



Talbotville & Ferndale Master Servicing Plan

Water / Wastewater /
Stormwater Management


Southwold, Ontario

May 7, 2015



Sign-off Sheet

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Prepared and Reviewed by 
(signature)

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Executive Summary

Introduction

The Township of Southwold (Southwold) is a small, rural municipality immediately west of the City of St. Thomas. The Township has completed a Master Servicing Plan (MSP) for the provision of water and wastewater servicing and stormwater management under the Municipal Class Environmental Assessment (Class EA) process for the Talbotville and Ferndale settlement areas.

The Master Servicing Plan is a component of the Township's strategic plan to improve development opportunities within these settlement areas through an environmentally sensitive and sustainable framework for the provision of municipal services for existing and future development.

Master Plan and Public Consultation

The intent of the Master Servicing Plan is to address public, review agency, and First Nation community requirements and concerns and to ensure all possible alternatives and opportunities are fairly assessed and reviewed in a public forum before being finalized and carried forward for implementation.

The Master Servicing Plan is being undertaken in accordance with the Master Planning requirements of the MEA Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011). Master Plans are not subject to requests from the public, agencies or First Nations communities for a Minister's Order (Part II Order). However, individual projects identified within a Class EA process can be subject to a Part II Order. As such, the Master Plan can be implemented following Council approval.

The first step in the Class Environmental Assessment process is to identify the problem or opportunity under consideration. In letters sent to the public, agencies, stakeholders and First Nation communities, the following was included which defines the problem opportunity statement developed for the Talbotville & Ferndale Master Servicing Plan.

"The purpose of the Talbotville & Ferndale Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the Township. Specifically, the Master Servicing Plan is to address the provision of water, wastewater and stormwater management for existing and future growth areas for the Talbotville and Ferndale settlement areas as defined in the Township's Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services."

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Members of the public were notified of project commencement and were invited to attend two Public Information Centres (PICs) by way of notices published in a local area newspaper and on the Township's website. An Aboriginal Communications Log was completed for this project to document the consultation process with Aboriginal communities contacted as part of the Class EA process. Agency consultation with the Ministry of the Environment and Climate Change (MOECC) and Kettle Creek Conservation Authority (KCCA) was undertaken as part of the Master Servicing Plan. Consultation with landowners/developers was undertaken as well.

General Setting

The study area includes the entire Talbotville and Ferndale settlement areas, including the lands designated for industrial use as defined in the Township's Official Plan. Refer to Figure E.1 for an illustration of the study area.

Review of Existing Infrastructure

The Township is currently serviced with water and limited wastewater infrastructure. There is limited stormwater management infrastructure within the Township. Existing servicing within Talbotville and Ferndale is illustrated in Figure E.2.

Alternative Solutions

As part of the Class planning process, reasonable and feasible alternative solutions to the problem/opportunity statement were identified. A qualitative evaluation was used to consider the suitability of alternative servicing strategies for water, wastewater and stormwater management and to identify significant advantages and disadvantages with respect to a set of evaluation criteria identified for each environmental component (natural environment, social/cultural, technical, and economic/financial).

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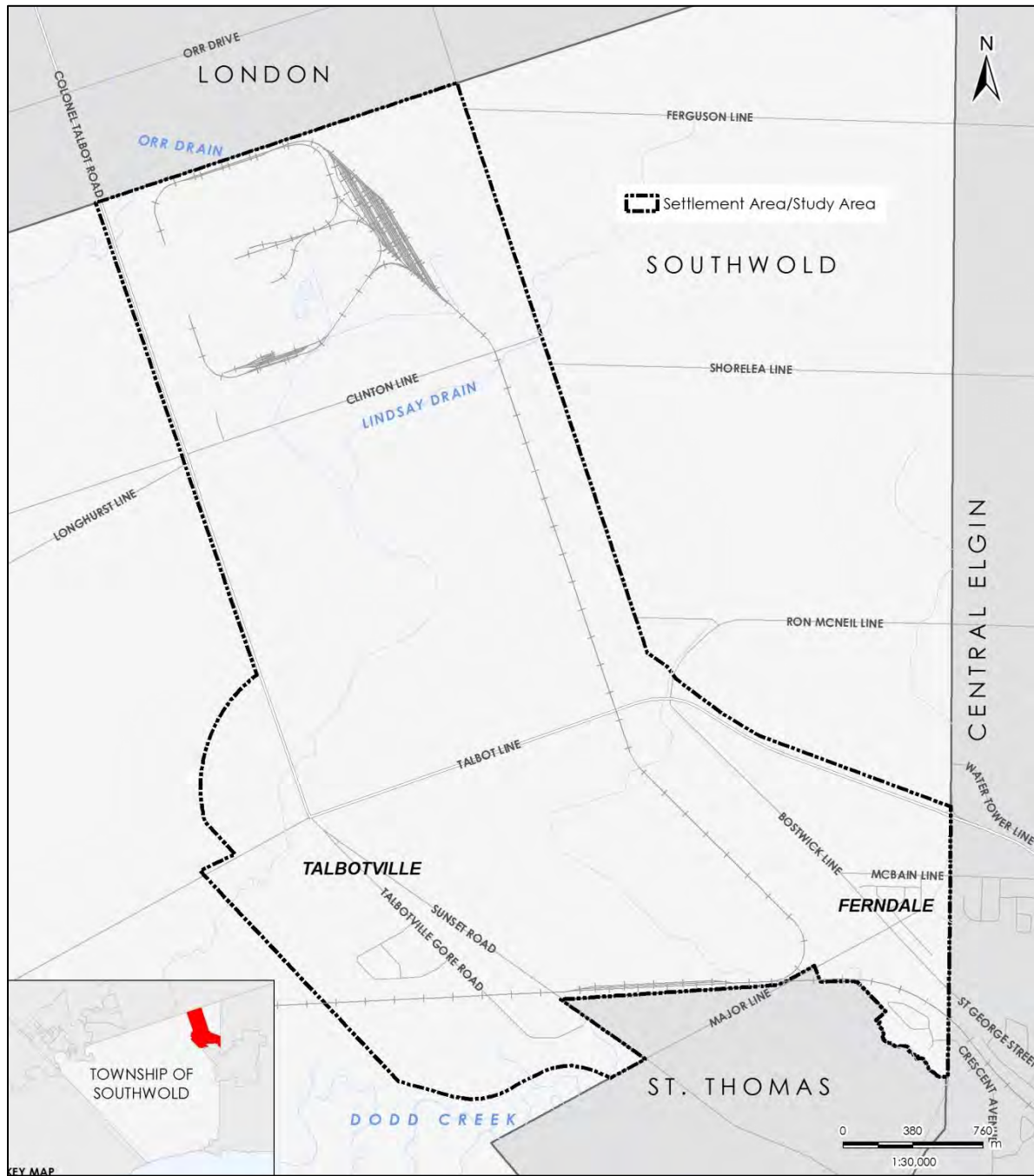


Figure E.1: Study Area

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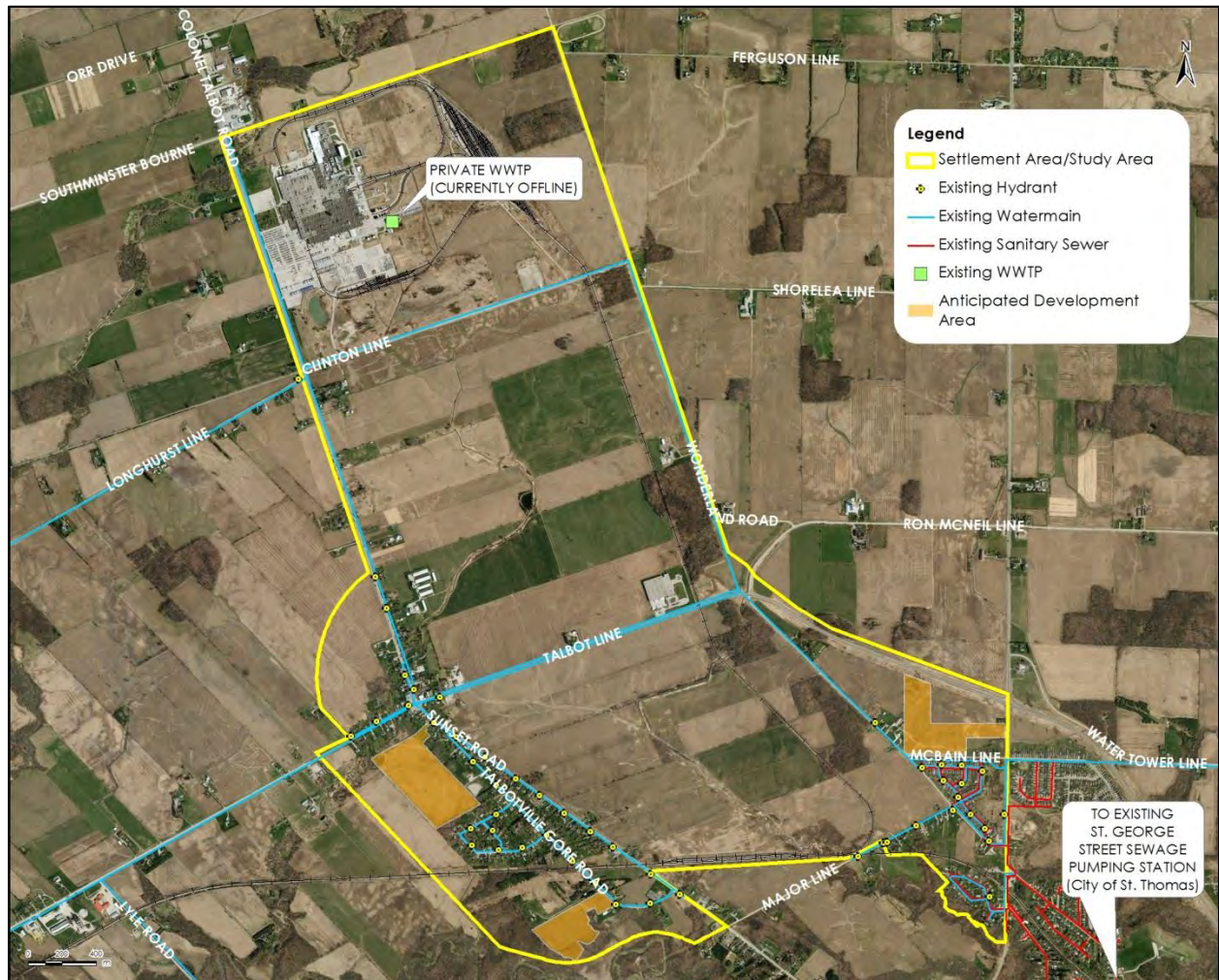


Figure E.2: Existing Servicing

Alternative Solutions – Water Supply and Distribution

Water servicing to existing and future development areas within Talbotville and Ferndale would utilize the existing Southwold water distribution system. The following water servicing alternatives were developed to address the problem opportunity statement:

Alternative 1: Do Nothing

Alternative 2: Private Water Servicing

Alternative 3: Extend Servicing of Elgin Area Primary Water Supply System (EAPWSS)

Alternative 4: Extend Existing Municipal Servicing System

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Alternative 4 “Extend Existing Municipal Servicing System” was selected as the **preferred alternative**.

This alternative utilizes the existing water distribution system within Talbotville and Ferndale. Extension of local distribution networks would be proposed for new development. This alternative utilizes existing capacity and infrastructure, and work would be situated within existing or proposed road allowances. It is also noted that the majority of complex crossings have been completed and therefore extension of services would not result in significant environmental impacts. While there would be some disruption associated with construction, the majority of work would occur on undeveloped land. Work that may impact the public, such as tie-in's, would be scheduled so as to reduce any adverse impacts. This alternative would have a lower cost than Alternative 3. It is also consistent with the Official Plan and *Provincial Policy Statement*. Figure E.3 illustrates the potential water supply and distribution projects.

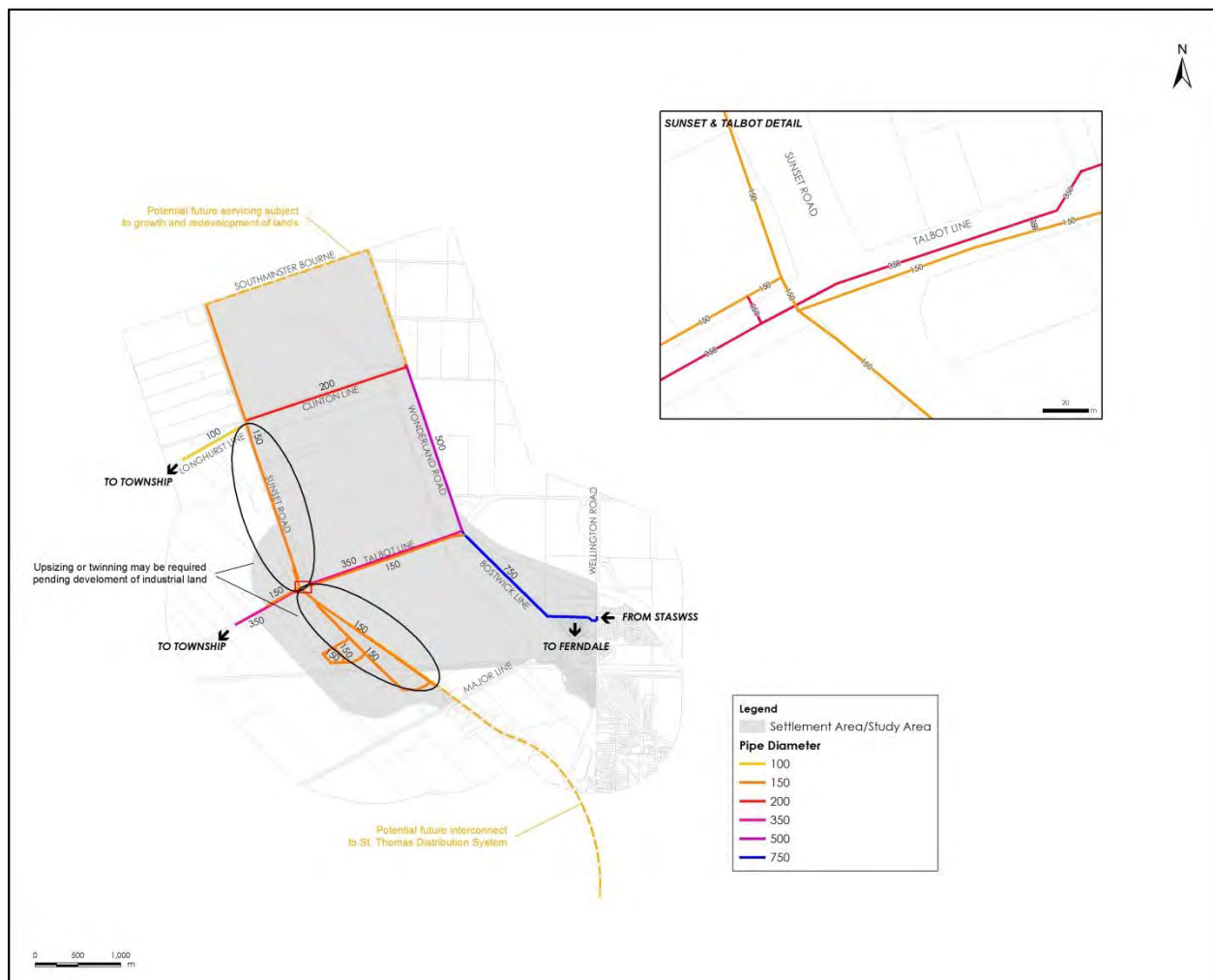


Figure E.3: Water Supply and Distribution Projects – Water Model

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Alternative Solutions – Wastewater Treatment and Collection (Ferndale)

There is no municipal wastewater treatment infrastructure within Ferndale; however, wastewater flows generated by existing development is conveyed via municipal sanitary sewers to the St. Thomas Wastewater Treatment Plant (WWTP). Sewer capacity issues exist upstream of the St. George Street Pumping Station which limit the amount of flow which can be conveyed from Ferndale to St. Thomas.

The following wastewater collection and treatment alternatives for Ferndale were developed to address the problem opportunity statement:

Alternative F1: Do Nothing

Alternative F2: Limit Growth

Alternative F3: Partial Upgrades of St. George Street Gravity Sewer

Alternative F4: Twin St. George Street Gravity Sewer

Alternative F5: Redirect Flow from Woodland Road Pumping Station

Alternative F6: Redirect Flow from Crescent Avenue Pumping Station

Alternative F7: New Pumping Station to Talbotville Wastewater Treatment Plant

Alternative F8: Utilize Existing Ford Motor Company Wastewater Treatment Plant

Alternative F5 “Redirect Flow from Woodland Road Pumping Station” and **Alternative F6** “Redirect Flow from Crescent Avenue Pumping Station” were selected as the **preferred alternatives**; however, other alternatives could be implemented as well.

The first option for Alternative F5 involves the redirection of wastewater flows from the Woodland Road Pumping Station to the Parkins Street Sewer. This project would result in the installation of approximately 285 m of sanitary forcemain through an easement held by the Municipality of Central Elgin. Upgrades to the Woodland Road Pumping Station would also be required.

The second option for Alternative F5 involves the redirection of wastewater flows from the Woodland Road Pumping Station; however, the forcemain would continue past the Parkins Street sewer and terminate at the St. George Street Pumping Station. The length of forcemain would be approximately 615 m and would be installed through the easement held by the Municipality of Central Elgin and along the road right of way. Upgrades to the Woodland Road Pumping Station would also be required.

The first option for Alternative F6 involves the redirection of wastewater flows from the Crescent Avenue Pumping Station via the CN right of way. This project would result in the installation of

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approximately 1,475 m of sanitary forcemain, terminating at the St. George Street Pumping Station. Acquisition of the CN right of way would be required. Upgrades to the Crescent Avenue Pumping Station would also be required.

The second option for Alternative F6 also involves the redirection of wastewater flows from the Crescent Avenue Pumping Station; however the forcemain would be installed along St. George Street, terminating at the St. George Street Pumping Station. The length of forcemain would be approximately 1,740 m. Upgrades to the Crescent Avenue Pumping Station would be required.

These options would redirect flow from the St. George Street sewer and help to alleviate capacity constraints on this system. Both options require coordination and approval from the Municipality of Central Elgin. Refer to Figure E.4 for an illustration of the alternatives.



Figure E.4: Water Treatment and Collection Alternatives (Ferndale)

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Alternative Solutions – Wastewater Treatment and Collection (Talbotville)

There is no municipal wastewater collection or treatment infrastructure within Talbotville. Existing development within the settlement area is serviced by private on-site septic systems.

The following wastewater collection and treatment alternatives for Talbotville were developed to address the problem opportunity statement:

Alternative T1: Do Nothing

Alternative T2: Limit Growth

Alternative T3: St. Thomas Wastewater Treatment Plant via St. George Street Gravity Sewer

Alternative T4: St. Thomas Wastewater Treatment Plant via Alternate/New Trunk Sewer

Alternative T5: New Wastewater Treatment Plant in Talbotville

Alternative T6: Utilize Existing Ford Motor Company Wastewater Treatment Plant

Alternative T5 “New Wastewater Treatment Plant in Talbotville” was selected as the **preferred alternative**.

This alternative involves the construction of a new municipally owned and operated wastewater treatment plant within the Talbotville settlement area to service both existing and future development. A suitable receiving body of water will have to be determined for this option to meet MOECC requirements. This is to be carried out through an Assimilative Capacity Study (ACS).

A new wastewater treatment plant would prompt the completion of a Schedule C Class EA. The Schedule C Class EA would build upon the findings of the Master Servicing Plan and would complete Phase 3 (Alternate Design Concepts) and Phase 4 (Environmental Study Report) of the Municipal Class EA process.

A new wastewater treatment plant should be sized accordingly for expansion (both in terms of area available on the site and potential oversizing of certain components).

There are impacts to the natural, cultural and socio-economic environments associated with this option. The construction of a wastewater treatment plant would result in a new outfall.

It is intended that a gravity sanitary trunk sewer will be constructed along Talbotville-Gore Road, terminating at the WWTP at the southern end of the settlement area. This will prevent disruption along Sunset Drive, a busier road. It will also allow for the connection of sanitary sewers to both

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the east and west sides of Talbotville-Gore Road. A future trunk sewer could be installed north of the CN tracks along Sunset Road, if warranted by development.

It is proposed that a new municipal wastewater treatment plant is to be located in the southern end of Talbotville. The plant would discharge to Dodd Creek, or one of its tributaries (pending the completion of the ACS). By locating the wastewater treatment plant in the south end of Talbotville, it results in the smallest distance between Ferndale and the WWTP, if it was determined that flows (existing, future, or both) should be directed to the Talbotville WWTP. Figure E.5 illustrates the approximate location of a new wastewater treatment plant in Talbotville and the layout of the trunk sanitary sewer.

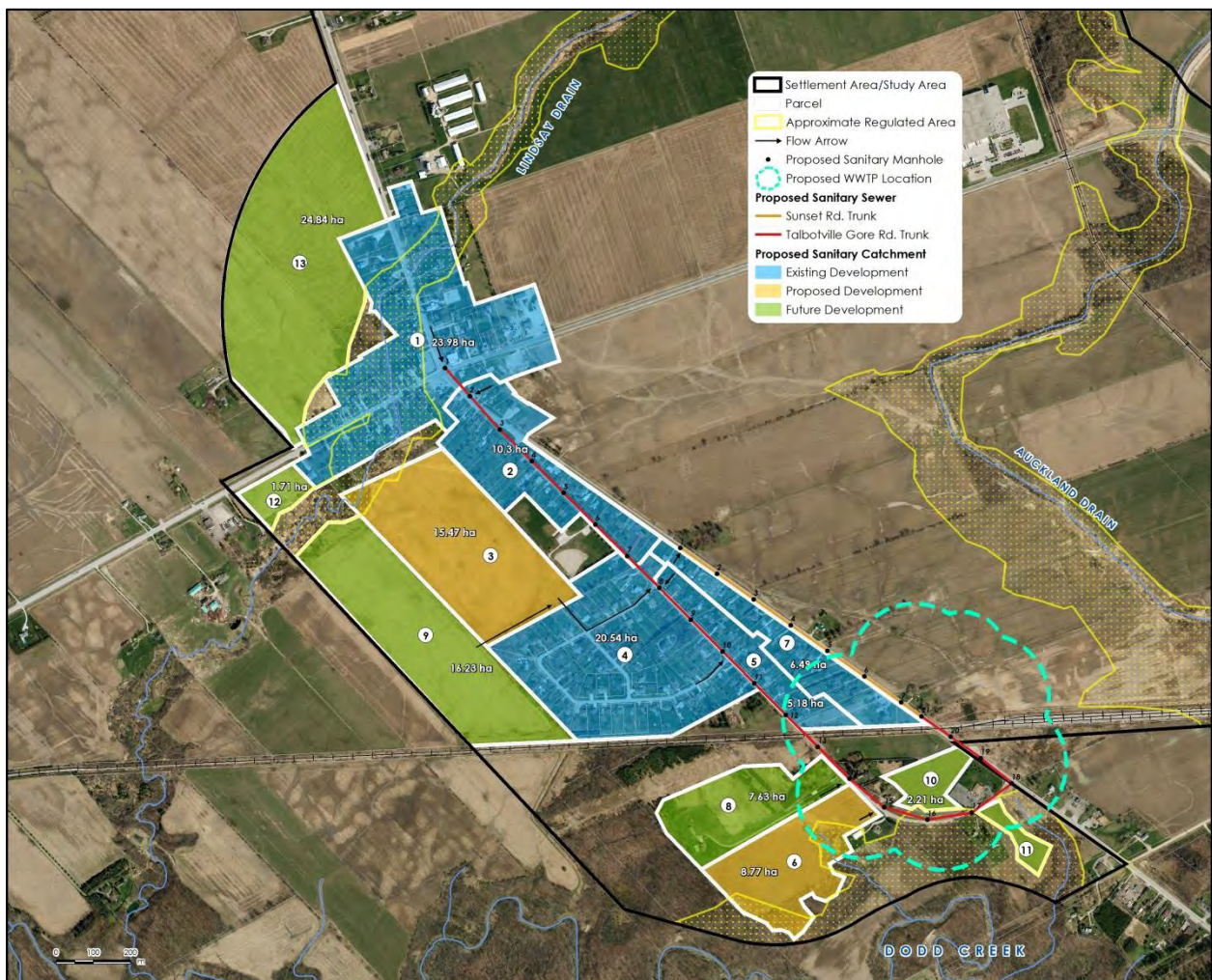


Figure E.5: Water Treatment and Collection Alternatives (Talbotville)

Regulated limits and floodplains restrict potential WWTP locations. Minimum distance separation between residential and other sensitive land uses must also be considered when siting a plant.

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As municipally owned land is not available, the Township would likely have to purchase property for a new plant. The cost for land acquisition was not considered in the development of cost estimates.

In accordance with KCCA policies, the construction of a wastewater treatment plant shall not be located within the regulatory flood hazard limit. Construction could occur subject to prior permission within the regulation limit. In order to obtain a permit from KCCA, demonstration must be provided, by qualified professionals, confirming that the control of flooding, erosion, dynamic beach, pollution, or the conservation of land will not be affected by the proposed development (O. Reg. 181/06). The entire facility (treatment plant, tankage, access roads, buildings, etc.) must be situated outside of any regulatory flooding hazard.

In accordance with MOECC policies (Southwestern Region), a wastewater treatment plant must be municipally owned. There cannot be a period where there is private ownership, administration or operation of a facility servicing separately-titled properties. In any event, for a municipally owned facility, the MOECC would expect that the municipality be the proponent/co-proponent and would be heavily involved at every stage of the Schedule C Class EA process. The municipality's position on its ownership and control of the facility should be unequivocal. In essence, it would be a municipal project; the municipality would have the facility designed/built to the standards set by its engineering standards, consultants, etc.

Further determination of the preferred plant location would be accomplished through the completion of a Schedule C Class EA.

As a sanitary collection system network does not currently exist within Talbotville, a phased approach would be necessary to implement sanitary sewers. Proposed development interests would be the primary driver for the implementation and timing of the sanitary trunk construction.

As an existing treatment plant does not exist within Talbotville, a phased approach should be taken for the construction of a new wastewater treatment plant. This is due to the minimal flows that a wastewater treatment plant would experience initially. Preliminary flows have been projected for each phase, according to existing and future development.

Based on preliminary WWTP flow projections, it is estimated that minimum site dimensions of 125 m x 125 m would be required to allow for the initial plant construction, and to also accommodate future plant expansions.

While a Schedule C Class EA will provide the basis for the selection of the preferred treatment technology, technologies that may be evaluated, but are not limited to this list are as follows:

- Extended Aeration (EA);
- Sequencing Batch Reactor (SBR); and
- Membrane Bioreactor (MBR).

Alternative Solutions – Stormwater Management

Ultimately, the best approach to stormwater management (SWM) - and the one proposed for this study area - utilizes several of the short-listed alternatives in sequence, where the short list can serve as a menu of suitable options for designers. This approach is typically referred to as “cascading” or a “treatment train” and has been demonstrated to provide the best opportunities for stormwater control and treatment. A cascading approach including “prevention” and “improvement” measures with preference for closer-to-source alternatives is recommended. Discussion within the Master Servicing Plan for each development should focus on how the benefits of the cascading approach have been realized.

Lot-level controls are important components of stormwater control; however, each should be considered based on required maintenance, reliability of the maintaining party and expectation of long-term performance before approvals are granted. Any privately-owned lot-level control will have a higher risk of failure due to the lack of municipal control.

For small infill developments where SWM measures are not practical or effective to implement, cash-in-lieu of SWM measures can be used to fund stormwater projects elsewhere in the community or study area.

The proposed SWM strategy for the Talbotville settlement area includes a regional SWM treatment train at the southern extent of the proposed residential expansion which outlets to the Moody Drain. By outletting in this location, runoff from the settlement is contributed to Dodd Creek downstream of a reach particularly sensitive to erosion. This regional facility is intended to collect and treat runoff from the Talbot Meadows/South Talbotville/Moody Drains catchment area.

Given the current uncertainty of the development plan for the industrial lands, it is difficult to recommend a SWM strategy for these areas with any accuracy or vigor. Inclusion of regional facilities in the Auckland Drain catchment may be feasible, depending on the development plan of industrial blocks in the southern half of the catchment and access to the drain itself. A regional facility may also be feasible in the Orr Drain catchment; however, the outlet quality is considered to be less than with the Auckland Drain as reaches downstream of the study area may be sensitive to erosion.

SWM for the Ferndale settlement area is recommended to be a regional treatment train which can accommodate all new residential and commercial development in the Underhill Drain catchment. Erosion in downstream reaches of the Drain or in upper Kettle Creek is not believed to be a concern and, as such discharge from a regional facility may be acceptable.

Figure E.6 illustrates the constraints and opportunities for stormwater management in Talbotville and Ferndale.

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Figure E.6: Stormwater Management Constraints and Opportunities

1.0 INTRODUCTION

1.1 BACKGROUND

The Township of Southwold (Southwold) is a small, rural municipality immediately west of the City of St. Thomas. The Township has completed a Master Servicing Plan (MSP) for the provision of water and wastewater servicing and stormwater management under the Municipal Class Environmental Assessment (Class EA) process for the Talbotville and Ferndale settlement areas.

The Master Servicing Plan is a component of the Township's strategic plan to improve development opportunities within these settlement areas through an environmentally sensitive and sustainable framework for the provision of municipal services for existing and future development.

1.2 STUDY AREA

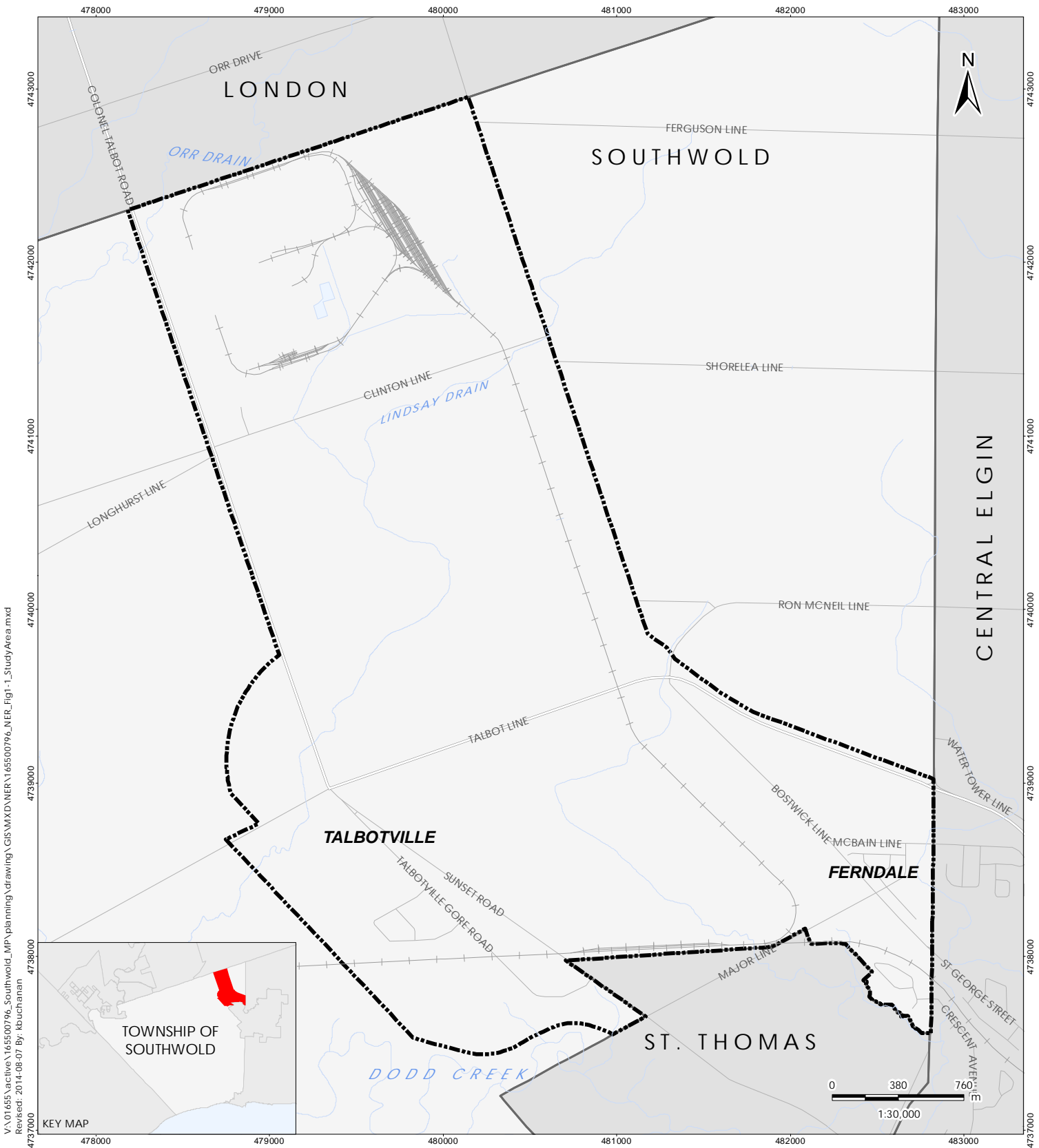
The study area includes the entire Talbotville and Ferndale settlement areas, including the lands designated for industrial use as defined in the Township's Official Plan. Refer to Figure 1.1 for an illustration of the study area.

1.3 EXISTING INFRASTRUCTURE

The Township is currently serviced with water and limited wastewater infrastructure. The Master Servicing Plan should be reflective of the development and growth goals of the Township, in accordance with the Official Plan. To ensure this, a set of guiding principles or priorities were developed with consideration for the following:

- Preference for long-term servicing solutions over interim solutions;
- All services to be fully funded through adequate planning, budgeting and identified revenue streams, development charges, etc.; and
- Servicing solutions should be developed which minimize risk to the Township, users, and others.

A review of existing information which forms the basis for the analysis of the study areas current infrastructure capabilities and deficiencies was undertaken. Water and wastewater infrastructure present in Talbotville and Ferndale is listed in Table 1.1. There is limited stormwater management infrastructure within the Township. Existing servicing within Talbotville and Ferndale is illustrated in Figure 1.2.



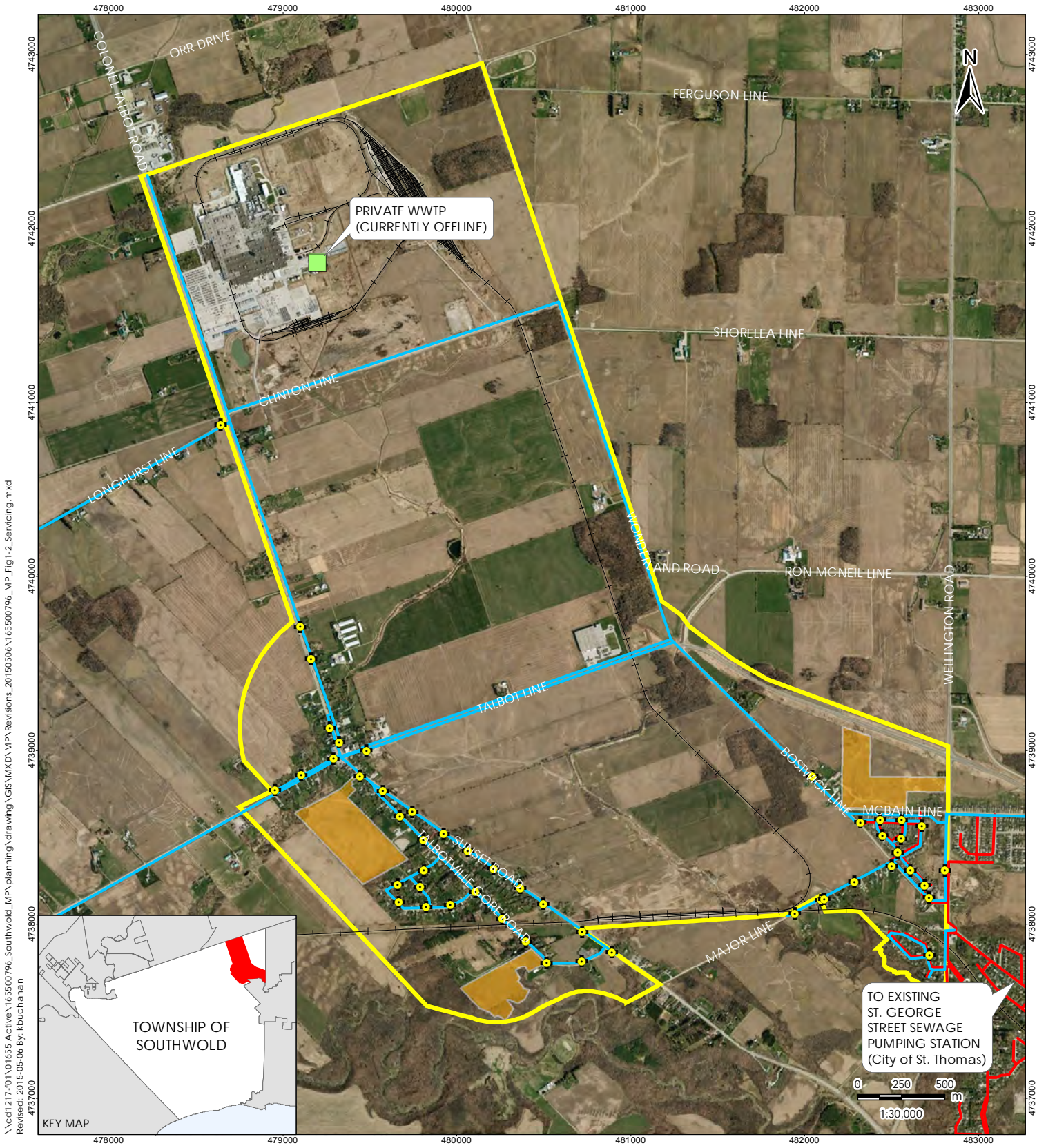
Legend
 Settlement Area/Study Area

Client/Project
 Township of Southwold
 Talbotville & Ferndale Master
 Servicing Plan

Figure No.
 1.1

Title
 Study Area

- Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2014.



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 Revised: 2015-05-06 By: kbuchanan

May 2015
165500796



- Legend**
- Settlement Area/Study Area
 - + Existing Hydrant
 - Existing Watermain
 - Existing Sanitary Sewer
 - Existing WWTP
 - Anticipated Development Area

- Notes**
- Coordinate System: NAD 1983 UTM Zone 17N
 - Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
 - 2010 orthoimagery © First Base Solutions, 2015.

Client/Project
 Township of Southwold
 Talbotville & Ferndale
 Master Servicing Plan

Figure No.
 1.2

Title
 Existing Servicing
 and Anticipated
 Development Areas

TALBOTVILLE & FERNDALE MASTER SERVICING PLAN

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Table 1.1: Water and Wastewater Infrastructure

Area	Water	Wastewater
Talbotville	Fully serviced	No services (onsite septic systems)
Ferndale	Fully serviced	Partially serviced (existing development is fully serviced, growth area is not serviced)
Industrial Lands	Partially serviced	Partially serviced

The former Ford Motor Company property is on municipal water and has a private wastewater treatment plant on site.

1.4 PROJECT SCOPE & OBJECTIVES

The intent of the Master Servicing Plan is to address public, agency, and First Nation community requirements and concerns and to ensure all possible alternatives and opportunities are fairly assessed and reviewed in a public forum before being finalized and carried forward for implementation. The scope of work being completed as part of this Municipal Class EA includes:

- Background review;
- Technical analysis of each of the three municipal servicing components;
- Review of the social and natural environment;
- Development of planning level master plan solutions for each of the three municipal servicing components;
- Undertake public consultation in accordance with Phase 1 and 2 of the Class EA process; and
- Preparation of a Project File.

The objective of the Master Servicing Plan is to provide the Township with a unique strategy for the provision of servicing for both existing and future development within Talbotville and Ferndale, identifying opportunities and constraints based on the local physical, social, natural and economic environment.

1.4.1 Water Supply and Distribution

As outlined in the Terms of Reference for the Master Servicing Plan, the following is to be completed for water supply and distribution:

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- Complete assessment of alternatives and selection of preferred alternative for water supply;
- Identify logical extensions of distribution systems based on system demands to service future growth and development areas. Proposed network extensions are to be included in the evaluation of water system alternatives;
- Prepare preliminary cost estimates for each alternative; and
- Prepare implementation strategies (i.e., role of existing community and development; identify potential funding alternatives).

1.4.2 Wastewater Collection and Treatment

As outlined in the Terms of Reference for the Master Servicing Plan, the following is to be completed for wastewater collection and treatment:

- Complete assessment of alternatives and selection of preferred alternative for wastewater treatment;
- Identify logical extensions of wastewater collection systems and/or new sewerage networks based on projected wastewater flows to service both currently un-serviced areas within each community as well as future growth and development areas; identify location and approximate sizing of pumping stations. Proposed collection system networks are to be included in the evaluation of wastewater system alternatives;
- Prepare preliminary cost estimates for each alternative; and
- Prepare implementation strategies (i.e., role of existing community and development; identify potential funding alternatives).

1.4.3 Stormwater Management

As outlined in the Terms of Reference for the Master Servicing Plan, the following is to be completed for stormwater management:

- Identify appropriate options for providing stormwater management for new developments including lot level controls, conveyance controls, a centralized "regional" end of collection treatment and system controls;
- Provide commentary on the appropriate application of oil and grit separators for the purposes of water quality control;

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- Identify logical areas for the implementation of regional treatment and control facilities for new development including identification of approximate drainage areas and functional sizing in order to provide approximate area requirements;
- Complete assessment of stormwater management alternatives and identify a preferred strategy for the future implementation of stormwater management within the growth area;
- Prepare preliminary cost estimate for each alternative and include first order estimates for the long-term maintenance of end of pipe alternatives; and
- Prepare implementation strategies (i.e., role of existing community and development, identify potential funding alternatives).

2.0 CONSULTATION

2.1 OVERVIEW

Consultation is an integral component of the Municipal Class EA process. Effective communication with Aboriginal communities, agencies, stakeholders and the general public can reduce or avoid controversy that can ultimately lead to project delay and general discontent of project stakeholders.

Stantec, in consultation with Township staff identified stakeholders, agencies and Aboriginal communities that may have an interest in this study, the methods of contact, and the timing of contact for this project. This section details the consultation process followed for the Master Servicing Plan.

2.2 CLASS ENVIRONMENTAL ASSESSMENT

A Class Environmental Assessment is a planning document which sets out the process that a proponent must follow in order to meet the requirements of the Environmental Assessment Act for a class or category. Projects are divided into schedules based on the type of project and activity. Schedules are categorized as A, A+, B, and C with reference to the magnitude of their anticipated environmental impact.

All municipalities in Ontario, including the Township of Southwold, are subject to the provisions of the Environmental Assessment Act and its requirements to prepare an Environmental Assessment for applicable public works projects. The Ontario Municipal Engineers Association (MEA) Municipal Class Environmental Assessment (June 2000, revised 2007 and 2011) document provides municipalities with a five-phase planning procedure approved under the Environmental Assessment Act to plan and undertake all municipal sewage, water, stormwater and transportation projects that occur frequently, are usually limited in scale and have a predictable range of environmental impacts and applicable mitigation measures.

2.2.1 Schedule A

Schedule A projects are limited in scale, have minimal adverse environmental impacts and include the majority of municipal sanitary, stormwater and water operations, and maintenance activities. These projects are pre-approved and therefore may proceed to implementation without going through the full planning process.

Schedule A projects typically include normal or emergency operation maintenance activities where the environmental effects of these activities are minimal. Examples of Schedule A projects include watermain and sewer extensions where all such facilities are located within the municipal road allowance or an existing utility corridor. As such, these projects are pre-approved and subsequently do not require any further planning and public consultation.

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2.2.2 Schedule A+

Schedule A+ projects were introduced as part of the 2007 amendments to the Municipal Class EA document. This schedule was introduced to ensure that some type of public notification would occur for pre-approved projects. Although the public is to be notified, no formal public consultation process is required. The public has the right to comment to municipal staff in their area; however, considering that the projects are pre-approved there is no appeal process to the Minister of the Environment on these projects.

2.2.3 Schedule B

Schedule B projects are those which have a potential for adverse environmental impacts. A screening process must be undertaken which includes consultation with Aboriginal communities, 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 B projects require that Phase 1 and 2 of the Class EA planning process be followed and a Project File be prepared and submitted for review. If there are no outstanding concerns raised by the public, review agencies or First Nation communities then the proponent may proceed to project implementation (Phase 5). If however, the screening process raises a concern that cannot be resolved, then the Part II Order procedure (formerly referred to as a "bump-up") may be invoked. Alternatively, the proponent may voluntarily elect to complete the project as a Schedule C undertaking.

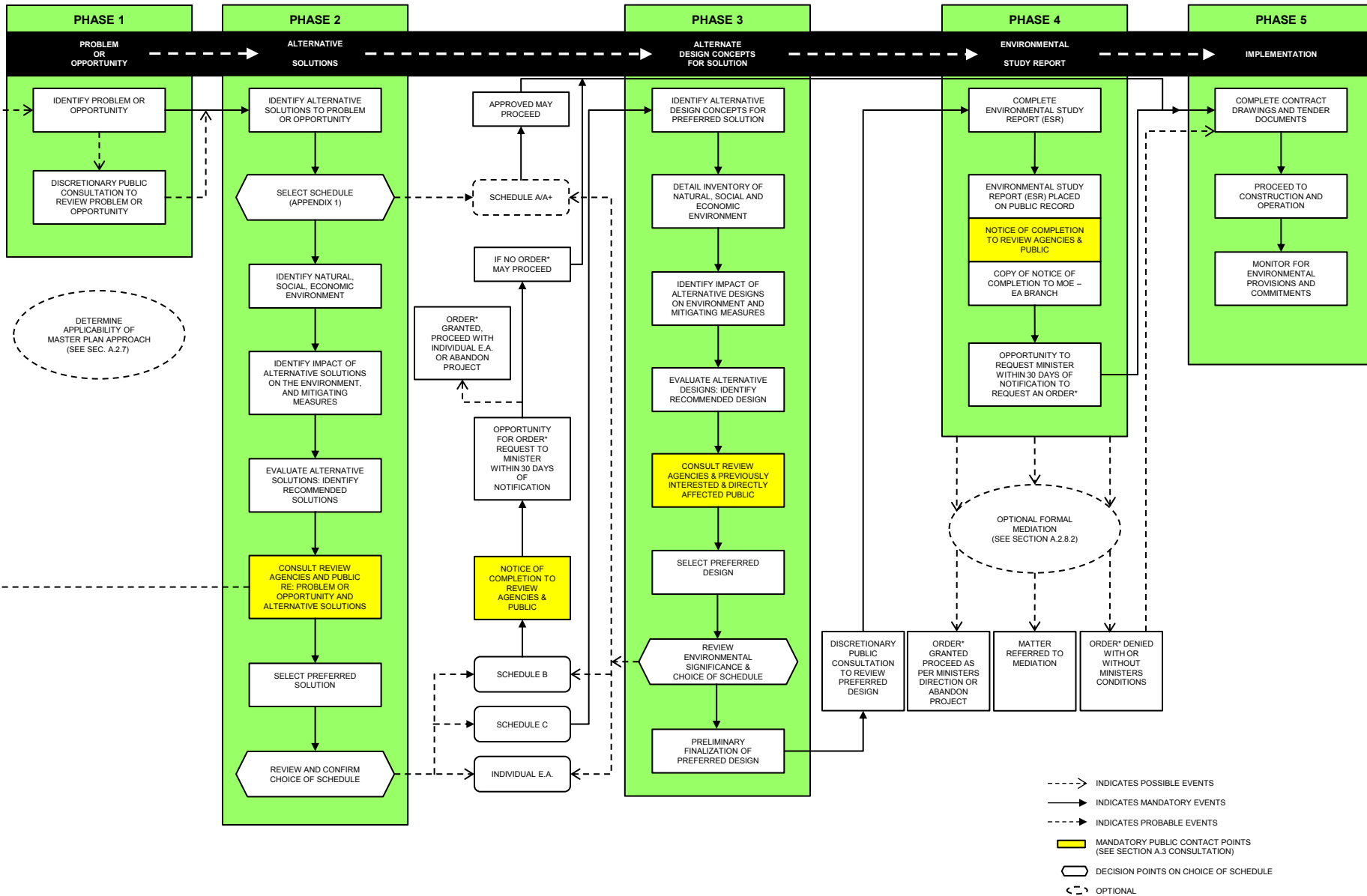
2.2.4 Schedule C

Schedule C projects have the potential for significant environmental impacts and must follow the full planning and documentation procedures specified in the Class EA document (Phase 1 to 4). An Environmental Study Report (ESR) must be prepared and filed for review by the public, review agencies and First Nation communities. If concerns are raised that cannot be resolved, then the Part II Order procedure may be invoked. Projects generally include the construction of new facilities and major expansions to existing facilities.

2.3 PLANNING PROCESS

Figure 2.1 illustrates the process followed in the planning and design of projects covered by a Municipal Class EA. The figure incorporates steps considered essential for compliance with the requirements of the Environmental Assessment Act that are summarized subsequently.

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS



* PART II ORDER (SEE SECTION A.2.8)

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

- Phase 1** Identification of problem (deficiency) or opportunity.
- Phase 2** Identification of alternative solutions to address the problem or opportunity. Public, review agency, and First Nation community 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.
- Phase 3** Examination of alternative methods of implementing the preferred solution established in Phase 2. This decision is based on the existing environment, public, review agency and First Nations input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.
- Phase 4** Preparation of an Environmental Study Report summarizing the rationale, planning, design and consultation process of the project through Phases 1 to 3. The ESR is then made available for public, agency and First Nations review.
- 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 MEA Class EA document also serves as a public statement of the decision making process followed by municipalities for the planning and implementation of necessary infrastructure.

The complexity of each project is based on the level of investigation, environmental effects, technical considerations and agency, Aboriginal communities, and public input, which may affect the selection of the project schedule. It is the responsibility of the proponent to determine and/or customize the planning process to meet the projects consultation and technical needs based on the complexity of the issues.

The Class EA process is a decision making process to promote good environmental assessment planning, with key features being:

- Early consultation;
- Consideration of reasonable range of alternatives;
- Assessment of environmental effects;
- Systematic evaluation of alternatives; and

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- Clear documentation and traceable decision making.

2.4 MASTER PLAN APPROACH

The Master Servicing Plan is being undertaken in accordance with the Master Planning requirements of the MEA Municipal Class Environmental Assessment (October 2000, as amended in 2007 and 2011). Master Plans are not subject to requests from the public, agencies or First Nation communities for a Minister's Order (Part II Order). However, individual projects identified within a Master Plan can be subject to a Part II Order. As such, the Master Plan can be implemented following Council approval.

The MEA offers four approaches for undertaking a Master Plan and based on our review Municipal Class EA Approach #2 appears to be the most accurate. Approach #2 allows for the preparation of a Master Plan document at the conclusion of Phases 1 and 2 of the Municipal Class EA process where the level of investigation, consultation and documentation are sufficient to fulfill the requirements for Schedule B projects. Accordingly, the final public notice for the Master Plan could become the Notice of Completion for the Schedule B projects within it. Any Schedule C projects, however, would have to fulfill Phases 3 and 4 prior to filing an ESR for public review. The Master Plan would provide the basis for future investigations for the specific Schedule C projects identified within it.

2.5 CHANGING PROJECT STATUS – “PART II ORDER”

Subsection 16 of the amended Environmental Assessment Act provides the Minister of the Environment or delegate an opportunity to review the status of a project. Members of the public, interest groups, review agencies and First Nation communities may submit a request to the Minister or delegate to require a proponent to comply with Part II of the Environmental Assessment Act (i.e., Individual EA) before proceeding with the proposed undertaking. The Minister or delegate determines whether the request is justified and then determines the course of the undertaking. This decision is considered final.

A request to the Minister or delegate must be in writing and must address the following issues as they relate to the identified concerns:

- Environmental impacts of the project and their significance;
- The adequacy of the planning process;
- The availability of other alternatives for the project;
- The availability of the public consultation program and the opportunities for public participation;
- The involvement of the person or party in the planning of the project;

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- The nature of the specific concern which remains unresolved;
- Details of any discussions held between the person or party and the proponents;
- The benefits of requiring the proponent to undertake an Individual EA; and
- Any other important matters considered relevant.

The person requesting the Part II Order shall forward a copy of the request to the proponent at the same time as submitting it to the Minister of the Environment or delegate.

The Minister has four options for a decision on a Part II Order (bump-up) request:

- Deny the request;
- Deny the request with conditions;
- Refer to mediation; or
- Grant the request and require the proponent to undergo an individual EA.

2.6 STAKEHOLDER CONSULTATION

The following potential stakeholders were included:

- **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 that represent the policy positions of their respective departments, ministries, authorities or agencies.

The role of the members of the public with an interest in the study is to provide background information to advise the proponent of their support and concerns, and to review and provide comments and input about the study findings (as the project progresses). Members of the public with an interest in the study can ask to be placed on the mailing list to receive notification of the consultation opportunities for this project.

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

A list of relevant public and agency contacts were developed at the onset of the project. Throughout the process, these contacts were sent letters notifying them of the project progress. Appendix 2.1 contains the contact list developed for this project. Appendix 2.2 contains public

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and agency comments that were received during the project as well as agency notifications. Comments received following PICs, and if requested, a response from Stantec, are included in a separate appendix.

2.7 ABORIGINAL CONSULTATION

A list of relevant Aboriginal communities was developed at the onset of the project. Throughout the process, these communities were provided with letters notifying them of project commencement and invitation to attend the PICs. The following six communities were engaged as part of the consultation process:

- Chippewas of the Thames First Nation;
- Caldwell First Nation;
- Moravian of the Thames First Nation;
- Bkejwanong Territory (Walpole Island);
- Munsee-Delaware First Nation; and
- Oneida of the Thames First Nation.

At the request of Chippewas of the Thames First Nation and Caldwell First Nation, Stantec met with these two First Nation communities on October 2, 2014 and October 3, 2014, respectively, to provide an overview of the project and answer questions. In addition, Stantec met with Bkejwanong Territory (Walpole Island) on October 20, 2014. Based on the outcome of these meetings, the following requests were made.

Caldwell First Nation requested the following:

- Remediation of disturbed areas to be completed with native wildflowers and grass mix;
- Remediation to take place immediately so as to minimize the establishment of invasive species;
- Projects should not result in harmful issues regarding health and/or detriment to the environment;
- Opportunity to provide an Aboriginal Monitor should a Stage 2 Archaeological Assessment be required for any project; and
- Be included on any future project correspondence.

Chippewas of the Thames First Nation requested the following:

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- Opportunity to provide an Aboriginal Monitor should a Stage 2 Archaeological Assessment be required for any project; and
- Be included on any future project correspondence.

Bkejwanong Territory (Walpole Island) requested the following:

- Be included on any future project correspondence.

After review of the documentation provided, Moravian of the Thames First Nation stated that additional consultation was not required. Munsee-Delaware First Nation and Oneida of the Thames First Nation did not provide any comment.

At the conclusion of the study, project information will be sent to the above listed communities for their review and to request final project comments, as outlined in the Aboriginal Communications Log. Appendix 2.3 contains the Aboriginal Communications Log which was completed for this project to document the consultation process with Aboriginal communities contacted as part of the Class EA process. Appendix 2.4 contains a copy of each response received.

2.8 PUBLIC INFORMATION CENTRES

Public Information Centres are a method to communicate with the general public, interested parties, review agencies and First Nation communities. For this project two PICs were held. The PICs were advertised on the Township website as well as in the Weekly News. The Weekly News was selected by the Township as it is a free newspaper and provides the widest circulation within Elgin County.

PIC 1 was held on March 19, 2014 from 6:30 pm to 8:30 pm at the Keystone Community Complex in Shedden, Ontario. The PIC was held as a drop in format to introduce the project to agencies, stakeholders, First Nation communities and the public. Both Township staff and Stantec personnel were on hand to answer questions. Handouts were available to attendees (duplication of project boards on display at the PIC) along with comment sheets. Twenty-five people signed the attendance log. Appendix 2.5 contains the PIC 1 Summary and a copy of the handout and comment sheet given to attendees. No comment sheets were submitted at the meeting.

PIC 2 was held on September 23, 2014 from 6:30 pm to 8:30 pm at the Keystone Community Complex in Shedden, Ontario. A formal presentation was given at 7:00 pm. Both Township staff and Stantec personnel were on hand to answer questions after the presentation. Handouts were available to attendees (duplication of PowerPoint presentation slides presented at the PIC) along with comment sheets. Forty-three people signed the attendance log. Appendix 2.6 contains the PIC 2 Summary and a copy of the handout and comment sheet given to

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attendees. One comment sheet was submitted at the meeting, with an additional four comment sheets returned following the meeting.

The individuals listed below provided written comments following PIC 2:

- Dennis Broome (Royal LePage Triland Realty Brokerage);
- Colin McBain (property owner);
- Jamie McBain (property owner);
- Heather Brady (property owner); and
- Jason Small (property owner).

As requested, Stantec provided written responses to all individuals who submitted a comment sheet. A copy of the original comment sheet and Stantec's written responses can be found in Appendix 2.7.

On December 15, 2014, Stantec held a formal presentation to Township staff and Council to present work completed to date and the draft findings and recommendations pertaining to the Master Servicing Plan. A copy of this presentation can be found in Appendix 2.8.

2.9 AGENCY CONSULTATION

Stantec held two meetings with the Ministry of the Environment and Climate Change (MOECC) throughout the duration of this project. These meetings were held on August 26, 2014 and March 4, 2015. In addition, ongoing consultation between Stantec and the MOECC occurred at various stages of the study.

Consultation was also undertaken with Kettle Creek Conservation Authority (KCCA) regarding conservation authority policies. Further details pertaining to both MOECC and KCCA consultation is found in subsequent sections of this document.

2.10 CONSULTATION WITH LANDOWNERS/DEVELOPERS

At the onset of the project, Stantec and the Township invited landowners/developers who had previously expressed an interest in this project with an opportunity to meet to review any specific issues or voice questions they had on this project and to outline any servicing plans or concepts that had been developed for their lands. This meeting was held at the Southwold Township Office in Fingal, Ontario on October 4, 2013. The following individuals were in attendance:

- Joe Ostojic (Walter Ostojic and Sons);
- Tom Albrecht (Heath Street Advisors, on behalf of Lena Pittao);

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- Rick Dykstra (RICOR Engineering, on behalf of DHP Contracting); and
- Dave Sparenberg (DHP Contracting).

Those in attendance were given the opportunity to speak and provide information on their respective land/developments. Further correspondence and additional information was provided to Stantec and the Township by Tom Albrecht and Rick Dykstra throughout the duration of the study with regards to their respective development interests. Following initial correspondence with Walter Ostojic and Sons at the onset of the study, no further comments or information was received prior to PIC 2.

2.11 NOTICES

The Notice of Study Commencement and PIC 1 as well as the Notice of PIC 2 were published in two separate issues of the Weekly News prior to the PIC dates. Letters were mailed via Canada Post to all project contacts.

The Notice of Completion was sent out to agencies and interested parties informing them that the Talbotville & Ferndale Master Servicing Plan had been completed via Canada Post as well as being published in two separate issues of the Weekly News. Copies of all notices are included in Appendix 2.9.

In addition, all notices were posted on the Township's website.

2.12 INTENT OF REPORT

The intent of this report is to outline the steps that the proponent (Township of Southwold) has taken to satisfy the requirements of the Municipal Class Environmental Assessment planning and design process for Schedule B projects. The Project File should detail the following:

- Background to the project and earlier studies;
- Nature and extent of the problem or opportunity, explain the source of the concerns or issue and the need for solutions;
- Description/inventory of the environment;
- Identify solutions that are possible and define a preferred solution; and
- Identify the cost to implement the preferred solution.

The MEA Class EA process currently allows a 10 year window for implementation following completion of the Class EA.

3.0 PHASE 1 – PROBLEM OR OPPORTUNITY

3.1 PROBLEM / OPPORTUNITY STATEMENT

The first step in the Class Environmental Assessment process is to identify the problem or opportunity under consideration. In letters sent to agencies, stakeholders, public and First Nation communities, the following was included which defines the problem opportunity statement developed for the Talbotville & Ferndale Master Servicing Plan.

“The purpose of the Talbotville & Ferndale Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the Township. Specifically, the Master Servicing Plan is to address the provision of water, wastewater and stormwater management for existing and future growth areas for the Talbotville and Ferndale settlement areas as defined in the Township’s Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.”

3.2 GUIDING PRINCIPLES

The following guiding principles were developed for the Master Servicing Plan:

- The Master Servicing Plan is developed in a logical, consistent and fair manner that reflects the values of the Township of Southwold (Council, staff, community).
- The Master Servicing Plan should align with and build upon the goals and objectives for the Township with respect to servicing of existing and growth areas as noted in the Official Plan and as per the *Provincial Policy Statement* and *Small Settlement Servicing Study*.
- The Master Servicing Plan should align with the Municipal Servicing Objectives defined in the Official Plan ensuring that servicing is provided in a sustainable and financially viable manner and that planned growth is accommodated through the efficient use of existing municipal infrastructure.
- The Master Servicing Plan developed meets the requirements of current regulations and establishes a proactive plan to achieve compliance with regulations to be phased in by the federal and provincial government.
- The Master Servicing Plan addresses the state and condition of current infrastructure as well as future infrastructure needs in order to provide the Township with an overall blueprint for infrastructure management.

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Phase 1 – Problem or Opportunity

- Technical analysis based on data collection and modeling is undertaken to provide full understanding of key systems under the expected range of conditions over the study period to the level required for decisions to be made.
- Key problems and opportunities facing the Township with regard to municipal water, wastewater and stormwater infrastructure are properly identified, including opportunities to time work with other capital projects.
- Past work, current knowledge and future trends and technology are adequately analyzed and identified to the Township.
- Cost effective, sustainable and timely solutions are developed.
- For the Township to have an interdepartmental consensus as to the Master Servicing Plan strategy based on Stantec's work.

3.3 POPULATION PROJECTIONS

Population projections for Talbotville and Ferndale were based upon the *Addendum to Allocation of Equivalent Residential Units Tables and Responses to OMAFRA and MMAH Land Supply Review and Small Settlement Servicing Study* for the next 20 years (2012). Population projections are based on three people per equivalent residential unit (ERU) for existing development.

ERU allocation is based on land supply, proposed additions to the land supply, dwelling unit forecasts, existing land use and land ownership patterns, development interests, consideration of infilling, rounding out and minor extension opportunities and existing residential densities and lot sizes in communities.

There are approximately 165 dwellings within Talbotville for an estimated population of 462 people. The estimated ERU for future development is approximately 600 units.

There are approximately 210 dwellings within Ferndale for an estimated population of 588 people. The estimated ERU for future development is approximately 270 units.

Existing, future and total population projections are provided in Table 3.1.

Table 3.1: Population Projections for Talbotville and Ferndale

	Existing	Future	Total
Talbotville	462	1,800	2,262
Ferndale	588	810	1,398

4.0 POLICY AND PLANNING DOCUMENTS

4.1 POLICY DOCUMENTS

4.1.1 The Planning Act (2005)

The Planning Act (2005) sets out the ground rules for land use planning in Ontario and describes how land uses may be controlled, and who may control them. Pursuant to the Planning Act, the Province of Ontario is the primary planning authority in Ontario. The Planning Act enables the Province to delegate some of its planning authority to the upper-tier municipalities (i.e., counties and regional/district municipalities, as well as planning boards) while retaining control through the approval process. Municipalities must conform to approved policies of the Provincial government and its agencies. Provincial ministries, municipal councils, planners and other stakeholders implement the Act when such actions include:

- Preparing Official Plans and planning policies that guide future development considering provincial interests, such as protecting and managing natural resources; and
- Regulating and controlling land uses through zoning by-laws and minor variances.

4.1.2 Provincial Policy Statement (2014)

The *Provincial Policy Statement (PPS)* is the complimentary policy document to the Planning Act. Issued under the authority of Section 3 of the Planning Act, the *PPS* provides direction on matters of provincial interest related to land use planning and development and promotes the provincial “policy-led” planning system that recognizes and addresses the complex interrelationship among environmental, economic and social factors in land use planning. The Planning Act requires that the *PPS* be reviewed periodically to ensure its policies are still effective. The new 2014 *PPS* provides for enhanced protection of the environment by identifying the significance of the natural heritage system and water resources, including natural hazards and water quality, air quality and energy use.

The *Provincial Policy Statement* provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. The *Provincial Policy Statement* supports improved land use planning and management, which contributes to a more effective and efficient land use planning system.

The policies of the *Provincial Policy Statement* may be complemented by provincial plans or by locally generated policies regarding matters of municipal interest. Provincial plans and municipal Official Plans provide a framework for comprehensive, integrated, place-based and long-term planning that supports and integrates the principles of strong communities, a clean and healthy environment and economic growth, for the long term.

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Relevant excerpts pertaining to the Master Servicing Plan from the *Provincial Policy Statement* are found below, but are not limited to the following:

Settlement Areas (Section 1.1.3)

- **Section 1.1.3.8 b:** Infrastructure and public service facilities which are planned or available are suitable for the development over the long term, are financially viable over their life cycle, and protect public health and safety and the natural environment.

Infrastructure and Public Service Facilities (Section 1.6)

- **Section 1.6.1:** Infrastructure shall be provided in a coordinated, efficient and cost-effective manner that considers impacts from climate change while accommodating projected needs. Planning for infrastructure shall be coordinated and integrated with land use planning so that they are financially viable over their life cycle, which may be demonstrated through asset management planning and available to meet current and projected needs.
- **Section 1.6.3 a:** Before consideration is given to developing new infrastructure, the use of existing infrastructure should be optimized.

Sewage, Water and Stormwater (Section 1.6.6)

- **Section 1.6.6.1:** Planning for sewage and water services shall direct and accommodate expected growth in a manner that promotes the efficient use and optimization of existing municipal sewage services and municipal water services and ensure that these systems are provided in a manner that can be sustained by the water resources upon which such services rely, is feasible, financially viable and complies with all regulatory requirements and protects human health and the natural environment. Planning should be in accordance with the servicing hierarchy outlined through policies 1.6.6.2, 1.6.6.3, 1.6.6.4 and 1.6.6.5.
- **Section 1.6.6.2:** Municipal sewage services and municipal water services are the preferred form of servicing for settlement areas.
- **Section 1.6.6.4:** In settlement areas, individual on-site sewage services and individual on-site water services may only be used for infilling and minor rounding out of existing development.
- **Section 1.6.6.5:** Partial services shall only be permitted within settlement areas to allow for infilling and minor rounding out of existing development on partial services provided that site conditions are suitable for the long-term provision of such services with no negative impacts.

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- **Section 1.6.6.6:** Planning authorities may allow lot creation only if there is confirmation of sufficient reserve sewage system capacity and reserve water system capacity within municipal sewage services and municipal water services. The determination of sufficient reserve sewage system capacity shall include treatment capacity for hauled sewage from private communal sewage services and individual on-site sewage services.
- **Section 1.6.6.7:** Planning for stormwater management shall minimize or where possible, prevent increases in contaminant loads, minimize changes in water balance and erosion, not increase risks to human health and safety and property damage, maximize the extent and function of vegetative and pervious surfaces and promote stormwater management best practices, including stormwater attenuation and re-use and low impact development.

4.1.3 Township of Southwold Official Plan

The purpose of the Official Plan is as follows:

- To provide for the orderly growth and cost-effective development;
- To minimize future land use conflicts;
- To provide a planning policy framework for decision making by the Township and its Committees, and other public bodies;
- To serve as a guide for the public and the business community regarding the growth and development of the Township;
- To provide a local context for the application of Provincial planning policies generally including Building Strong Communities, the Wise Use and Management of Resources and Protecting Public Health and Safety; and
- To encourage economic growth and development including tourism, recreation, commercial and industrial.

The goals and policies of the Official Plan were established primarily to guide the physical development of the Township while having regard to relevant social, economic and environmental matters. Relevant sections for the Master Servicing Plan are listed below, but are not limited to the following:

Growth Strategy and Community Structure (Section 1.7)

- A surplus of land is available for residential development for both the trend and growth scenarios. The focus of new residential development is in the Settlement Area of Talbotville and the Hamlet north of Port Stanley. These lands have the best potential for future servicing by full municipal services.

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- Until full municipal services or an adequate alternative to partial services are provided, development will be restricted to infilling and rounding out of existing development.
- The Settlement Area of Talbotville and the Hamlet north of Port Stanley have sufficient community amenities and infrastructures, and the potential for efficient infrastructure development and expansions to strengthen these communities. These areas are also the focus of development interests in the Township.

Settlement Area (Section 4.3)

- Residential development will be phased contingent upon the availability of servicing infrastructure.
- Development will complement/enhance the natural beauty of the Kettle Creek valley system. The aesthetic and environmental assets of the Kettle Creek valley system including the watercourse, valley and slopes shall be protected. Council may request the valley lands for Kettle Creek and its tributaries be dedicated for public use. That dedication will not constitute a parkland dedication to the Township under the Planning Act.

Sanitary, Water Stormwater Management (Section 5.7)

- In the Lynhurst and Ferndale area, all new development redevelopment, intensification and infill will require municipal water supply and municipal sanitary sewage services.
- The Township acknowledges that full municipal water and sanitary sewage services are the preferred method of servicing new development in Settlement Areas.
- The Township will make no commitment or approve any development that would cause the capacity of the St. Thomas sewage treatment plant to be exceeded. In certain cases, improvements to the sanitary sewer system may be required before development may proceed. Such improvements may include the provision of a new pumping station and/or sewer line extensions.
- The Ministry of Environment recommends minimum separation distances between new residential development and other sensitive land uses and existing sewage treatment facilities. The Ministry of Environment will be consulted to determine these separation distances within the Township or an adjoining municipality.

4.2 PLANNING DOCUMENTS & PREVIOUS STUDIES

4.2.1 Small Settlement Servicing Study

The *Small Settlement Servicing Study* was intended to determine alternatives for providing services to settlement areas designated within the Township's Official Plan. It identified servicing

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options and potential issues relating to each, for the Settlement Areas of Talbotville, Ferndale/Lynhurst, the Hamlet of Port Stanley and the Settlement Areas of Shedden and Fingal. It was required by the Ministry of Municipal Affairs and Housing (MMAH) and the Ministry of the Environment and Climate Change to demonstrate consistency with the servicing policies of the *Provincial Policy Statement*.

As stated in the *Small Settlement Servicing Study*, settlement areas are the primary growth centres where full municipal or communal services are required to achieve forecasted growth. Hamlets are small, existing centres with growth potential limited to infilling and build out to existing urban centre boundaries. Development is constrained in both settlements and hamlets by the absence of wastewater treatment facilities. The Official Plan contemplates development on municipal or communal wastewater treatment facilities in the settlement areas and the Hamlet north of Port Stanley. Wastewater treatment facilities are not contemplated in the hamlets, where development is limited to infill.

This document and the servicing options put forth formed the basis of the Master Servicing Plan.

4.3 DESIGN SPECIFICATIONS

Design standards and specifications were reviewed and considered in the development of the Master Servicing Plan.

The *Design and Construction Standards for the Township of Southwold (2012)* provides for the standardization of the design and construction of roads, sanitary sewers, storm sewers, watermains and lot grading in the Township of Southwold. These standards are to be used in the design and construction of the above-mentioned services and any deviations are only accepted under unusual circumstances and approved in writing by the Township's Engineer. In addition, the design standards state that all subdivisions shall be serviced with sanitary sewers connected to the municipal sanitary sewer system. Section 3 (sanitary sewers) outlines specifications related to the sanitary sewer collection system. The planning and design of future servicing networks will rely on the design criteria listed within this document.

In addition to the *Township of Southwold Design and Construction Standards*, the *Design Guidelines and Construction Standards for the Municipality of Central Elgin and the City of St. Thomas* were also referenced in the development of the Master Servicing Plan.

4.4 MOECC GUIDELINE D-5

MOECC Guideline D-5 (Planning for Sewage and Water Services) is intended to guide municipal planning for wastewater and water servicing. It describes an approach for municipal planning for wastewater and water services to ensure an acceptable quantity and quality of water supply and the proper collection, treatment and disposal of wastewater for development. It is consistent with the provincial goal to manage growth and change to foster communities that

are socially, economically, environmentally, and culturally healthy, and that make efficient use of land, new and existing infrastructure, and public service facilities.

This document states that a hierarchy of servicing preferences should be adopted within the development of Official Plans and Master Servicing Plans. The Ministry states that development on full municipal services is to be the preferred mode of servicing where there is sufficient uncommitted reserve capacity or where there is the capability for full municipal services to be expanded. New development should be directed to settlement areas with existing full municipal services or to where there has been a commitment to new full municipal services consistent with the *Provincial Policy Statement*.

4.5 MOECC GUIDELINE D-2

MOECC Guideline D-2 (Compatibility between Sewage Treatment and Sensitive Land Use) recommends minimum separation distances between new residential developments and other sensitive land uses and existing sewage treatment facilities. The guideline applies to all applications for Certificates of Approval for new and expanding municipal wastewater treatment facilities.

Separation distances are measured from the periphery of the noise/odour producing source/structure to the property line of the sensitive land use. When new facilities are proposed an adequate buffer area should be acquired as part of the project. In the case where an adequate buffer has not been acquired, more effective noise and odour mitigation are necessary to provide an optimum level of protection between the sewage treatment facilities and adjacent sensitive land uses. Consideration should be given to silencing specific sources of noise, covering certain sections of the plant, and treating collected gases. In some cases, a combination of distance, covering and treatment may be required.

For sewage treatment plants with a capacity equal or less than 500 m³/d, the recommended separation distance is 100 m. A separation distance of less than 100 m may be permitted, however a qualified professional must produce a study showing the feasibility of the distance based on noise reduction equipment, degree and type of odour mitigation measures and any other contaminants of concerns. Preconsultation with the MOECC Southwestern Region Office is recommended under these circumstances. In the course of reviewing a draft plan of subdivision, the MOECC Regional Office may request the MOECC Approvals Branch to review any study which supports a separation distance of less than 100 m.

For sewage treatment plants with a capacity greater than 500 m³/d but less than 25,000 m³/d, the minimum separation distance shall be 100 m. The recommended separation distance shall be 150 m.

4.6 MOECC DESIGN GUIDELINES FOR SEWAGE WORKS (2008)

This document is a reference for those who are responsible for designing wastewater works, ministry engineers responsible for reviewing and approving the designs of such works, and municipalities/owners of the wastewater works. There are specific guidelines and procedures related to wastewater works affecting design and which take precedence over these design guidelines. This document provides design guidance related to established technologies, and use of newer or other technologies would have to be approved in accordance with proven operational reliability and effectiveness. As well, any legislation or regulations take precedence over the design guidelines and must be adhered to.

4.7 MOECC DESIGN GUIDELINES FOR DRINKING-WATER SYSTEMS (2008)

This document is a reference document for those who are responsible for designing drinking water systems, ministry engineers responsible for reviewing and approving designs of such systems, and the municipalities/owners of the drinking water systems.

Similar to the *MOECC Design Guidelines for Sewage Works*, any legislation or regulations take precedence over the design guidelines and must be adhered to.

5.0 NATURAL ENVIRONMENT REVIEW

5.1 BACKGROUND

Natural heritage features of the study area should be identified early in the Class EA process. The purpose of a Natural Environment Report (NER) is to characterize the significance and sensitivity of the natural features in the study area, identify potential environmental effects and recommend appropriate measures in order to avoid or minimize potential negative impacts on the surrounding environment. Information was collected through a review of published data as it relates to the proposed alternatives as identified in the Master Servicing Plan. Environmental sensitivities and associated mitigation measures are presented to protect the environmental features and their functions.

5.2 STUDY AREA

The study area is defined as the geographical area that could be affected by the proposed alternatives and was defined on the expected range of social and natural environmental effects associated with the Master Servicing Plan. For the purposes of the Natural Environment Report, the study area includes the entire Talbotville and Ferndale settlement areas including the lands designated for industrial use. Figure 1.1 illustrates the study area.

5.3 PLANNING AND POLICY CONSIDERATIONS

Policies and guidelines provide the context within which the approval of potential projects may be granted. The following natural environmental policies and guidelines may be relevant to recommendations outlined by the Master Servicing Plan.

5.3.1 Species at Risk Act (SARA)

The Species at Risk Act (SARA) identifies wildlife species considered to be at risk in Canada and designates them as threatened, endangered, extirpated, or of special concern. Species at risk are identified and assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which is an independent committee of wildlife experts and scientists that make recommendations to the federal government regarding the status of wildlife species in Canada.

The purpose of SARA is to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activities and to manage species of special concern to prevent them from becoming endangered or threatened. SARA prohibits various activities related to listed species and provides strategies, action plans or management plans under the Act.

The protection and conservation measures afforded by SARA apply to those species identified on Schedule 1. Other species identified by COSEWIC as species at risk that require further

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assessment in accordance with current assessment criteria are identified on Schedule 2 (Endangered and Threatened) and Schedule 3 (Special Concern). All listed aquatic species and migratory birds in Canada are protected by SARA. Remaining listed species (plants, mammals, reptiles, amphibians) are only protected where they occur on federal lands (i.e., National Parks, First Nation Reserves).

Any activity affecting a listed species or its critical habitat requires the prior issuance of a permit from the applicable agency, either Environment Canada or the Department of Fisheries and Oceans Canada (DFO). Permits may only be issued for scientific research relating to the conservation of the species, where activities are required to benefit a species or to enhance its chances of survival or for incidental impacts. Efforts to avoid, reduce or minimize impacts must first be employed and activities will not be permitted if they would jeopardize the survival or recovery of the species.

5.3.2 Endangered Species Act

Similar to SARA, the Endangered Species Act identifies wildlife species considered to be at risk in Ontario and designates them as threatened, endangered, extirpated or of special concern. Provincial species at risk are identified and assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO) which is a committee of wildlife experts and scientists, as well as those who provide Aboriginal traditional knowledge, that classify species according to their degree of risk based on the best available scientific information, community knowledge and Aboriginal traditional knowledge. When COSSARO classifies a species at risk, that classification applies throughout Ontario, unless otherwise noted.

The Endangered Species Act (2007) replaces the original Endangered Species Act (1971) to provide broader protection for species at risk and their habitats, a stronger commitment to recovery of species, greater flexibility, increased fines and more effective enforcement, as well as greater accountability through government reporting requirements.

The Endangered Species Act protects species at risk and their habitats by prohibiting anyone from killing, harming, harassing or possessing protected species, as well as prohibiting any damage or destruction to the habitat of species identified on the Species At Risk in Ontario (SARO) list. All species on the SARO list are provided with general habitat protections under the Endangered Species Act, which protect areas that species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration, or feeding.

A species added to the SARO list is required to have a regulation approved by the Ministry of Natural Resources (MNR) within a set period of time to define species specific habitat requirements, which identifies specific boundaries, areas, or features of an area where the species lives, used to live or is believed to be capable of living. This 'regulated habitat' replaces the general habitat description once approved.

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Any activity that may impact a protected species or its habitat requires the prior issuance of a permit from the MNR. Such permits may only be issued under certain circumstances, which are limited to activities required to protect human health and safety, activities that will assist in the protection or recovery of the species, activities that will result in an overall benefit to the species or activities that may provide significant social or economic benefit without jeopardizing the survival or recovery of the species in Ontario.

Recent changes to the Endangered Species Act allow for specific infrastructure projects to proceed without the prior issuance of a permit. For these activities the work must be registered and certain rules and guidelines adhered to. Consultation with the ministry is recommended prior to the works starting in order to ensure compliance with the Endangered Species Act.

5.3.3 Provincial Policy Statement

The wise use and management of the natural environment is recognized as a crucial component of ensuring Ontario's long-term prosperity, environmental health and social well-being. Accordingly, the *Provincial Policy Statement* provides direction for the long-term protection, restoration and improvement of the diversity and connectivity of natural features, the ecological function and biodiversity of natural systems, and the quality and quantity of water at a watershed scale.

Policy 2.1 of the *Provincial Policy Statement* provides direction for the protection of the natural heritage features, while guidance in this regard is provided through the *Natural Heritage Reference Manual*. The natural heritage features to be considered in accordance with the *PPS* include:

- Significant wetlands (PSW) and significant coastal wetlands;
- Significant habitat of endangered and threatened species;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant areas of natural and scientific interest (ANSIs); and
- Fish habitat.

In southern Ontario, development and site alteration is not permitted in significant habitat of endangered and threatened species or fish habitat except in accordance with provincial and federal requirements. Development and site alteration may be permitted on lands adjacent to significant wetlands, coastal wetlands and the habitat of endangered and threatened species if

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it is demonstrated that there will be no negative impacts on the natural features or the ecological functions for which the area was identified.

Development is not permitted within, or on lands adjacent to, the other significant natural heritage features unless the ecological function of these lands has been evaluated and it has been demonstrated that no negative impacts on the natural heritage features or their ecological function will occur. Development and site alteration is not permitted within fish habitat except in accordance with provincial and federal requirements.

While not bound by the *PPS*, the assessment, selection and implementation of any preferred alternatives should consider the context and direction provided by the policies in the *PPS*.

5.3.4 Conservation Authority Approval

Kettle Creek Conservation Authority is responsible for approval of development or site alteration within hazardous areas adjacent to shorelines, watercourses and wetlands. These areas, known as the "Regulation Limit", are detailed in *Ontario Regulation 181/06 – Kettle Creek Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*, and its accompanying mapping. The purpose of this regulation is to protect life and property from flooding, erosion and unstable slopes. Regulated areas are further discussed in Section 5.5.11.

5.3.5 Municipal Official Plans

The Township of Southwold is a lower-tier municipality in Southwestern Ontario. Land use, environmental, social and economic matters are guided by the Township's Official Plan.

In regards to natural heritage systems, the Official Plan notes that the Township, in partnership with the Province, conservation authorities and the general public, strives to protect Natural Heritage Features and functions. It is a priority of the Township to ensure the sustainable use of resource assets, to protect and enhance significant Natural Heritage Features and Areas functions, and to reduce the risk to public safety and property from the hazards of flooding, unstable slopes and human-made hazards.

The following are lands subject to Natural Heritage Features and Areas Policies:

- Significant habitat of endangered and threatened species;
- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;

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- Significant wildlife habitat;
- Significant Areas of Natural and Scientific Interest; and
- Fish habitat.

5.3.6 Summary of Policy Implications

The Master Servicing Plan recognizes the objectives of the policies noted above and the requirements of the individual agencies. The corresponding opportunities and constraints established by these policies and supporting guidelines should be recognized and addressed through the development, design, location and supporting documentation, including the identification of appropriate mitigation, restoration and enhancement measures to offset potential negative impacts. The intent of the NER is to demonstrate how the proposed project complies with the applicable policies noted above. As such, this approach is to recognize the objectives of the policies noted above and the requirements of the individual agencies charged with their implementation. This information will be considered during the establishment of the preferred alternative and identification of appropriate mitigation, restoration and, where feasible, enhancement opportunities.

5.4 METHADODOLOGY FOR DATA COLLECTION

5.4.1 Background Data Collection and Review

The following were used as primary data sources for this report:

- Natural Heritage Information Centre (NHIC) Biodiversity Explorer Database;
- Kettle Creek Watershed Report Cards;
- Kettle Creek Source Protection Area Approved Updated Assessment Report;
- Land Information Ontario; and
- Geology Ontario.

This information included:

- Existing fisheries data for the study area and throughout the watershed;
- Wildlife survey records in the vicinity of the study area;
- Records of designated significant species occurrences;
- Drinking water source protection vulnerable areas; and

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- Physiography, geology, soils, topography and land cover.

5.4.2 Field Studies and Investigations

Fieldwork was not incorporated into the natural environment characterization. Species information may be sufficiently updated at the time of project implementation. Fieldwork should be planned and completed at the project onset through discussions with agency staff.

5.4.2.1 Future Considerations

Prior to construction the following fieldwork may be required:

- Breeding birds: surveys may be required to confirm the absence or presence of at risk species;
- Migratory Bird Act: avoidance of construction during the May 1 to July 31 nesting period for southern Ontario. If construction is necessary, nest searches must be completed within three days of clearing;
- Spring botanical survey, if required by agencies and/or summer botanical; and
- Full aquatic assessment of watercourse crossings if construction methods require permitting.

This list is not deemed exclusionary and will be finalized upon determination of the finalized detailed design.

5.4.3 Assessment of Species Significance and Sensitivity

The provincial status of wildlife flora and fauna was provided by the NHIC. Status rankings (SRANKs) for both plants and wildlife are based on the number of occurrences in Ontario and have the following meanings:

- S1** Extremely rare; usually fewer than 5 occurrences.
- S2** Very rare; usually between 5 to 20 occurrences.
- S3** Rare to uncommon; usually between 20 to 100 occurrences.
- S4** Common; apparently secure, usually more than 100 occurrences.
- S5** Very common; demonstrably secure.

5.5 EXISTING NATURAL FEATURES AND FUNCTIONS

5.5.1 Introduction

An inventory of the natural environment features and associated ecological functions within the Study Area was undertaken to comply with the requirements of the policy and guideline documents. This was completed as a desk top exercise. Further review may be required depending on final selection of the alternative and prior to detailed design.

5.5.2 Climate

Environment Canada's St. Thomas weather monitoring station is the closest station to the Southwold study area with sufficient temperature, precipitation and other weather data, (Environment Canada Station Climate ID 6137362). This climate station meets the World Meteorological Organization (WMO) standards for temperature and precipitation. Climate averages for the period 1971 to 2000 are outlined in Table 5.1 below.

Table 5.1: Climate Averages

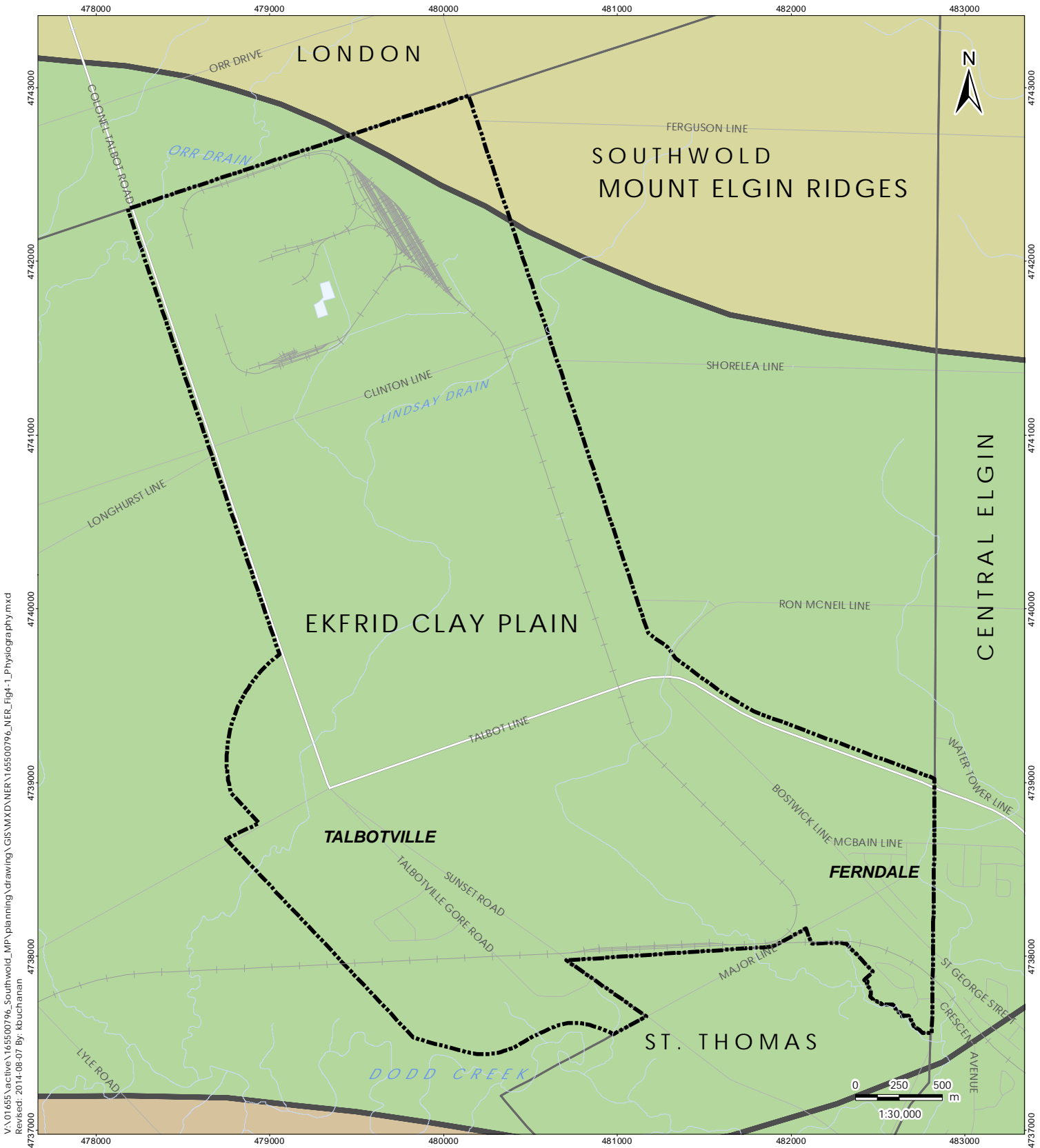
Climate Station ID 6137362		Value	Month
Daily Average Temperature	Maximum	21.2 °C	July
	Minimum	-4.70 °C	January
Average Monthly Precipitation	Maximum	94.8 mm	September
	Minimum	37.33 mm	February
Total Annual Precipitation		993.0 mm	---

5.5.3 Physiography

The Southwold study area is situated in two physiographic regions. The majority of the study area is in the Ekfrid Clay Plain region, while a 26 hectare portion of the northeast is in the Mount Elgin Ridges region. The study area is largely classified as clay plain with the Mount Elgin Ridges portion classified as undrumlinized till plain. Figure 5.1 illustrates the physiographic regions for the study area.

5.5.4 Geology

The bedrock geology across the study area consists primarily of limestone (the Dundee Formation) found at a depth ranging from 60 to 90 metres. The surficial geology is characterized by generally flat topography and underlain by stratified clay and silt which provides little relief and poor drainage. Figure 5.2 and Figure 5.3 illustrate the geology for the study area.



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 Revised: 2014-08-07 By: kbuchanan

August 2014
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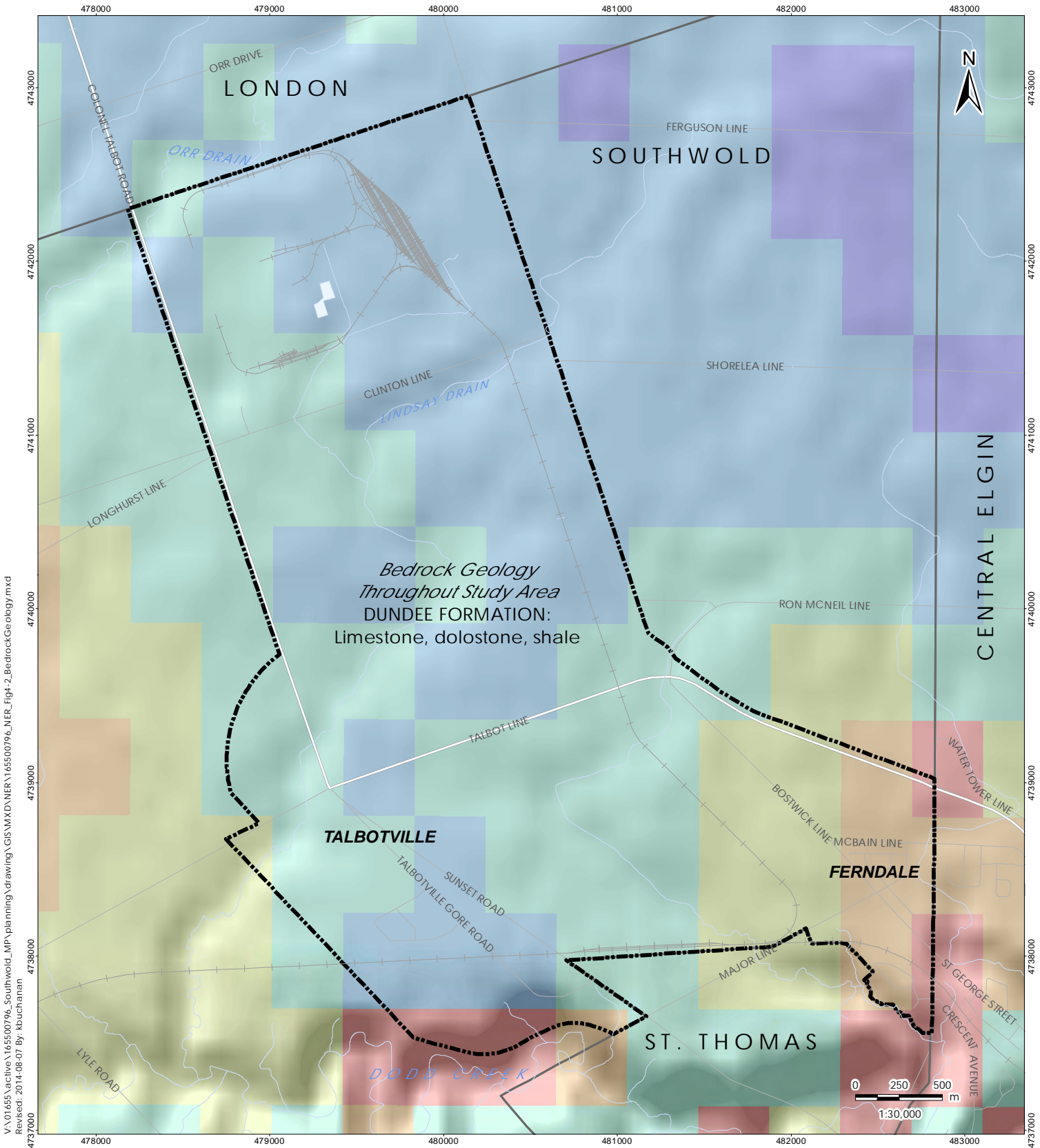
- Legend**
- Settlement Area/Study Area
 - Physiographic Region
 - Physiography**
 - Clay Plain
 - Till Moraine
 - Till Plain (Undrumlinized)

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2014.

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 Township of Southwold
 Talbotville & Ferndale Master Servicing Plan

Figure No.
5.1

Title
Physiography



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 Revised: 2014-08-07 By: kbuchanan



Notes

- Coordinate System: NAD 1983 UTM Zone 17N
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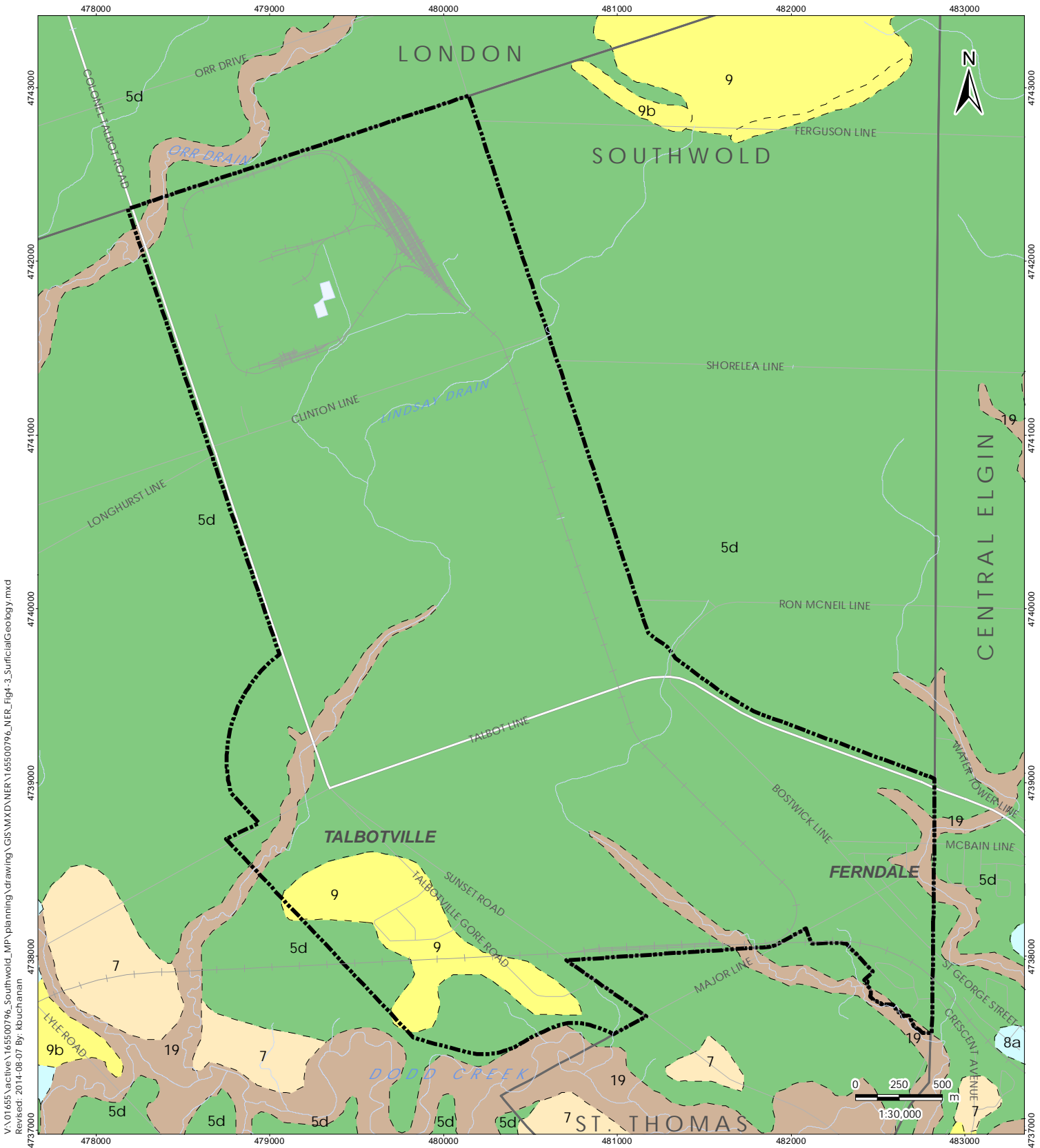
Legend

	Settlement Area/Study Area
BedrockGeology_MNDM	
Approximate Depth to Bedrock	
	60 - 65 m
	65 - 70 m
	70 - 75 m
	75 - 80 m
	80 - 85 m
	85 - 90 m

Client/Project
 Township of Southwold
 Talbotville & Ferndale Master
 Servicing Plan

Figure No.
5.2

Title
**Bedrock Geology
 and Depth**



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 Revised: 2014-08-07 By: kbuchanan

August 2014
165500796



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2014.

- Legend
- Settlement Area/Study Area
 - Surficial Geology
 - 5d: Glaciolacustrine-derived silty to clayey till
 - 7: Glaciofluvial deposits
 - 8a: Massive-well laminated
 - 9: Coarse-textured glaciolacustrine deposits
 - 9b: Littoral-foreshore deposits
 - 19: Modern alluvial deposits

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 Township of Southwold
 Talbotville & Ferndale Master
 Servicing Plan

Figure No.
5.3

Title
Surficial Geology

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5.5.5 Soils

The study area soils are a mix of poorly drained clay soils with glacial till parent material and are highly susceptible to erosion. Intensive row crop production in over 70% of the watershed combined with extensive municipal drains leads to ongoing sediment flushing. Figure 5.4 illustrates the soil mapping for the study area.

5.5.6 Topography

The topography in the Kettle Creek watershed is characterized by deeply incised valley systems and watercourses with decrease in elevation at an average of 1.75 metres per kilometer of watercourse. Low base flows, flash flooding and run-off, erosion and sedimentation and degrading quality and quantity of water resources are the watershed's primary natural resource management issue. The upland portion of the study area consists of gentle slopes in the range of 0.4%, with overland flow generally directed south towards Dodd Creek. An area of approximately 70 hectares at Ferndale drains westerly to a tributary of upper Kettle Creek. Figure 5.5 illustrates the topography and drainage for the study area.

5.5.7 Hydrology

The study area is under the jurisdiction of KCCA, and falls into the Dodd Creek subwatershed area, with the exception of a 70 hectare portion of Ferndale in the Upper Kettle Creek subwatershed. Dodd Creek is Kettle Creek's largest tributary, with a drainage area of 133 km². Figure 5.5 also illustrates the KCCA watersheds.

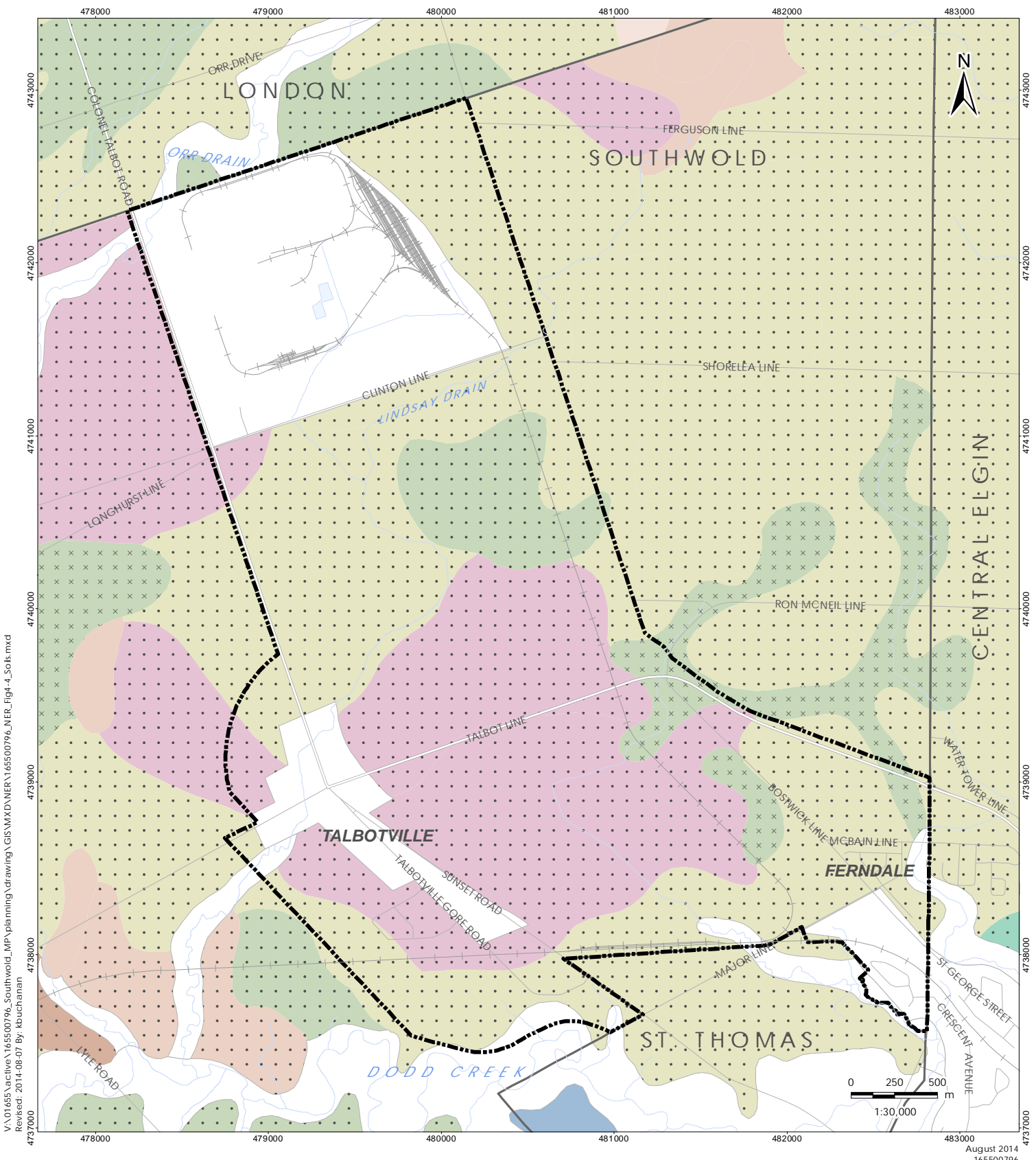
5.5.8 Aquatic Resources

There have been a total of 30 fish species identified including Largemouth Bass and Smallmouth Bass. The 2008 Report Card records species at risk not being present at that time. A review of DFO Distribution of Fish Species at Risk mapping does not illustrate species at risk within the study area. Recommended alternatives may require additional review of updated information and may require field investigations to determine the presence or absence of at risk species.

5.5.9 Water Quality

The KCCA 2008 Watershed Report Card grades surface water quality according to the document *Watershed Reporting: Improving Public Access to Information*. Three indicators are used to assess the surface water quality for each watershed:

- Bacteria (E. coli);
- Total phosphorus; and
- Benthic invertebrates.



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 Revised: 2014-08-07 By: kbuchanan

August 2014
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- Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
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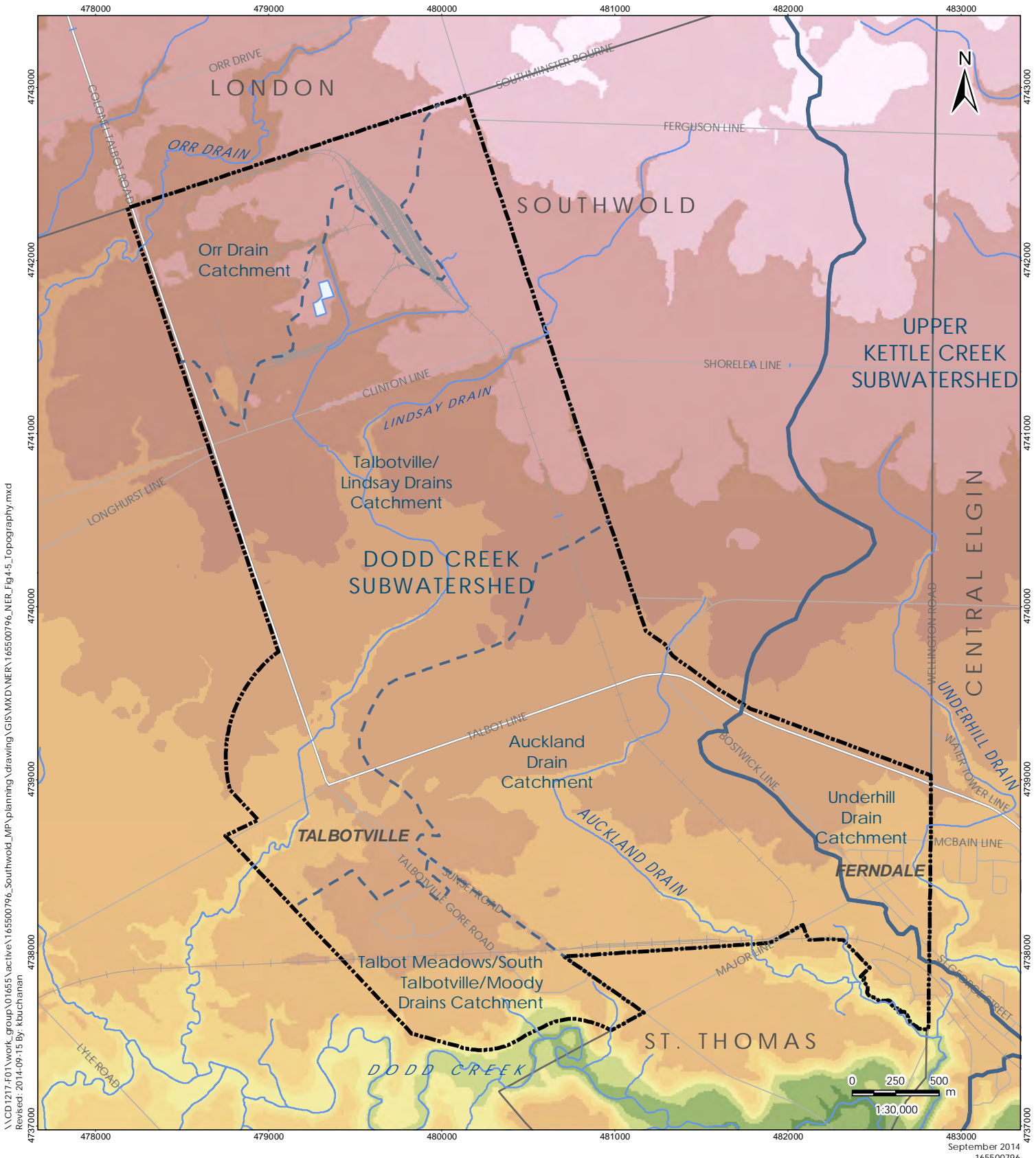
- Legend
- Study Area
 - Dominant Soil Texture**
 - Loam
 - Sandy Loam
 - Fine Sandy Loam
 - Very Fine Sandy Loam

- Clay Loam
- Silty Clay Loam
- Silty Loam
- Loamy Sand
- No Data
- Poor Infiltration
- Very Poor Infiltration

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 Township of Southwold
 Talbotville & Ferndale Master
 Servicing Plan

Figure No.
5.4

Title
Soils



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165500796



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Legend	
	Study Area
	Catchment Boundary
	Subwatershed
Elevation (m)	
	255 - 260
	250 - 255
	245 - 250
	240 - 245
	235 - 240
	230 - 235
	225 - 230
	220 - 225
	215 - 220
	210 - 215
	205 - 210
	200 - 205

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Figure No.
5.5

Title
**Topography
 and Drainage**

The results for the study area are outlined in Table 5.2 below.

Table 5.2: Water Quality Results

Watershed	E.coli (grade, result)	Total Phosphorous (grade, result)	Benthic Invertebrates (grade, result)	Overall Surface Water Quality Grade
Dodd Creek (2008)	C 432 cfu	F 0.764 mg/L	F FBI = 5.9	D+
2012 Annual Watershed Report Card Update	---	---	---	C-

5.5.10 Terrestrial Resources

5.5.10.1 Vegetation Communities

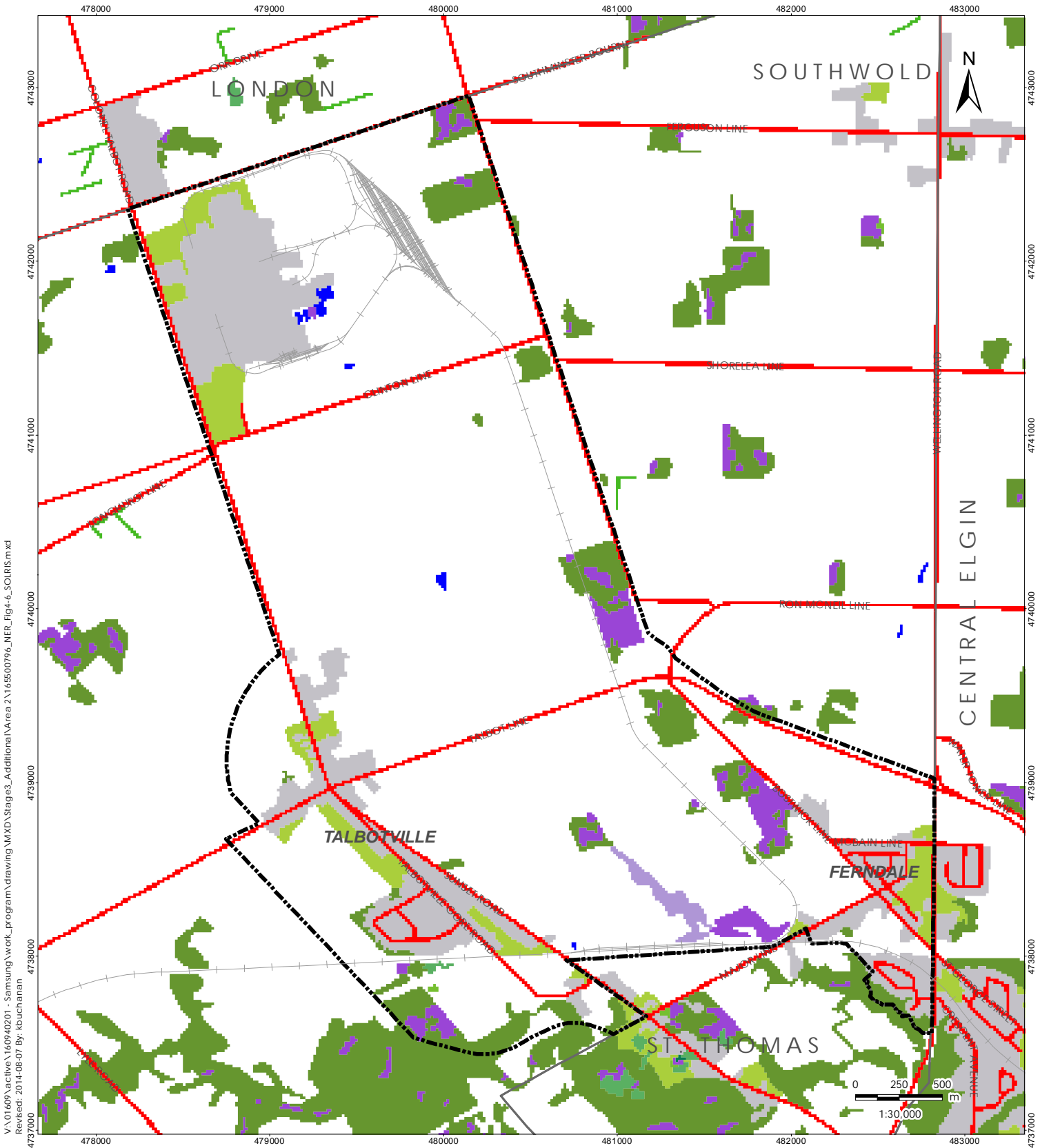
Field investigation of vegetation communities has not been conducted for the NER; however the Ministry of Natural Resources' Southern Ontario Land Resources Information System (SOLRIS) dataset provides a high-level overview of the types of vegetation communities that exist on the landscape.

Significant land cover classes described by SOLRIS in the study area include "undifferentiated land" (almost exclusively agriculture) and developed areas at approximately 75%, and 18% respectively.

Forested areas including hedge rows and plantations cover approximately 5% of the landscape. Forests throughout the study area are predominantly deciduous. Wetlands account for less than 3% and open water is less than 1%. Figure 5.6 illustrates the SOLRIS dataset for the study area.

5.5.10.2 Plant Species

The Natural Heritage Information Centre maintains a list publicly available database of critical flora and fauna previously observed within the study area. Since 1990, there have been no observations of tracked plant species in the study area. The KCCA 2008 Watershed Report Card lists a total of seven species at risk in the Dodd Creek sub watershed, however only two of these species are listed as at risk in Ontario. These species are listed in Table 5.3 below according to their classification on the Species at Risk in Ontario List at the time of reporting.



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Legend

- Study Area
- SOLRIS Classification (MNR)
 - 27. Forest
 - 29. Mixed Forest
 - 30. Deciduous Forest
 - 36. Tree Plantation
 - 37. Hedge Rows
 - 42. Transportation
 - 44. Built-up Area Pervious
 - 45. Built-up Area Impervious
 - 50. Swamp
 - 63. Marsh
 - 66. Open Water

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 Talbotville & Ferndale Master
 Servicing Plan

Figure No.

5.6

Title

Southern Ontario Land
 Resources Information
 System Classification

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Natural Environment Review

Table 5.3: At-Risk Flora Species

Threatened	Special Concern
False Rue-anemone (<i>Enemion biternatum</i>)	Crooked-stem Aster (<i>Symphyotrichum presnanthoides</i>)

5.5.10.3 Wildlife

The Natural Heritage Information Centre lists a total of two at-risk bird species observed in or near the study area since 1990. The KCCA 2008 Watershed Report Card lists a total of one at-risk bird species, one insect and one mammal within the sub-watershed. These species are listed in Table 5.4 below and illustrated in Figure 5.7.

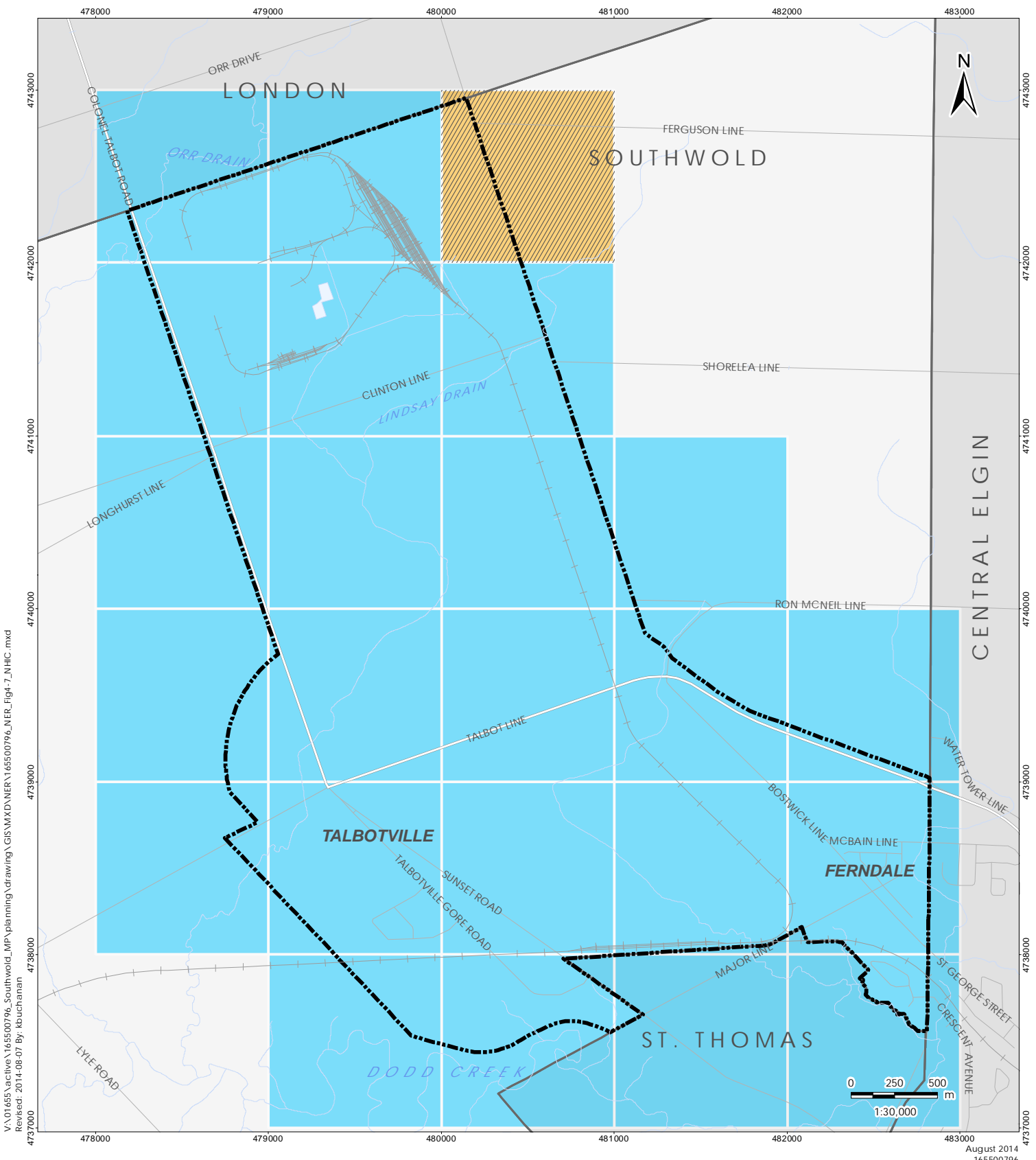
Table 5.4: At-Risk Fauna Species

Subwatershed	Birds	Insects	Mammals
Dodd Creek	Acadian Flycatcher	Monarch Butterfly	American Badger
	Bobolink		
	Eastern Meadowlark		

5.5.11 Natural Hazard Features

Natural processes that have the potential to cause damage to property, personal injury or loss of life are regulated in Southern Ontario under the Conservation Authorities Act. These hazards can include flooding, erosion, dynamic beaches and unstable slopes. Ontario Regulation 181/06 outlines regulated areas within the jurisdiction of KCCA, and considers:

- The Hurricane Hazel and the 100 Year Flood Event Standards;
- Wave uprush along Lake Erie;
- Long term stable slopes;
- Dynamic beaches;
- Riverine meander belts;
- Wetlands;
- Other hazardous lands; and
- Additional setbacks from these features.



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Legend

Study Area

Number of Protected Species

1

2

Highest Ranking Species Observed

Endangered

Threatened

Special Concern

Tracked by NHIC

No Species Identified

Client/Project

Township of Southwold
 Talbotville & Ferndale Master Servicing Plan

Figure No.

5.7

Title

NHIC Recorded Species Observed since 1990

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Natural Environment Review

Approximately 14% of the study area is regulated by the KCCA under O. Reg. 181/06 as illustrated in Figure 5.8. Any development, construction, or site alteration proposed within the regulated areas may require prior written approval from the conservation authorities.

5.5.12 Wetlands

At this time, the MNR's Land Information Ontario wetland dataset does not identify any wetlands within the study area.

5.5.13 Significant Woodlands

The Township of Southwold Official Plan defines Significant Woodlands as forested areas which are designated Natural Area and are four hectares or greater in size. Figure 5.9 illustrates forested areas that may qualify as Significant Woodlands.

5.5.14 Other Natural Features

No Areas of Natural and Scientific Interest have been identified in the study area. No other natural features subject to the Natural Heritage Features and Areas policies within the Township of Southwold Official Plan were identified in that plan.

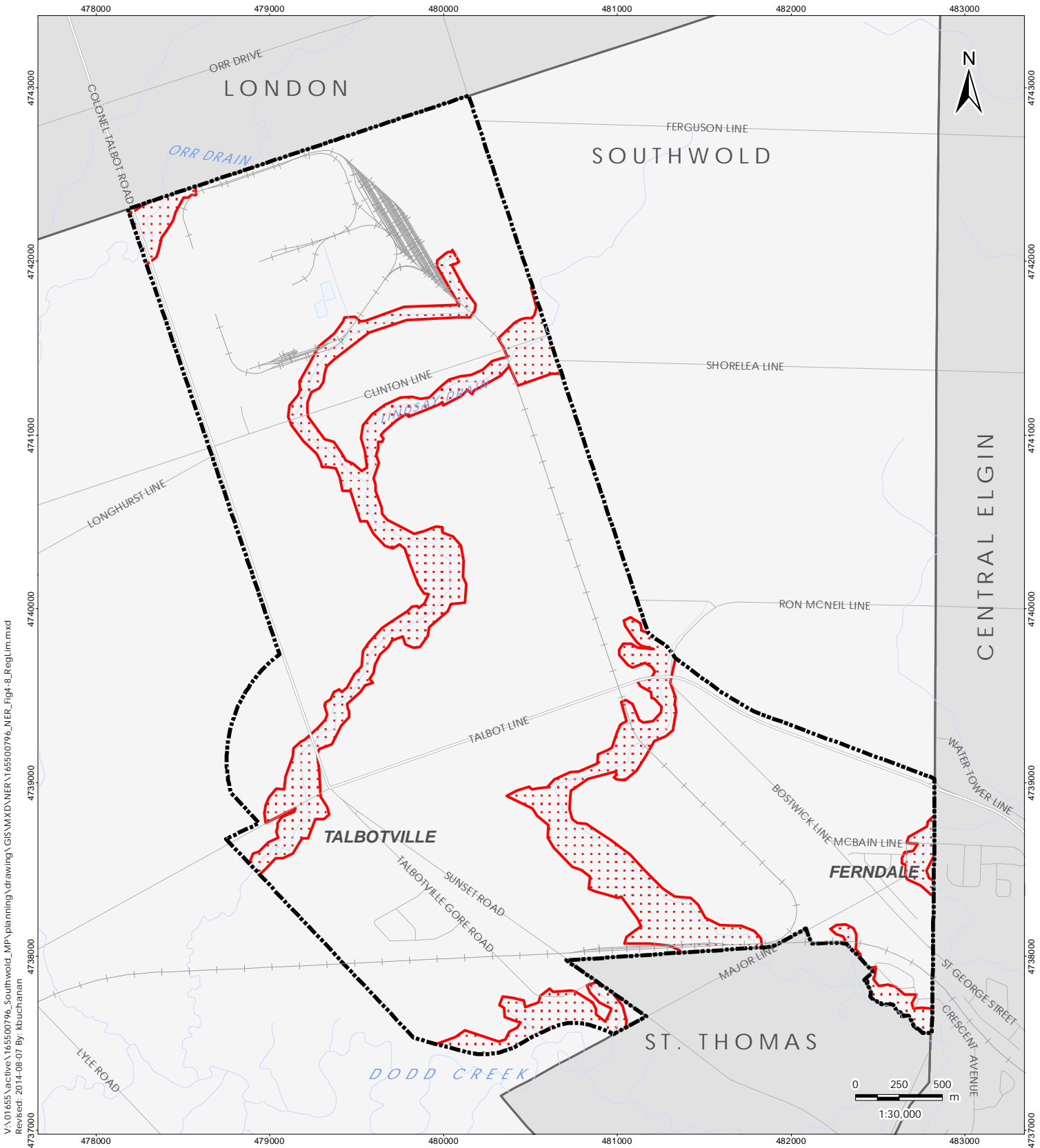
5.5.15 Invasive Species

Invading species have far-reaching impacts on the natural environment and are one of the greatest threats to biodiversity. The Ontario Ministry of Natural Resources and Forestry define an invasive species as: "*harmful alien species whose introduction or spread threatens the environment, the economy, or society, including human health*".

Consultation with First Nations communities has identified concerns over the potential for common reed (*Phragmites australis* subsp. *australis*) to become established in the area of the project site once construction has been completed.

Common reed is an invasive perennial grass that creates monoculture stands that in most cases leads to a decrease in biodiversity and destruction of habitat for other species. It thrives in disturbed habitat and is often among the first species to colonize a new area. It is for this reason that it has been identified as a concern.

It is important to note that the invasive subspecies is similar to a native species (subspecies *americanus*) and is imperative to correctly identify before implementing a management or removal plan.



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165500796



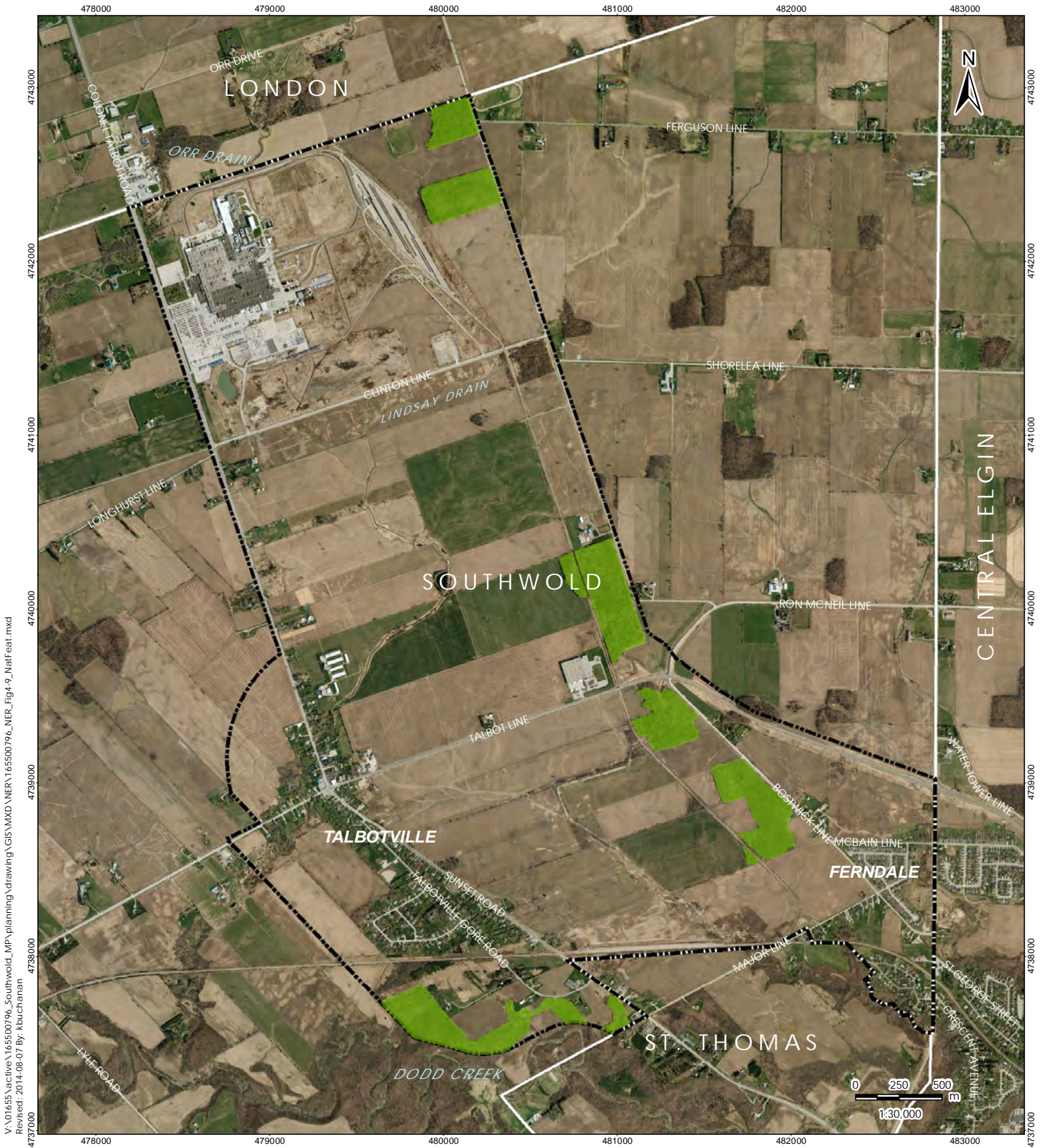
- Legend
- Study Area
 - Area of the Regulated Limit (KCCA)

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- Notes
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Figure No.
5.8

Title
Area of the Regulated Limit



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- Legend
- Study Area
 - Woodland > 4.0 hecatres

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Figure No.
5.9

Title
Natural Features

5.5.16 Drinking Water Source Protection

Drinking Water Source Protection represents the first barrier in the protection of drinking water. Protecting surface and ground water from becoming contaminated or overused will ensure a sufficient supply of clean, safe drinking water. The Clean Water Act 2006 (CWA) is intended to protect existing and future sources of drinking water as part of the government's overall commitment to protecting human health and the environment. The CWA sets out a framework for source protection planning on a watershed basis with Source Protection Areas established based on the watershed boundaries of Ontario's 36 Conservation Authorities.

For the purposes of drinking water source protection, the Kettle Creek Source Protection Area is partnered with the Grand River Source Protection Area, Catfish Creek Source Protection Area and Long Point Region Source Protection Area to create the Lake Erie Source Protection Region (LESPR). The Lake Erie Source Protection Region is one of 19 regions established across the province.

The Kettle Creek Source Protection Area Assessment Report prepared by the LESPR delineates Significant Groundwater Recharge Areas (SGRAs) as the only type of vulnerable area present within the study area. Figure 5.10 illustrates the approximate boundaries of the SGRAs.

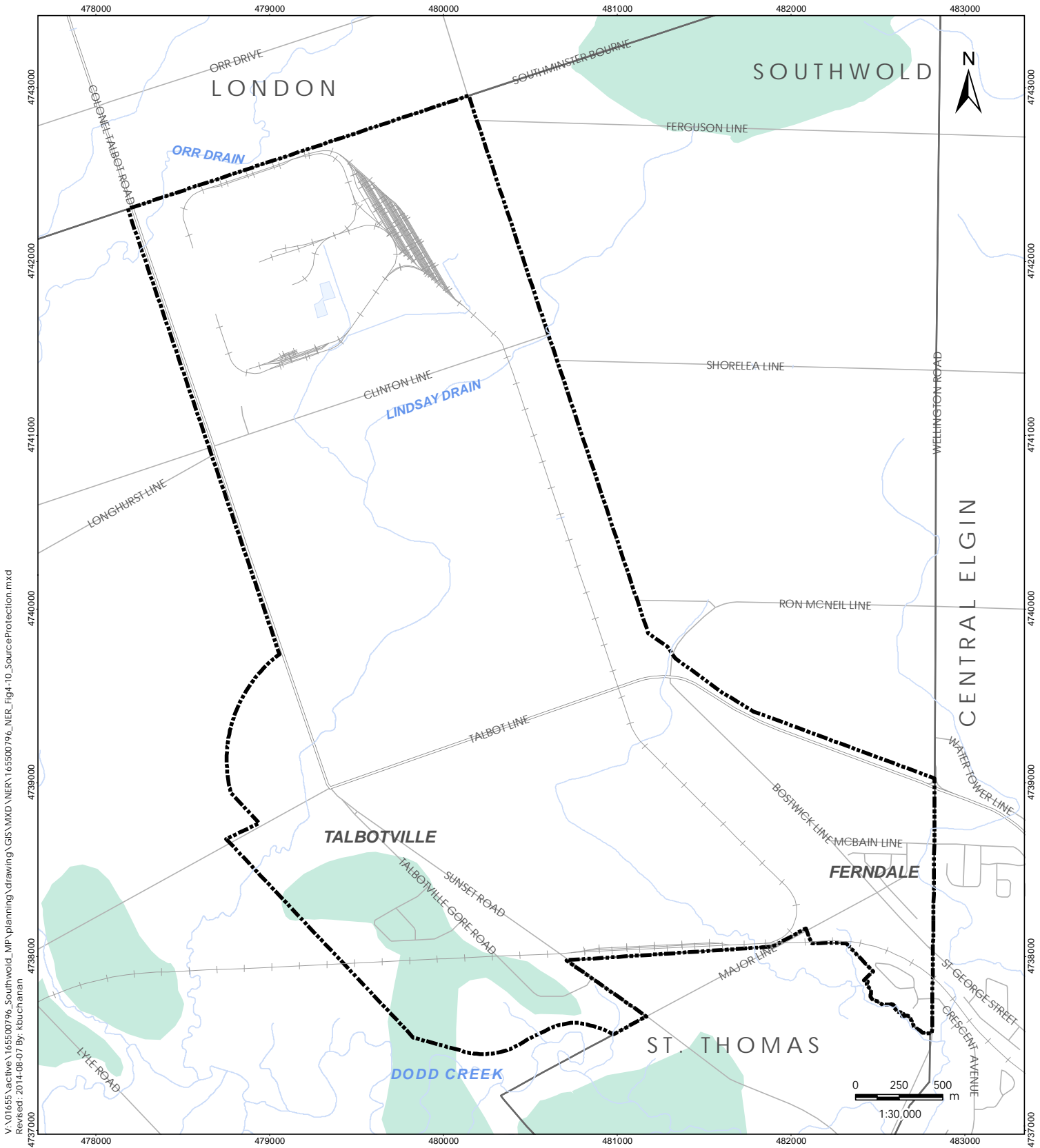
Placement of certain types of infrastructure with a Significant Groundwater Recharge area may be affected by the Source Protection Plan for this area.

5.6 RECOMMENDATIONS

5.6.1 Recommended Protection and Mitigation Measures

During the planning, design, and construction of recommended projects, the potential exists for adverse environmental impacts on the natural features and ecological functions identified within the study area. Assuming appropriate mitigation measures are followed these effects will be preventable or minimal to the surrounding environment.

Table 5.5 summarizes typical recommended mitigation and enhancement measures, and suggested application, to minimize and mitigate the potentially adverse environmental impacts associated with the Master Servicing Plan and any proposed projects where potential for habitat disturbance exists. This information should be used in further planning studies, preparing detailed designs, construction timing, agency approvals, and on-going monitoring to ensure that the natural environment features identified within this report are protected, maintained, and restored through the implementation of any identified projects.



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- Legend
- Study Area
 - Approximate Significant Groundwater Recharge Area

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- Notes
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Figure No.
5.10

Title
**Drinking Water
 Source Protection
 Vulnerable Areas**

Table 5.5: Recommended Mitigation and Enhancement Measures

Potential Impact	Typical Recommended Mitigation and Enhancement Measures
Aquatic Habitat, Fisheries and Water Quality	
<p>Direct loss, alteration, or disruption of fish habitat</p>	<ul style="list-style-type: none"> • Ensure sufficient fish passage is provided through all in-water works. • Restore vegetation and aquatic habitat (substrate) to pre-construction condition (or better), ensuring that any habitat features (pools, riffles, structure) are restored or enhanced. • Any Harmful Alteration, Disruption or Destruction (HADD) of fish habitat that may result from the proposed dyke improvements will require prior authorization from DFO. A compensation plan will be required for review and approval and should be discussed with KCCA staff on behalf of DFO. • Opportunities to enhance riparian vegetation through the planting of other hanging grasses, shrubs and trees will improve stream cover, reduce temperature impacts, and provide allochthonous inputs (food source for various fish species).
<p>Increased turbidity and siltation in downstream areas resulting in “smothered” plants and animals due to the Deposition of silt and increased turbidity of surface watercourses</p>	<ul style="list-style-type: none"> • Ensure enhanced erosion control measures are installed and maintained throughout all phases of construction to protect exposed surfaces, control run-off and minimize the deposition of silt or suspended sediments within downstream habitats. • Worksite isolation and dewatering plans should be prepared to identify appropriate isolation methods, siltation controls and dewatering measures to be implemented. • Any pumped water resulting from dewatering activities should be discharged to settling areas or through filter media before entering the surface water bodies. • Utilize suitable backfill material along banks and footings. • Stage construction activity to minimize the frequency and duration of any in-water work, as much as feasible. • Re-vegetate all disturbed areas as soon as possible following disturbance to stabilize the area and minimize erosion potential. • Effective monitoring and reporting is required.
<p>Impacts on species at risk</p>	<ul style="list-style-type: none"> • Improve water quality enhanced erosion control. • Restore riparian vegetation cover through the planting of

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Natural Environment Review

Potential Impact	Typical Recommended Mitigation and Enhancement Measures
	<p>overhanging grasses, forbs and shrubs, to provide cover, shade and a source of food (insects).</p> <ul style="list-style-type: none"> Any work along or in the watercourse margins should be timed/scheduled to minimize impacts to fish and mussel species. A review of the particular activity may assist in negotiating the timing window.
Stress on fish communities	<ul style="list-style-type: none"> Any fish that may occur within isolated work areas should be captured and released in accordance with appropriate MNR protocols.
Terrestrial Habitat and Species	
Removal or disturbance of significant trees or ground flora	<ul style="list-style-type: none"> Relocate or replant any significant species in a timely manner following construction. Minimize tree removal during construction. Stabilize all disturbed areas upon completion of any grading works through re-vegetation of the disturbed areas utilizing native plant species (i.e., seed and mulch, compost mix, tree and shrub planting).
Migratory Birds	<ul style="list-style-type: none"> Avoidance of construction during the recommended May 1 to July 31 nesting period for southern Ontario. If construction is necessary, nest searches must be completed within three days of clearing.
Stress on biological communities	<ul style="list-style-type: none"> Avoid construction impacts during sensitive wildlife periods, such as breeding seasons for various bird species.
Introduction of invasive species through disturbance and material removal	<ul style="list-style-type: none"> Restore disturbed areas as soon as possible. Use only native species for all re-vegetation work. Monitoring plans should include invasive species. All soils removed from the project site containing invasive species material to be dealt with in a manner to prevent spreading to a new area.
Interference with ecological corridors and linkages	<ul style="list-style-type: none"> Minimize vegetation disturbance in grassland areas to ensure habitat protection.

5.6.2 Permits and Approvals

Based on the preliminary recommendations provided above, and assuming all of the recommended mitigation measures described can be accommodated through the detailed design and construction staging process, the following permits and approvals may be required for future proposed projects.

Kettle Creek Conservation Authority

- Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Permits

Fisheries and Oceans Canada

- Authorization for the Harmful Alteration, Disruption and Destruction of fish habitat (HADD) Species at Risk Act (aquatic species)
- Species At Risk Act (2002)

Ministry of Natural Resources

- Fish Collection Permit
- Endangered Species Act (2007)

The specific requirements for such approvals will be refined and confirmed through project detailed design phases.

6.0 PHASE 2 – ALTERNATIVE SOLUTIONS

As part of the Class EA planning process, reasonable and feasible alternative solutions to the Phase 1 problem opportunity statement are identified and described in Phase 2. The magnitude of the net positive and negative effects of each alternative solution are identified and evaluated. Based on this evaluation, a preliminary preferred option is selected and confirmed based on public, agency and First Nation community consultation. The following sections describe the environmental components, evaluation criteria and methodology considered.

6.1 ENVIRONMENTAL COMPONENTS

The environmental components outlined below represent a broad definition of the environment as described in the Environmental Assessment Act.

Table 6.1: Environmental Component Definitions

Environmental Component	Description
Natural Environment	Component having regard for protecting significant natural and physical elements of the environment (i.e., air, land, water and biota) including natural heritage and environmental features and functions.
Social / Cultural	Component that evaluates potential effects on residents, neighbourhoods, businesses, community character, social cohesion, community features, and historical/archaeological and heritage components.
Technical	Component that considers technical suitability and other engineering aspects of the servicing options.
Economic / Financial	Component that addresses the potential effect on servicing costs.

A qualitative evaluation has been used to consider the suitability of alternative servicing strategies for water, wastewater and stormwater management and to identify significant advantages and disadvantages with respect to a specific set of evaluation criteria identified for each environmental component.

7.0 WATER SUPPLY AND DISTRIBUTION

7.1 OVERVIEW

The Talbotville and Ferndale settlement areas are currently serviced off the St. Thomas Area Secondary Water Supply System (STASWSS) via the Elgin Middlesex Pumping Station (EMPS). Based on the anticipated growth within each settlement area, it is expected that the 20-year projections can be accommodated via the existing infrastructure, in addition to any necessary servicing extensions and lifecycle upgrades.

7.2 EXISTING INFRASTRUCTURE

7.2.1 Talbotville

Water servicing to existing and future development areas within Talbotville would utilize the existing Southwold water distribution system.

Due to the closure of the Ford Motor Company (Ford) plant in 2011, the demand along the existing 500 mm diameter watermain was reduced by approximately 99%. The Ford plant was the end user of the pipeline which was not looped to the remaining water distribution system. With the anticipated drop in demand, turnover of water within the pipeline would have significantly been reduced resulting in stagnant water conditions. In order to avoid the excessive waste of water and associated impacts with regards to operational costs and environmental impacts, a new 1,990 m long watermain was constructed along Clinton Line. It connected the 500 mm pipeline along Wonderland Road South (Ford Road) to the existing 150 mm watermain along Sunset Road, creating a loop within the distribution system to backfeed the Talbotville service area and minimizes requirements for flushing. This project was carried out with the assistance of OSWAP-3 funding from the Ontario government.

As outlined in the *Small Settlement Servicing Study*, "there is a sufficient water supply to accommodate allocated development within the settlement area. Currently there is a 350 mm trunk main on Talbot Line along with 150 mm local mains on Sunset Road, Talbot Line, Shady Lane Crescent, Green Park Drive and Gore Road. This watermain distribution network would have sufficient conveyance capacity to service this settlement area. Local mains would need to be extended from these trunk mains into the settlement area. Ideally, the local mains should be looped to the trunk main to maintain residual chlorine consistent with provincial regulations."

7.2.2 Ferndale

Water servicing to existing and future development areas within Ferndale would utilize the existing Southwold water distribution system.

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Water Supply and Distribution

As outlined in the *Small Settlement Servicing Study*, “there is sufficient water supply to accommodate allocated development within the settlement area. Currently there is a 750 mm trunk main on Ford Road and on McBain Line to the southwest and south sides of the settlement area, respectively. These trunk mains would have sufficient conveyance capacity to service this settlement area. Local mains would need to be extended from these trunk mains into the settlement area. Ideally, the local mains should be looped to the trunk main to maintain residual chlorine consistent with provincial regulations”.

7.2.3 Elgin Area Primary Water Supply System

The Elgin Area Primary Water Supply System Board of Management owns and governs the drinking water system. The Board of Management is made up of representatives from each of the seven member municipalities that are currently supplied with water from the Elgin Area Primary Water Supply System (EAPWSS). The City of London acts as the Administering Municipality. The water system is operated and maintained by the Ontario Clean Water Agency (OCWA) under contract to the Joint Board of Management. The Township of Southwold is one of the seven EAPWSS board member municipalities.

The EAPWSS serves a population of approximately 112,000. The Elgin Area Water Treatment Plant (EAWTP) utilizes pre-chlorination, screening, powder activated carbon addition, coagulation, flocculation, sedimentation, dual-media filtration, UV disinfection, post-chlorination, fluoridation and pH adjustment using both carbon dioxide and sodium hydroxide to treat raw water from Lake Erie. Assets of the EAPWSS include one low lift pumping station, one water treatment plant, two surge facilities, one in-ground storage reservoir and over 29 km of watermain.

Following treatment, water is pumped to various communities or to the terminal storage reservoirs. As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the EAWTP cannot exceed 91,000,000 L/d and therefore is the plant's rated capacity. Average usage in 2014 was 42,609,000 L/d, or approximately 46.8% of the daily rated capacity. In 2014, water usage within Southwold accounted for approximately 4.11% of the total volume from the EAWTP. The primary system does not allocate supply to any individual municipality and is available to all benefitting municipalities on an aggregate supply basis.

The EAPWSS is inspected annually by the MOECC. The most recent MOECC inspection took place in June 2014. There were no non-compliance issues identified and the plant received a final inspection rating of 100%.

7.2.4 St. Thomas Area Secondary Water Supply System

The St. Thomas Area Secondary Supply System was constructed to supply treated water to the City of St. Thomas, the former Ford Motor Company Plant, the Municipality of Central Elgin, and the Township of Southwold. The system consists of an elevated water tower storage tank and trunk watermains to the Ford Plant. A 750 mm diameter watermain is connected to the Primary System at the Old St. Thomas Waterworks site on South Edgeware Road. The pipeline then

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Water Supply and Distribution

connects to the elevated storage tank that is located just off Water Tower Line Road near Waterworks Park in St. Thomas. The pipeline then extends west for approximately 2.6 km along Edgeware Road to County Road 26 and then along Ford Road/Wonderland Road before turning northwesterly for approximately 3.6 km to the Ford Chamber located at the northwest corner of Clinton Line and Wonderland Road. At the intersection of Ford Road and Talbot Line, the diameter of the pipeline is reduced to 500 mm.

7.2.5 Elgin-Middlesex Pump Station

The St. Thomas Area Secondary Water Supply System is supplied water through the Elgin-Middlesex Pump Station, which receives water from the Elgin Area Primary Water Supply System on Dexter Line, east of Port Stanley, Ontario. The EMPS is occupied by three booster stations that comprise an integrated booster station. The EMPS is comprised of three high-lift pumps that deliver water through a transmission main that services the STASWSS. A gas re-chlorination system provides re-chlorination of water being directed to the STASWSS.

The EMPS has an available capacity of 54,605 m³/d. In 2014, the maximum total daily flow through the system was 12,789 m³/d, which was approximately 23% of its capacity. The average total daily flow was 6,250 m³/d, approximately 11% of its capacity.

The STASWSS is inspected annually by the MOECC. The most recent inspection took place in June 2014. There were three non-compliance issues that were identified, however, these did not pertain to the EMPS. The final inspection rating received for 2014 was 86.04%.

7.2.6 Southwold Distribution System

As outlined in the *Township of Southwold Water Distribution System Quality Management System Operational Plan (March 2013)*, the Southwold Water Distribution System (Drinking Water System Number 260001362) is owned by the Township of Southwold. The Municipality of Dutton-Dunwich is the Operating Authority for the Southwold Water Distribution System, with the exception of the Lynhurst area, which is operated and maintained by the City of St. Thomas. Treated potable water is provided from the St. Thomas Secondary Water Supply System and the St. Thomas Water Distribution System. Water enters the Southwold Distribution System through the Talbotville Interconnect Control Chamber and Clinton Line Interconnect Chamber.

Water is supplied to the Municipality of Dutton-Dunwich via the Iona Interconnect Control Chamber. This water supply connection is based on an agreement between the Municipality of Dutton-Dunwich and the Elgin Area Primary Water Supply System. The pressure and flow at the Iona Interconnect Control Chamber is monitored through the EAPWSS.

The Southwold Water Distribution System supplies water to the City of St. Thomas, east of the municipal boundary on Fingal Line. This water supply connection is based on an agreement between the Township of Southwold and the City of St. Thomas. The flow is monitored by the City of St. Thomas.

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Water Supply and Distribution

In the case of an emergency, potable water can be supplied to the Township via the Iona Interconnect Control Chamber. However, the Dutton-Dunwich Water Distribution System cannot provide sufficient potable water to support the Township.

The Southwold Water Distribution System includes approximately 1,260 service connections. It includes a rechlorination facility northeast of the hamlet of Shedden. All customers are metered and the meters are read on a quarterly basis, with the exception of the former Ford Motor Company Plant which was read monthly.

With the closure of the Ford Motor Company Plant, approximately 274 m³/d of water usage became available for future development within Southwold.

7.3 AGREEMENTS

The following agreement was reviewed as part of the Master Servicing Plan.

Bylaw No. 2009-39: Agreement between the Township of Southwold and City of St. Thomas for Supply of Water to Lynhurst area (November 9, 2009).

7.4 SYSTEM HYDRAULICS

As part of the Clinton Line Watermain project, preliminary hydraulic modeling was undertaken to confirm potential hydraulic issues associated with the existing distribution system. The results from this preliminary modeling were reviewed and updated as part of the Master Servicing Plan to establish servicing characteristics for each alternative solution over the study period.

The existing WaterCAD V.8 water distribution system model was updated with the most up to date information as provided by the Township.

The results of the preliminary hydraulic modeling revealed the following key findings:

- Currently, there is no additional water storage within the Talbotville/Ferndale area, although storage is provided at upstream areas of the supply system via the Elgin Area Water Treatment Plant, Elgin Middlesex Pumping Station, and St. Thomas Elevated Water Tower, with standby power available at both the EAWTP and EMPS. In general, storage is required to address the following:
 - Risks associated with providing sufficient flow to meet the greater of maximum day plus fire flow or peak hour demand conditions, or
 - Disruption to the supply source (either planned maintenance or emergency events).
- Results from the preliminary analysis indicates that there is sufficient flow capacity to meet both existing and proposed demand conditions, particularly given the current

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Water Supply and Distribution

available capacity at the EMPS. It should be noted, however, that available capacity may be assigned to other municipal connections in the future and that these requirements are not clear at this time. Therefore the Township should systematically review its own water supply needs in the context of committed capacity allocation from the St. Thomas Area Secondary Water Supply System to confirm whether any additional measures are required (i.e., potential secondary connections and/or water storage measures).

- With regards to fire protection, the 2008 *Design Guidelines for Drinking-Water Systems* notes that "fire protection is a municipal responsibility and the municipality may elect to provide for higher fire flow requirements or entirely forgo fire protection by way of the drinking-water distribution system". Preliminary analysis indicates that fire flow via the distribution is generally limited as a result of the smaller diameter watermains present within the system which increases the pressure losses under high flow events. The provision of municipal water storage will not necessarily address this issue as the supply from the storage will also be limited by the distribution system sizing. Oversizing or potential twinning of watermains can improve fire flow capabilities, but may result in water quality issues. At present, the Township addresses fire flow protection by means of pumper trucks and other methods to address system limitations. The Township must consider potential fire flow provision to future service areas, including industrial development lands.
- As the primary supply to the settlement area is provided via the 750mm diameter transmission main along Highway 3, a potential pipe break within this main could leave the service area without water for a prolonged period of time. At present, there have been no significant issues noted with the condition of the transmission main, however this can change over time. The Township may, alone or in conjunction with other serviced municipalities, consider potential measures to minimize future service interruptions including provision of additional storage, refurbishment/repairs to the transmission main, twinning of the transmission main, and/or secondary/emergency connections. These options will need to be considered and assessed in relation to overall capital and operational costs versus risk to users.
- System pressures within the distribution system were above the minimum requirement of 275 kPa (40 psi) as noted in the MOECC minimum requirement of 275kPa (40psi) under all operating conditions assuming existing operating strategy at the EMPS. Lower system pressures were noted in higher elevation areas of the existing system, which is considered typical, but still above the MOECC minimum pressure guidelines.
- The backbone of the distribution system is a 350 mm line that runs along Highway 3, with various 200 mm and 150 mm lines branching off. This provides for a system that can generally tolerate increasing flow rates due to growth and expansion. However the reduction in pipe diameters as the system branches off may limit opportunities to provide high demands. As previously noted, the Township should review its policy on fire

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Water Supply and Distribution

protection and should ensure that future development areas (including commercial and industrial developments) provide independent fire storage/suppression systems if required.

7.5 DESIGN CRITERIA

Section 4 of the *Design and Construction Standards for the Township of Southwold (Spriet, 2012)* outlines requirements for the design and construction of water distribution systems. The water requirements in the design of a distribution system are to be based on the following three basic needs: domestic uses, fire protection, and industrial uses. Water supply systems should be designed to satisfy the greater of either of the following demands: maximum day plus fire flow (where fire flow is to be provided) or peak rate (maximum hourly demand).

Water requirements for domestic demands are based on a per capita consumption rate of 350 L/cap/d, a maximum daily demand factor of 3.0 and a peak hourly demand factor of 4.1. The level of fire protection to be provided requires the approval of the Township's Engineer and Fire Chief. In general, as stated in the design standards, the minimum fire flow is 30 L/s. Industrial water consumption varies considerably and is dependent on the type of industry. If development is known, actual water requirements should be determined prior to the design of a water system.

Minimum watermain size to be used in the design of distribution systems is 150 mm. Pipe composition must be PVC. HDPE is only acceptable within proposed directional drilling sections of watermains. Other design criteria such as installation, pipe bedding, pressure testing, disinfection, etc. are further detailed within the *Design and Construction Standards for the Township of Southwold*.

7.6 WATER SERVICING ALTERNATIVES

This section of the report describes the methodology used to select the preferred water servicing alternative. The process used to identify, screen, evaluate and select the alternatives is documented in this section. The details for the planning process are presented in the following sections.

The process of identifying and evaluating alternative solutions included the following activities:

- Development of a long list of potential alternatives, and screening of those to a short list;
- Compilation of a broad inventory of the natural, social and economic environment in the study area;
- Identification of impacts of the short-listed alternative solutions on the environment, and development of mitigating measures;

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- Evaluation of the short listed alternative solutions;
- Consultation with review agencies and the public regarding the problem and the alternative solutions; and
- Selection of the preferred alternative.

After the problem opportunity statement was established and justification for the project was determined, alternative solutions to address the problem/opportunity were generated. The following descriptions provide a general overview of the solutions reviewed as part of this study. The following water servicing alternatives were developed to address the problem opportunity statement:

Alternative 1: Do Nothing

Alternative 2: Private Water Servicing

Alternative 3: Extend Servicing of Elgin Area Primary Water Supply System (EAPWSS)

Alternative 4: Extend Existing Municipal Servicing System

Further discussion of each alternative is provided in the following sections of this document.

7.6.1 Alternative 1 – Do Nothing

The “Do Nothing” alternative is a required review consideration for all Class EAs. This option is usually exercised when the environmental or financial costs of all other alternatives significantly outweigh the potential benefits. Under this approach, the Township would do nothing to provide water servicing to new development which would adversely impact planned growth. The “Do Nothing” alternative would result in no additional water servicing to the settlement area.

Therefore, this alternative was not carried forward for further review as it does not address the needs defined in the problem opportunity statement.

7.6.2 Alternative 2 – Private Water Servicing

This alternative would involve the provision of private water servicing for new development (i.e., private wells). As stated within the Official Plan, “It is the intent of the Township that development within the Settlement Areas and Hamlets will be serviced by municipal piped water facilities. The developer will normally be responsible for the necessary extensions and/or enlargements. The Township may require the oversizing of watermains where future servicing is anticipated.”

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Furthermore, it is stated that “development may be permitted on private water systems where piped water is not available and an extension of services is not economically feasible, subject to compliance with Provincial regulations regarding the adequacy of water quality and quantity.”

It is also the responsibility of the developer to demonstrate that there is sufficient reserve water capacity within the system prior to development.

As the Official Plan outlines that new development shall be serviced by a municipal water distribution system, this alternative was not carried forward as it would go against the Official Plan. The *Provincial Policy Statement* also indicates that municipal water services are the preferred form of servicing for settlement areas.

As both Talbotville and Ferndale are currently serviced by municipal water, there is an adequate source available and the extension of services would not be economically unfeasible.

7.6.3 Alternative 3 – Extend Servicing of Elgin Area Primary Water Supply System (EAPWSS)

This alternative involves the extension of water servicing from the Elgin Area Primary Water Supply System. This alternative would provide an additional servicing connection and increased system security. However, this option would likely require storage, booster pumping and rechlorination facilities. The extension of servicing would result in a long pipeline connection and high capital and operating costs. In addition to the extension of the trunk watermain, local distribution watermains would be required for development. Due to the extent of implementing this option, there would be a very high impact to the environment and would cause significant construction disruption. This alternative, however, is consistent with the Official Plan and *Provincial Policy Statement*.

7.6.4 Alternative 4 – Extend Existing Municipal Servicing System

This alternative utilizes the existing water distribution system within Talbotville and Ferndale. Extension of local distribution networks would be proposed for new development. This alternative would utilize existing capacity and infrastructure, and work would be situated within existing or proposed road allowances. It is also noted that the majority of complex crossings have been completed and therefore extension of services would not result in significant environmental impacts. While there would be some disruption associated with construction, the majority of work would occur on undeveloped land. Work that may impact the public, such as tie-in's, would be scheduled so as to reduce any adverse impacts. This alternative would have a lower cost than Alternative 3. It is also consistent with the Official Plan and *Provincial Policy Statement*.

7.7 EVALUATION OF WATER SERVICING ALTERNATIVES


The preferred alternative for water servicing within Southwold is to extend existing municipal servicing (Alternative 4). Through this alternative, consideration should be given to system security and redundancy.

As part of Phase 2 of the Class EA process, defining the framework and criteria for evaluating the alternative solutions for each servicing component was undertaken and all reasonable and feasible solutions that could be implemented to address the problem and/or deficiency were identified. The water servicing strategies identified above were compared using a qualitative evaluation process. This process determined the suitability and classified the significant advantages and disadvantages of each option with respect to the specific evaluation criteria. A decision matrix has been developed to document the potential impacts associated with each option and to assist in the selection of the preferred alternative. The decision matrix is presented below in Table 7.1.

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Table 7.1: Water Supply and Distribution Alternatives

Alternatives	Potential Impacts on Natural Environment	Potential Impact Due to Proximity to Residential Development, Cultural / Heritage or Other Features	Potential Economic Impacts Based on Both Capital Costs and Operations and Maintenance Requirements		Land Requirements	Complexity of Operations Due to Location, Proximity to Existing Infrastructure	Ability to Meet Official Plan and Provincial Policy Statement Requirements	Ability to Address Risk	Other	Preferred Alternative 
	Natural	Social	Economic		Land	Technical				
			Capital	O&M						
Alternative 1: Do Nothing	No impacts to natural environment anticipated.	No impacts to archaeological/cultural heritage resources anticipated.	N/A	N/A	N/A	N/A	No	No change.	Adverse impact on planned community growth.	
	●	●	---	---	---	---	○	●	○	●
Alternative 2: Private Water Servicing	Minor natural environment impacts anticipated. Potential for groundwater impacts including possibility for contamination.	No impacts to archaeological/cultural heritage resources anticipated.	\$	\$	N/A	N/A	No	Water supply to homes based on private systems with no back-up.	Adverse impact on planned community growth.	
	●	●	●	●	---	---	○	●	○	●
Alternative 3: Extend Servicing off EAPWSS	Significant natural environment impacts due to length of pipeline connection.	Would require archaeological assessment and cultural heritage review along route and potential site of new facilities.	\$\$\$	\$\$\$	Additional land/easement may be required. Site may be required for booster pumping station and /or storage.	Pipeline required off EAPWSS. Likely requirements for booster pumping station and/or storage. Requires separate agreement for water supply.	Yes	Could provide partial servicing under emergency / maintenance conditions.	Would likely require additional planning studies.	
	●	●	●	●	○	○	●	●	○	●
Alternative 4: Extend Existing Municipal Servicing	Minor natural environment impacts anticipated.	Would require archaeological assessment and cultural heritage review.	\$\$	\$\$	Extension of servicing would utilize existing municipal right of way or follow proposed developer road patterns.	Existing system would remain in place. Servicing from STASWSS via EMPS. Adequate capacity at present within the system for the planned growth. Extension of watermain to suit development requirements. Depending on industrial development, some watermain improvements may be warranted.	Yes	Highway 3 watermain disruption (planned maintenance or emergency) would eliminate supply.	Would not require additional planning studies, would accommodate growth within settlement areas.	
	●	●	●	●	●	●	●	●	●	●

TALBOTVILLE & FERNDALE MASTER SERVICING PLAN

Water Supply and Distribution

7.7.1 Key Issues & Constraints

Hydraulic modeling suggests that the existing water distribution system should be capable of servicing future growth initiatives. Pressures within existing serviced areas are above 50 psi. A minimum operating pressure of 40 psi and a maximum operating pressure of 100 psi should be maintained within the distribution system. Water turnover in sections of larger diameter trunks is low, which suggests that there is capacity available.

In general, new municipal watermains would be constructed at the same time as new sanitary sewers to minimize overall costs. Local mains would need to be extended to connect to existing trunk mains. Some existing watermains may need to be twinned or oversized to accommodate development depending on provision of fire flow (pump truck versus direct feed) and potential/type of industrial development. To minimize the potential for stagnant water and to improve fire flow supply, looping should also be considered.

Currently there is only one major supply line into the settlement areas. With no water storage within Talbotville or Ferndale, during a major emergency event (i.e., watermain break), disruption to the potable water supply would occur.

It should be noted that the City of St. Thomas is currently undertaking a study to review extension of servicing to Sunset Drive/Major Line. The outcome of this study may involve further interconnection, with potential pressure zone separation. It may also help to alleviate dead end conditions and provide additional emergency connection in the event of interruption to the Talbot Line supply.

Sizing of watermains for future development should address the potential for stagnant water, maintain MOECC recommended minimum servicing pressures under average day, maximum day and peak hour flows, and provide adequate fire flow protection.

Future works will be generally classified as Schedule A+ projects as per the Municipal Class EA process and therefore obligations for these works have been met through the Master Servicing Plan.

7.8 IDENTIFIED WATER SERVICING PROJECTS

Through the hydraulic modeling undertaken as part of the Master Servicing Plan, three potential municipal projects were identified as follows:

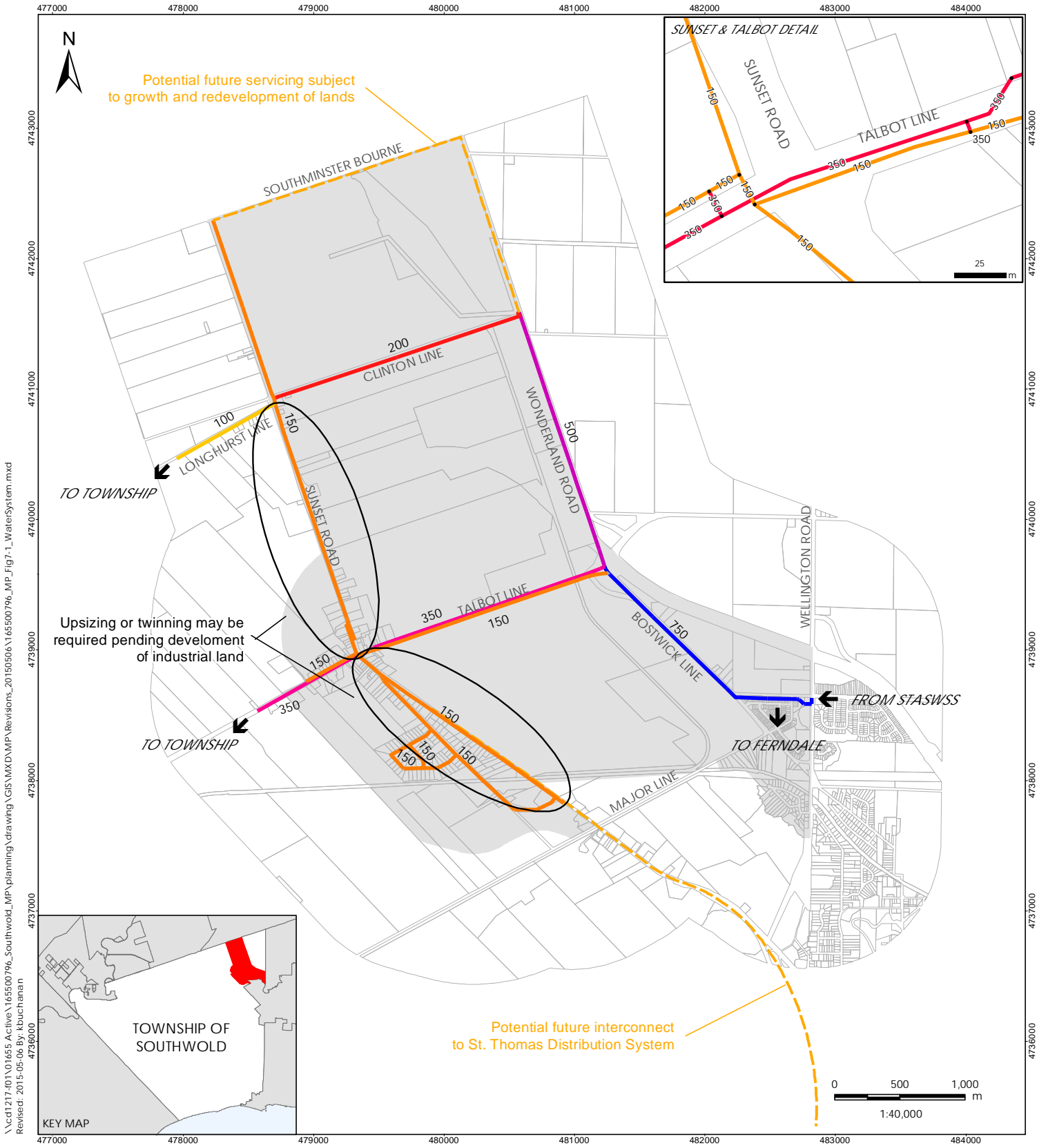
- Upsizing or twinning of watermains may be required pending development of industrial land
 - Sunset Drive (between Talbot Line and Clinton Line)
 - Sunset Drive (between Talbot Line and Major Line)

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- Extension for potential future servicing subject to growth and redevelopment of lands
 - Southminster Bourne (between Sunset Drive and Wonderland Road) and Wonderland Road (between Southminster Borne and Clinton Line)

The identified water servicing projects are illustrated in Figure 7.1.



\\\cd1217-401\01655 Active\165500796_Southwold_MPA_planning\drawing_GIS\AMXD\MPA_Revisions_20150506A\165500796_MP_Fig7-1_WaterSystem.mxd
 Revised: 2015-05-06 By: kbuchanan

May 2015
165500796

	Legend  Settlement Area/Study Area Pipe Diameter  100  150  200  350  500  750	Client/Project Township of Southwold Talbotville & Ferndale Master Servicing Plan
	Notes 1. Coordinate System: NAD 1983 UTM Zone 17N 2. Base features produced under license with the Township of Southwold, 2015.	Figure No. 7.1

8.0 WASTEWATER COLLECTION AND TREATMENT

8.1 OVERVIEW

The Township of Southwold does not currently have a municipal wastewater treatment system. Existing development is serviced either by private on-site systems (Talbotville) or sent to the St. Thomas Wastewater Treatment Plant via the St. George Street Pumping Station (Ferndale). As each settlement area has its own unique set of challenges and opportunities with respect to wastewater servicing, each will be discussed separately in the sections that follow.

8.2 EXISTING INFRASTRUCTURE

8.2.1 Talbotville

There is no municipal wastewater collection or treatment infrastructure within Talbotville. Existing development within the settlement area is serviced by private on-site septic systems.

8.2.2 Ferndale

There is no municipal wastewater treatment infrastructure within Ferndale, however wastewater flows generated by existing development is conveyed via municipal sanitary sewers to the St. Thomas WWTP. Flows travel via the St. George Street Pumping Station and forcemain which is owned by the Municipality of Central Elgin and operated by the City of St. Thomas. St. Thomas has confirmed that there is sufficient treatment capacity at the WWTP to accommodate proposed growth within Ferndale.

The St. George Street Pumping Station is a submersible pumping station located in the northwest area of St. Thomas. It services a fairly extensive area, including Florence and St. George Street (and adjoining side streets), as well as Elysian, Jesse and Owaissa Streets (among other smaller sections of other streets). The station contains two 100 hp pumps, each with a duty point of 94.6 L/s at 37.2 m TDH. The pump station's forcemain outlets to a gravity sewer further south along St. George Street.

Sewer capacity issues exist upstream of the St. George Street Pumping Station which limit the amount of flow which can be conveyed from Ferndale to the St. Thomas WWTP.

8.2.3 Industrial Land

In accordance with the Official Plan, there is approximately 412 hectares of land designated within the Talbotville settlement area. The former Ford Motor Company property houses its own wastewater treatment plant which is sized for 3,200 m³/d. The Ford WWTP has the ability to treat industrial wastewater containing heavy metals as well as municipal wastewater generated by its former employees.

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Development of industrial lands to the south of the former Ford property could result in a wide range of sanitary flows dependent on both type and size of industry. In order to size a new plant efficiently for current and projected residential flows, it is assumed that the municipal plant will undergo a separate expansion or industrial lands may be serviced through separate on-site treatment plants (similar to Ford) to accommodate much larger industrial flows and variable effluent quality.

Future industrial lands could generate wastewater flows upwards of 9,000 m³/d upon full build-out based upon the Township's design standards.

8.3 PREVIOUS REPORTS

8.3.1 Small Settlement Servicing Study (Zelinka Priamo, Triton)

This report was completed by Zelinka Priamo Limited and Triton Engineering Services Limited for the Township of Southwold in 2013. Various sanitary servicing options were presented within the *Small Settlement Servicing Study* for both Talbotville and Ferndale. The following provides a brief outline of the options and a summary for each settlement area. As stated in the document, selecting the best sanitary servicing strategy for the settlement areas will require additional investigations in the form of a Class EA undertaken by the Township.

The objective of the Master Servicing Plan is to consider and evaluate the options presented in the *Small Settlement Servicing Study* as well as others, and to sufficiently document the steps taken as part of the Class EA process.

8.3.1.1 Ferndale

Five options were presented as part of the *Small Settlement Servicing Study* for wastewater servicing for Ferndale. They are as follows:

- a. Ferndale settlement area sewage would be conveyed to the St. Thomas WWTP via St. George Street collection system;
- b. Ferndale settlement area sewage would be conveyed to the St. Thomas WWTP via existing servicing routes or new sewers / forcemains;
- c. Ferndale settlement area sewage would be conveyed to the St. Thomas WWTP and alternate strategies would be utilized to optimize capacity of available infrastructure;
- d. Ferndale and Talbotville settlement areas sewage would be conveyed to a new package plant near Talbotville; and
- e. Ferndale settlement area sewage would be conveyed to the existing Ford WWTP.

Through a review of these options, the *Small Settlement Servicing Study* concluded the following:

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- A combination of Option A and C would be preferred. Utilizing the existing St. George sewer to convey flows to the St. Thomas WWTP would be the most cost effective and efficient method, but only if it could be accomplished without replacing large sections of the St. George sewer.
- Option B should be considered if details regarding the other options make them impractical.
- The feasibility of a package plant option is largely contingent upon establishing an acceptable receiver.
- There are a number of unknowns regarding the utilization of the Ford WWTP. This option could be further investigated once a new owner has been established.

8.3.1.2 Talbotville

Four options were presented as part of the *Small Settlement Servicing Study* for sanitary servicing for Talbotville. They are as follows:

- a. Talbotville settlement area sewage would be conveyed to the St. Thomas WWTP via St. George Street collection system;
- b. Talbotville settlement area sewage would be conveyed to the St. Thomas WWTP via existing servicing routes or new sewers / forcemains;
- c. Talbotville settlement area sewage would be conveyed to a new wastewater package plant that may service Ferndale as well; and
- d. Talbotville settlement area sewage would be conveyed to the existing Ford WWTP.

Through a review of these options the *Small Settlement Servicing Study* concluded the following:

- Until critical details such as the availability of capacity at the St. Thomas WWTP and the confirmation of a suitable receiving water course, it is difficult to recommend a preferred option.
- Similar to the Ferndale alternative, there are a number of unknowns regarding the utilization of the Ford WWTP. This option could be further investigated once a new owner has been established.

8.3.2 City of St. Thomas Wastewater Treatment Plant Agreement

An agreement was made between the Township of Yarmouth, the Township of Southwold and the City of St. Thomas on July 23, 1997 regarding the acceptance of wastewater flows at the St.

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Thomas WWTP. The agreement stipulated that the St. Thomas WWTP shall not be required to accept the following:

- Sewage from areas other than those within Yarmouth Sewage Areas No. 1 and No. 2 and Southwold Sewage Areas No. 1 and No. 2; and
- More than a total of 3,600 cubic metres per day.

It also states that the City of St. Thomas shall provide maintenance in a good and workmanlike manner for the sanitary collection systems. It is understood that this item considers maintenance (i.e., sewer breaks) and not expansion or upsizing of the collection system.

Furthermore, the amount of sewage per day that each Township can send to the St. Thomas WWTP is limited to 1,800 m³/d. It is understood that this amount is in regards to treatment capacity at the WWTP and not the actual conveyance of the flows.

8.3.3 St. George Street Sanitary Sewer Capacity Evaluation 2008 Update Report (Dillon)

The *St. George Street Sanitary Sewer Capacity Evaluation 2008 Update Report, Revised Final Report*, dated July 15, 2009, was completed by Dillon Consulting Limited for the Municipality of Central Elgin to update the original 1996 sewer capacity evaluation (*St. George Street Sanitary Sewer Capacity Evaluation Revised Final Report*, August 23, 1996, Dillon Consulting Limited) based on completed developments. The 1996 report concluded that a number of improvements would be required for the St. George Street sanitary sewer system to provide capacity for the expanded service area. In 2009, Dillon provided an update to the 1996 report to reflect the level of development that had been implemented and conducted a subsequent sewer capacity analysis to determine whether any capacity was available within this system. The updated report included an assumed flow value for Area A3 (Jacklin Farm subdivision) at full build-out, but did not include any other potential developments. The report determined that the system is currently at capacity and further development would require additional modifications to the system.

8.3.4 St. George Street Pump Station Drainage Area (Houghton)

The *Report on the St. George Street Pump Station Drainage Area, Draft Report*, dated February 29, 2012 was completed by Gary O. Houghton Consulting Ltd. for the Municipality of Central Elgin. The report investigated the possible impact to the capacity of the receiving sewer to include areas immediately northwest of the existing service area. The report relied on information provided in two reports prepared for the City of St. Thomas and the Municipality of Central Elgin. Wastewater contribution was calculated from criteria identified on the sewer design table carried in both the 1996 and 2008 reports. As stated within the report, for design purposes, a pipe is generally considered to be at capacity when it is flowing 80% full. Based on the findings of the report, with the addition of the subject area flows, nearly all receiving sewers

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would be at or beyond capacity. In order to rectify the issue, the most direct option would be to upgrade the gravity sewer on St. George Street to the required capacity, but would likely be the most expensive and disruptive option. Equalization storage was also put forward as a consideration. Overall, the findings of the report on a conceptual level indicated that servicing new areas would require significant infrastructure works that either bypass the constrained sewer sections or upgrade the constrained sections.

8.3.5 McBain Property Proposed Development Sanitary Capacity Review (CJDL)

This report, provided in draft, on the sanitary capacity of the proposed McBain property development was completed by Cyril J. Demeyere Limited Consulting Engineers in February 2012. Its purpose was to determine if the St. Thomas WWTP had sufficient capacity to support the development of the McBain property as a low-density residential subdivision. The findings of the report stated that the St. George Street sewer leading to the pumping station had enough remaining peak flow capacity to support low density development of the McBain property.

The report utilized flow data collected by Dillon in 2009 to determine that, during a 2-year storm event seen during the monitoring, a peak flow of 58 L/s was observed. As the limiting pipe along St. George Street can handle a maximum of 76.4 L/s, it was determined that there is an additional 18.5 L/s of remaining capacity in the sewer system. The report suggests that the proposed developments would create an additional 14 L/s during peak events, although the design values used to calculate the proposed flow differ from the previously mentioned reports. As the additional flow is less than the remaining capacity in the pipe, it was suggested that there is adequate capacity remaining in the sewer system to support the new developments.

The findings of this report did not utilize municipal design standards and therefore the resulting wastewater flows were less. It was also stated that flows from the McBain property would be sent to the Lynhuyst Acres Pumping Station and peak flows would be regulated as discharge would be drawn out over a longer period of time. While this may be a possibility, a significant amount of flow would be generated by the subdivision and the existing pumping station may not be able to handle these flows with no increase in peak flow levels.

Although the property is located in Ferndale, the method of conveyance, the sanitary sewer network, falls under the jurisdiction and approval processes of the Municipality of Central Elgin. Based upon a review of the above noted reports, it is believed that the St. George Street sewer system is at full capacity. It is recognized that the CJDL report suggest that capacity is available in the sewer; however, the design values chosen to calculate the anticipated flows from the proposed developments (in particular, population per lot) may be insufficient and could result in capacity issues should they be developed while utilizing existing infrastructure.

8.4 AGREEMENTS

The following agreement was reviewed as part of the Master Servicing Plan.

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Wastewater Collection and Treatment

Agreement between Township of Yarmouth, Township of Southwold and the City of St. Thomas for the City of St. Thomas, subject to certain terms and conditions, to accept and treat sewage collected by Yarmouth and Southwold (July 23, 1997).

8.5 WASTEWATER SERVICING ALTERNATIVES (FERNDALE)

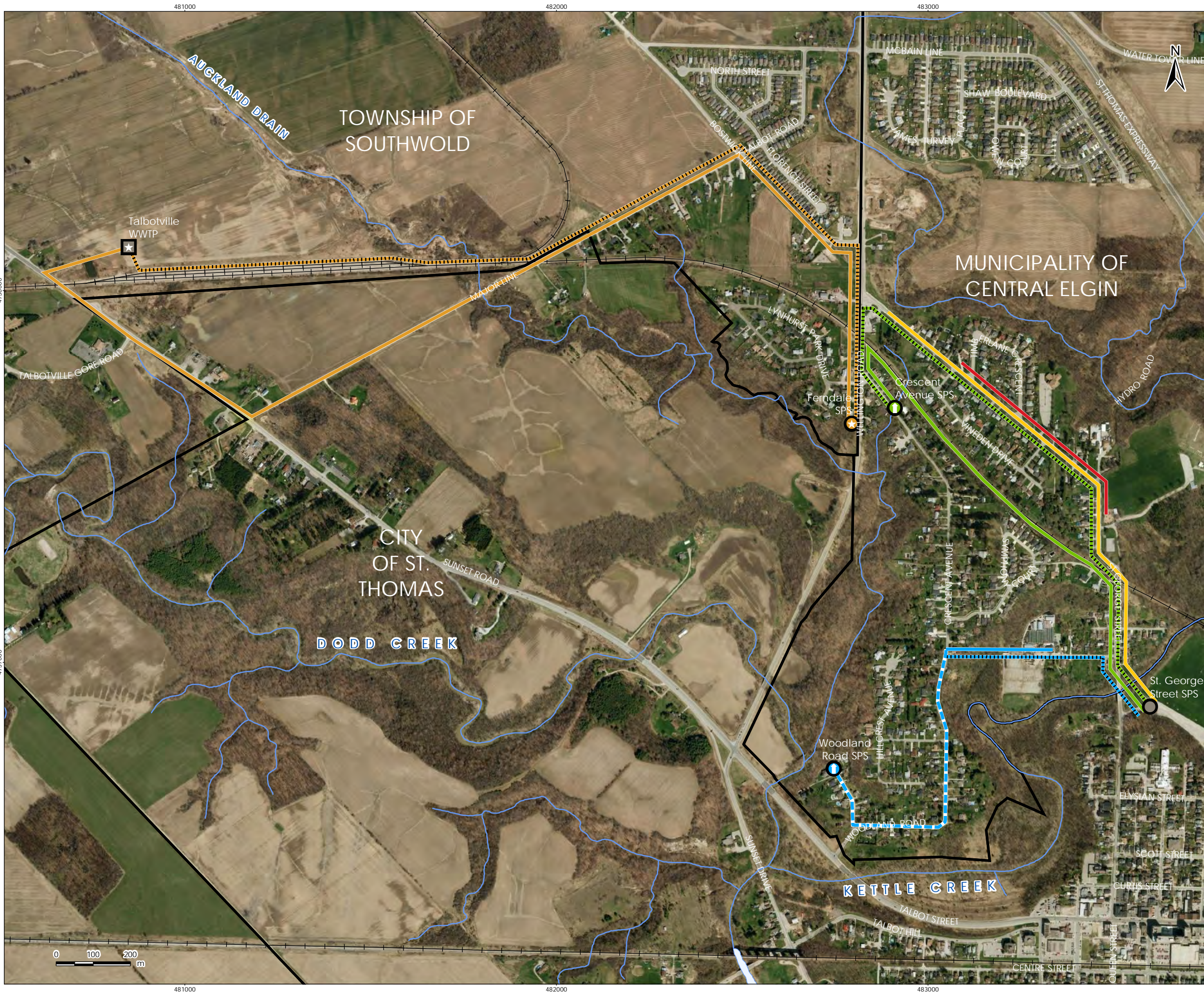
This section of the report describes the methodology used to select the preferred alternative. The processes used to identify, screen, evaluate, and select the alternatives are documented in this section. The details for the planning process are presented in the following sections.

The process of identifying and evaluating alternative solutions included the following activities:

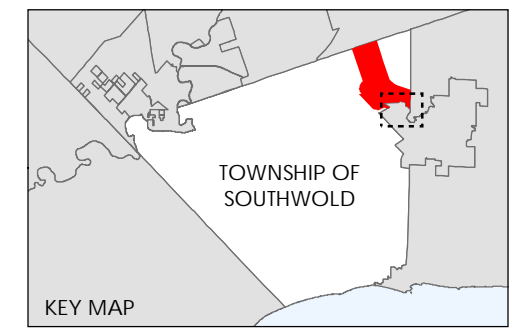
- Development of a long list of potential alternatives, and screening of those to a short list;
- Compilation of a broad inventory of the natural, social and economic environment in the study area;
- Identification of impacts of the short-listed alternative solutions on the environment, and development of mitigating measures;
- Evaluation of the short listed alternative solutions;
- Consultation with review agencies and the public regarding the problem and the alternative solutions; and
- Selection of the preferred alternative.

Previous servicing reviews undertaken by the Municipality of Central Elgin concluded that the St. George Street sewer system is at or near capacity and could not accommodate development in Ferndale in its current form. Stantec also undertook a review of the St. George Street sewer system for the Master Servicing Plan and the same conclusions were met. Sections of sewer along St. George Street, in particular, from Ryan Street to the CN tracks, were determined to be at or above the allowable capacity, as set forth by the Municipality of Central Elgin. The following approaches were considered as a long list of potential alternatives to alleviate constraints on the St. George Street sewer or to provide another means of wastewater servicing for Ferndale.

It should be noted that all servicing alternatives involving modifications to the St. George Street sewershed (collection system, pumping stations, easements, etc.) would be dependent upon approval from the Municipality of Central Elgin. The location and routing of the following alternatives is illustrated in Figure 8.1.



- Railway
- Watercourse
- Municipality
- Facility**
- Pumping Station - Existing
- ★ Pumping Station - New
- ⬆ Pumping Station - Upgraded
- ★ Wastewater Treatment Facility - New
- Wastewater Servicing Alternatives**
- Alternative 1 - Partial upgrades of St. George Street sewer
- Alternative 2 - Twin St. George Street gravity sewer
- Alternative 3a/3b (existing)
- Alternative 3a - Redirect flow from Woodland Road PS to Parkins Street sewer
- Alternative 3b - Redirect flow from Woodland Road PS to St. George Street PS
- Alternative 4a - Redirect flows from Crescent Avenue PS via railway
- Alternative 4b - Redirect flows from Crescent Avenue PS via St. George Street
- Alternative 5a - New PS to Talbotville via Major Line
- Alternative 5b - New PS to Talbotville via railway



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
 3. Orthomagery © First Base Solutions, 2014.

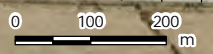
December 2014
165500796

Client/Project
Township of Southwold
Talbotville & Ferndale
Master Servicing Plan

Figure No.
8.1

Title
**Ferndale Wastewater
Servicing Alternatives**

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 Revised: 2014-12-19 By: kbuchanan



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Wastewater Collection and Treatment

After the problem opportunity statement was established and justification for the project was determined, alternative solutions to address the problem/opportunity were generated. The following descriptions provide a general overview of the solutions reviewed as part of this study. The following wastewater collection and treatment alternatives were developed for Ferndale to address the problem opportunity statement:

Alternative F1: Do Nothing

Alternative F2: Limit Growth

Alternative F3: Partial Upgrades of St. George Street Gravity Sewer

Alternative F4: Twin St. George Street Gravity Sewer

Alternative F5: Redirect Flow from Woodland Road Pumping Station

Alternative F6: Redirect Flow from Crescent Avenue Pumping Station

Alternative F7: New Pumping Station to Talbotville Wastewater Treatment Plant

Alternative F8: Utilize Existing Ford Motor Company Wastewater Treatment Plant

Further discussion of each alternative is provided in the following sections of this document.

8.5.1 Alternative F1 – Do Nothing

The “Do Nothing” alternative is a required review consideration for all Class EAs. Under this approach, the Township would do nothing to provide wastewater servicing to new development which would adversely impact planned growth. The “Do Nothing” alternative would result in no additional wastewater servicing in the settlement area. If “Do Nothing” was to be the preferred solution, construction of wastewater treatment or conveyance infrastructure would not occur and would contradict the Official Plan. Therefore, this alternative was not carried forward for further review as it did not address the needs defined in the problem opportunity statement.

8.5.2 Alternative F2 – Limit Growth

This alternative involves limiting residential growth in the settlement area to only infilling and rounding out of existing development. However, long term growth and development has been planned for the settlement area and requires increased wastewater treatment capacity and means of conveyance as a result. Limiting growth would contradict the Township's Official Plan. It would also have long term negative economic impacts on the community. In order to accommodate future development, this alternative does not satisfy the problem statement and therefore was not carried forward.

8.5.3 Alternative F3 – Partial Upgrades of St. George Street Gravity Sewer

This alternative involves partial sanitary sewer upgrades along St. George Street. This replacement would result in the upsizing of approximately 575 m of sanitary sewer along St. George Street from Ryan Street to just north of the CN right of way. This work would require coordination and approval from the Municipality of Central Elgin. Existing wastewater flows would have to be maintained through this sewer during construction.

8.5.4 Alternative F4 – Twin St. George Street Gravity Sewer

This alternative involves the twinning of the St. George Street gravity sewer. This project would result in a second sanitary trunk sewer installed adjacent to the existing sewer, for a length of approximately 1,375 m, and would provide additional conveyance capacity and alleviate loading on the existing St. George Street sewer. This work would require coordination and approval from the Municipality of Central Elgin.

8.5.5 Alternative F5 – Redirect Flow from Woodland Road Pumping Station

The first option for this alternative involves the redirection of wastewater flows from the Woodland Road Pumping Station to the Parkins Street sewer. This project would result in the installation of approximately 285 m of sanitary forcemain through an easement held by the Municipality of Central Elgin. Upgrades to the Woodland Road Pumping Station would also be required.

The second option for this alternative also involves the redirection of wastewater flows from the Woodland Road Pumping Station; however the forcemain would continue past the Parkins Street sewer and terminate at the St. George Street Pumping Station. The length of forcemain would be approximately 615 m and would be installed through the easement held by the Municipality of Central Elgin and along the road right of way. Upgrades to the Woodland Road Pumping Station would also be required.

These options would redirect flow from the St. George Street sewer and help to alleviate capacity constraints on this sewer. Both options would require the coordination and approval from the Municipality of Central Elgin. Existing wastewater flows would have to be maintained through this sewer during construction.

8.5.6 Alternative F6 – Redirect Flows from Crescent Avenue Pumping Station

The first option for this alternative involves the redirection of sanitary flows from the Crescent Avenue Pumping Station via the CN right of way. This project would result in the installation of approximately 1,475 m of sanitary forcemain, terminating at the St. George Street Pumping Station. Acquisition of the CN right of way would be required. Upgrades to the Crescent Avenue Pumping Station would also be required.

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The second option for this alternative also involves the redirection of sanitary flows from the Crescent Avenue Pumping Station; however the forcemain would be installed along St. George Street, terminating at the St. George Street Pumping Station. The length of forcemain would be approximately 1,740 m. Upgrades to the Crescent Avenue Pumping Station would be required.

These options would redirect flow from the St. George Street sewer and help to alleviate capacity constraints on this sewer. Both options would require the coordination and approval from the Municipality of Central Elgin. Existing wastewater flows would have to be maintained through this sewer during construction.

8.5.7 Alternative F7 – New Pumping Station to Talbotville Wastewater Treatment Plant

The first option for this alternative involves the construction of a new pumping station and forcemain from Ferndale to a new wastewater treatment plant in Talbotville. The forcemain would be installed along Major Line and then travel north along Sunset Drive. The forcemain would be approximately 3,275 m in length. Property would have to be acquired to for the pumping station and would likely be situated near Wellington Road.

The second option for this alternative also involves the construction of a new pumping station and forcemain from Ferndale to a new wastewater treatment plant in Talbotville. However, the forcemain would be installed along the CN right of way, with a length of approximately 2,675 m. Acquisition of the CN right of way would be required. As with the first option, property would have to be acquired for the pumping station.

8.5.8 Alternative F8 – Utilize Existing Ford Motor Company Wastewater Treatment Plant

This alternative involves the conveyance of wastewater from Ferndale to the wastewater treatment plant at the former Ford Motor Company plant. The Ford WWTP is rated for 3,200 m³/d and is oversized for the projected sanitary flows from Ferndale. Based upon topography, the construction of a pumping station and forcemain would be necessary to convey flows from Ferndale.

The plant was designed to treat both municipal wastewater generated by site personnel as well as industrial wastewater containing heavy metals.

As the plant is currently listed for sale, the future intentions for the site are unknown. It is difficult to review this alternative without a new owner of the site in place due to the number of unknowns that exist. If Ferndale was to convey flows to the Ford WWTP, the Certificate of Approval would require an amendment. Typically, this may cause the effluent limits to become more stringent. This could adversely affect the plant for future industrial uses, if a new owner was to continue to use it. Due to the uncertainty with ownership of the former Ford Motor Company plant, this alternative was not carried forward for further review.

8.6 WASTEWATER SERVICING ALTERNATIVES (TALBOTVILLE)

This section of the report describes the methodology used to select the preferred alternative. The processes used to identify, screen, evaluate, and select the alternatives are documented in this section. The details for the planning process are presented in the following sections.

The process of identifying and evaluating alternative solutions included the following activities:

- Development of a long list of potential alternatives, and screening of those to a short list;
- Compilation of a broad inventory of the natural, social and economic environment in the study area;
- Identification of impacts of the short-listed alternative solutions on the environment, and development of mitigating measures;
- Evaluation of the short listed alternative solutions;
- Consultation with review agencies and the public regarding the problem and the alternative solutions; and
- Selection of the preferred alternative.

After the problem opportunity statement was established and justification for the project was determined, alternative solutions to address the problem/opportunity were generated. The following descriptions provide a general overview of the solutions reviewed as part of this study. The following wastewater collection and treatment alternatives were developed for Talbotville to address the problem opportunity statement:

Alternative T1: Do Nothing

Alternative T2: Limit Growth

Alternative T3: St. Thomas Wastewater Treatment Plant via St. George Street Gravity Sewer

Alternative T4: St. Thomas Wastewater Treatment Plant via Alternate/New Trunk Sewer

Alternative T5: New Wastewater Treatment Plant in Talbotville

Alternative T6: Utilize Existing Ford Motor Company Wastewater Treatment Plant

Further discussion of each alternative is provided in the following sections of this document.

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Wastewater Collection and Treatment

8.6.1 Alternative T1 – Do Nothing

The “Do Nothing” alternative is a required review consideration for all Class EAs. Under this approach, the Township would do nothing to provide wastewater servicing to new development and would adversely impact planned growth. The “Do Nothing” alternative would result in no additional wastewater servicing in the settlement area. If “Do Nothing” was to be the preferred solution, construction of wastewater treatment or conveyance infrastructure would not occur and would contradict the Official Plan. Therefore, this alternative was not carried forward for further review as it did not address the needs defined in the problem opportunity statement.

8.6.2 Alternative T2 – Limit Growth

This alternative involves limiting residential growth in the settlement area to only infilling and rounding out of existing development. However, long term growth and development has been planned for the settlement area and requires increased wastewater treatment capacity and means of conveyance as a result. Limiting growth would contradict the Township’s Official Plan. It would also have long term negative economic impacts on the community. In order to accommodate future development, this alternative does not satisfy the problem opportunity statement and therefore was not carried forward.

8.6.3 Alternative T3 – St. Thomas Wastewater Treatment Plant via St. George Street Gravity Sewer

This alternative involves the conveyance of wastewater from Talbotville to the St. Thomas WWTP via the St. George Street sewer. It is unlikely that the St. George sewer would be used to service the Talbotville area in its current form since any available capacity realized/achieved through improvements, minor upgrades and/or operational changes would likely be utilized by the Ferndale settlement area. Sending flows via the St. George sewer would also require a pumping station as there is insufficient fall to the St. George Street sewer from Talbotville. If major upgrades to the sewer system were undertaken (i.e. full replacement of the St. George sewer), consideration could be given to this option. However, through the evaluation of potential alternatives for wastewater servicing for Ferndale within the Master Servicing Plan, this has not been identified as the preferred alternative. Future development within Talbotville (including potential industrial development) would be constrained by the hydraulic capacity of the St. George Street sewer (if replaced), as well as potentially the treatment capacity at the St. Thomas WWTP.

8.6.4 Alternative T4 – St. Thomas Wastewater Treatment Plant via Alternate/New Trunk Sewer

This alternative involves the conveyance of wastewater from Talbotville to the St. Thomas WWTP via a new or alternate trunk sewer. Similar to Alternative T3, future development within Talbotville would be constrained by the hydraulic capacity of the new sewer as well as the treatment

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Wastewater Collection and Treatment

capacity at the St. Thomas WWTP. This alternative would involve the construction of a new gravity sewer or forcemain from Talbotville to the St. Thomas WWTP. The length of this new sewer would be quite significant. Due to topography, it is likely that a forcemain and pumping station would be required for this alternative. Phasing may also be required to accommodate the initial low flows generated within Talbotville. Numerous water crossings would be required, increasing the significance of environmental considerations.

8.6.5 Alternative T5 – New Wastewater Treatment Plant in Talbotville

This alternative involves the construction of a new municipally owned and operated wastewater treatment plant within the Talbotville settlement area to service both existing and future development. A suitable receiving body of water will have to be determined for this option to meet MOECC requirements. This is to be carried out through an Assimilative Capacity Study (ACS).

A new wastewater treatment plant would prompt the completion of a Schedule C Class EA. The Schedule C Class EA would build upon the findings of the Master Servicing Plan and would complete Phase 3 (Alternate Design Concepts) and Phase 4 (Environmental Study Report) of the Municipal Class EA process.

A new wastewater treatment plant should be sized accordingly for expansion (both in terms of area available on the site and potential oversizing of certain components).

There are impacts to the natural, cultural and socio-economic environments associated with this option. The construction of a wastewater treatment plant would result in a new outfall.

8.6.6 Alternative T6 – Utilize Existing Ford Motor Company Wastewater Treatment Plant

This alternative involves the conveyance of wastewater from Talbotville to the wastewater treatment plant at the former Ford Motor Company plant. The Ford WWTP is rated for 3,200 m³/d and is oversized for the projected sanitary flows from Talbotville. Based upon topography, the construction of a pumping station and forcemain would be necessary to convey flows from Talbotville.

The plant was designed to treat both municipal wastewater generated by site personnel as well as industrial wastewater containing heavy metals.

As the plant is currently listed for sale, the future intentions for the site are unknown. It is difficult to review this alternative without a new owner of the site in place due to the number of unknowns that exist. If Talbotville was to convey flows to the Ford WWTP, the Certificate of Approval would require an amendment. Typically, this may cause the effluent limits to become more stringent. This could adversely affect the plant for future industrial uses, if a new owner was

to continue to use it. Due to the uncertainty with ownership of the former Ford Motor Company plant, this alternative was not carried forward for further review.

8.7 EVALUATION OF WASTEWATER SERVICING ALTERNATIVES

As part of Phase 2 of the Class EA process, defining the framework and criteria for evaluating the alternative solutions for each servicing component was undertaken and all reasonable and feasible solutions that could be implemented to address the problem and/or deficiency will be identified. The following sections describe the environmental components, evaluation criteria and methodology considered.

The wastewater servicing strategies identified above were compared using a qualitative evaluation process. This process determined the suitability and classified the significant advantages and disadvantages of each option with respect to the specific evaluation criteria. A decision matrix has been developed to document the potential impacts associated with each option and to assist in the selection of the preferred alternative. The decision matrix is presented below in Table 8.1 and Table 8.2.

8.7.1 Preferred Alternative (Ferndale)

The preferred alternative for wastewater servicing within Ferndale would be to continue to send existing wastewater flows to the St. Thomas WWTP. This option is contingent upon the capacity available within the St. George Street sewer system.

As determined through a desktop review of the existing sanitary sewer catchment area as well as proposed development, a sanitary design sheet was created. Through this exercise, it was observed that while some sections appeared to be able to accommodate some flow (before reaching 100%), through discussions with the Municipality of Central Elgin, the sewer is considered to be at capacity when it reaches 80%. Therefore, the St. George Street sewer is considered to be constrained, and in order to convey flows from new development in Ferndale to the St. Thomas WWTP, modifications to the existing sewer shed are required, or flows should be directed to a new wastewater treatment plant in Talbotville. By directing flows to Talbotville, it would allow the Township to control the rate of its development with no restrictions potentially imposed by servicing agreements. However, this option would depend on the completion of a Schedule C Class EA, the construction of a new wastewater treatment plant in Talbotville, as well as the construction of a pumping station and forcemain in Ferndale.

Therefore, in order to accommodate development in Ferndale, the Township may wish to undertake either Alternative F5 to redirect wastewater flows from the Woodland Road Pumping Station to the Parkins Street sewer or Alternative F6 to redirect sanitary flows from the Crescent Avenue Pumping Station via the CN right of way.

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Wastewater Collection and Treatment

8.7.2 Preferred Alternative (Talbotville)

The preferred alternative for wastewater servicing within Talbotville would be to construct a new municipally owned and operated wastewater treatment plant (Alternative T5).

Approximate plant capacity, site area requirements and various treatment technologies will be discussed further in this report. Additional detailed determination of treatment type, ultimate flows and treatment plant siting would be reviewed through a Schedule C Class EA.

Although early phases of a proposed wastewater treatment may be less than 500 m³/d, future expansion would certainly be in the range of 500+ m³/d and therefore the initial design and construction should account for such in terms of a buffer. As stated previously, the recommended separation distance is 150 m, however the minimum separation distance would be 100 m.

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Wastewater Collection and Treatment

Table 8.1: Ferndale Wastewater Collection and Treatment Alternatives

Alternatives	Potential Impacts on Natural Environment	Potential Impact Due to Proximity to Residential Development, Cultural / Heritage or Other Features	Potential Economic Impacts Based on Both Capital Costs and Operations and Maintenance Requirements		Land Requirements	Complexity of Operations Due to Location, Proximity to Existing Infrastructure	Ability to Meet Official Plan and Provincial Policy Statement Requirements	Other	Preferred Alternative
	Natural	Social	Economic		Land	Technical			<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
			Capital	O&M					
Alternative F1: Do Nothing	No impacts to natural environment anticipated.	No impacts to archaeological/cultural heritage resources anticipated.	N/A	N/A	N/A	N/A	No	Adverse impact on planned community growth.	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
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Alternative F2: Limit Growth	No impacts to natural environment anticipated.	No impacts to archaeological/cultural heritage resources anticipated.	N/A	N/A	N/A	N/A	No	Adverse impact on planned community growth.	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
	●	●	---	---	---	---	○	○	
Alternative F3: Partial Upgrades to St. George Street Sewer	Significant natural environment impacts due to length of sanitary sewer.	Would require archaeological assessment and cultural heritage review along route and potential site of new facilities. Significant construction impact to residents.	\$\$\$	\$	Space required within road right of way.	Must maintain flows within existing sewer during all stages of construction.	Yes	Would require coordination and approval from Municipality of Central Elgin.	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
	☺	☺	☺	☺	☺	☺	●	☺	
Alternative F4: Twin St. George Street Sewer	Significant natural environment impacts due to length of sanitary sewer.	Would require archaeological assessment and cultural heritage review along route and potential site of new facilities. Significant construction impact to residents.	\$\$\$	\$	Additional land/easement may be required. Cost of CN right of way not included.	Must maintain flows within existing sewer during all stages of construction.	Yes	Would require coordination and approval from Municipality of Central Elgin.	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
	☺	☺	☺	☺	☺	☺	●	☺	
Alternative F5: Redirect Flow from Woodland Road Pumping Station	Significant natural environment impacts due to length of forcemain.	Would require archaeological assessment and cultural heritage review.	\$	\$	Additional land/easement may be required.	Upgrades required at the Woodland Road Pumping Station. Construction of forcemain.	Yes	Would require coordination and approval from Municipality of Central Elgin.	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
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TALBOTVILLE & FERNDALE MASTER SERVICING PLAN






























Wastewater Collection and Treatment

Alternatives	Potential Impacts on Natural Environment	Potential Impact Due to Proximity to Residential Development, Cultural / Heritage or Other Features	Potential Economic Impacts Based on Both Capital Costs and Operations and Maintenance Requirements		Land Requirements	Complexity of Operations Due to Location, Proximity to Existing Infrastructure	Ability to Meet Official Plan and Provincial Policy Statement Requirements	Other	Preferred Alternative
	Natural	Social	Economic		Land	Technical			<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>
			Capital	O&M					
Alternative F6: Redirect Flow from Crescent Avenue Pumping Station	Significant natural environment impacts due to length of forcemain.	Would require archaeological assessment and cultural heritage review.	\$\$	\$	Additional land/easement may be required. Cost of CN right of way not included.	Upgrades required at the Crescent Avenue Pumping Station. Construction of forcemain.	Yes	Would require coordination and approval from Municipality of Central Elgin.	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
Alternative F7: New Pumping Station to Talbotville	Significant natural environment impacts due to length of sanitary forcemain.	Would require archaeological assessment and cultural heritage review along route and potential site of new facilities.	\$\$\$	\$\$	Additional land is required. Site required for pumping station. Cost of CN right of way not included.	Dependent upon construction of a new WWTP in Talbotville. WWTP must be sized to accommodate Ferndale sanitary flows. Would require a pumping station and forcemain.	Yes	Would require the completion of a Schedule C Class EA for the WWTP. Not limited by treatment capacity or conveyance.	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	
Alternative F8: Utilize Existing Ford Motor Company WWTP	Significant natural environment impacts due to length of sanitary forcemain.	Would require archaeological assessment and cultural heritage review along route and potential site of new facilities.	\$\$\$	\$\$	Additional land/easement may be required. Site is required for pumping station. Agreement between Property Owner and Township required.	WWTP is oversized. Modifications would be necessary to accommodate flows from Talbotville. Existing ECA would need to be revised. Pumping station and forcemain required.	Yes	Property is currently listed for sale, uncertainty of future is unknown.	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

TALBOTVILLE & FERNDALE MASTER SERVICING PLAN

Wastewater Collection and Treatment

Table 8.2: Talbotville Wastewater Collection and Treatment Alternatives

Alternatives	Potential Impacts on Natural Environment	Potential Impact Due to Proximity to Residential Development, Cultural / Heritage or Other Features	Potential Economic Impacts Based on Both Capital Costs and Operations and Maintenance Requirements		Land Requirements	Complexity of Operations Due to Location, Proximity to Existing Infrastructure	Ability to Meet Official Plan and Provincial Policy Statement Requirements	Other	Preferred Alternative 
	Natural	Social	Economic		Land	Technical			
			Capital	O&M					
Alternative T1: Do Nothing	No impacts to natural environment anticipated.	No impacts to archaeological/cultural heritage resources anticipated.	N/A	N/A	N/A	N/A	No	Adverse impact on planned community growth.	
			---	---	---	---			
Alternative T2: Limit Growth	No impacts to natural environment anticipated.	No impacts to archaeological/cultural heritage resources anticipated.	N/A	N/A	N/A	N/A	No	Adverse impact on planned community growth.	
			---	---	---	---			
Alternative T3: St. Thomas WWTP via St. George Street Sewer	Significant natural environment impacts due to length of sanitary sewer.	Would require archaeological assessment and cultural heritage review along route and potential site of new facilities. Significant construction impact to residents.	\$\$\$	\$	Additional land/easement may be required. Site is required for pumping station.	Likely requirements for a pumping station and forcemain. Constrained by hydraulic capacity of the St. George Street sewer. Does not account for potential future industrial flows.	Yes	Does not meet the preferred alternative for Ferndale servicing.	
									
Alternative T4: St. Thomas WWTP via Alternate/New Trunk Sewer	Significant natural environment impacts due to length of sanitary sewer.	Would require archaeological assessment and cultural heritage review along route and potential site of new facilities. Significant construction impact to residents.	\$\$\$	\$	Additional land/easement may be required. Site is required for pumping station.	Likely requirements for a pumping station and forcemain. Constrained by hydraulic capacity of the St. George Street sewer. Does not account for potential future industrial flows.	Yes	Does not meet the preferred alternative for Ferndale servicing.	
									

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Wastewater Collection and Treatment

Alternatives	Potential Impacts on Natural Environment	Potential Impact Due to Proximity to Residential Development, Cultural / Heritage or Other Features	Potential Economic Impacts Based on Both Capital Costs and Operations and Maintenance Requirements		Land Requirements	Complexity of Operations Due to Location, Proximity to Existing Infrastructure	Ability to Meet Official Plan and Provincial Policy Statement Requirements	Other	Preferred Alternative <div style="text-align: center;"> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> </div>
	Natural	Social	Economic		Land	Technical			
			Capital	O&M					
Alternative T5: New Wastewater Treatment Plant in Talbotville	Significant natural environment impacts due to new outfall.	Would require archaeological assessment and cultural heritage review.	\$\$\$	\$\$	Additional land is required. Site required for WWTP. Sewers to be installed within township right of way.	Construction of new mechanical treatment plant. New discharge to be determined through ACS.	Yes	Would require the completion of a Schedule C Class EA. Would accommodate growth within settlement areas.	
	☐	☐	☐	☐	☐	●	●	●	
Alternative T6: Utilize Existing Ford Motor Company WWTP	Significant natural environment impacts due to length of sanitary sewer.	Would require archaeological assessment and cultural heritage review along route and potential site of new facilities.	\$\$\$	\$\$	Additional land/easement may be required. Site is required for pumping station. Agreement between Property Owner and Township required.	WWTP is oversized. Modifications would be necessary to accommodate flows from Talbotville. Existing ECA would need to be revised. Pumping station and forcemain required.	Yes	Property is currently listed for sale, uncertainty of future is unknown.	
	☐	☐	☐	☐	☐	☐	●	○	☐

TALBOTVILLE & FERNDALE MASTER SERVICING PLAN

Wastewater Collection and Treatment

8.7.3 Talbotville Sewershed

Topography within Talbotville tends to fall towards Dodd Creek to the south; however, Lindsay Drain creates fall to the northwest as well. A relative high point exists within the Talbotville Meadows subdivision. Where possible, conveyance of wastewater flows should be achieved by gravity trunk sewers rather than through pump stations and forcemains.

The settlement area of Talbotville was divided into thirteen segments or catchments, based upon topography and existing and future development parcels. A sewer design sheet was created based on these areas to determine wastewater flow projections, sizing and routing of a future sanitary sewer network. Figure 8.2 illustrates the proposed sanitary trunk routing within Talbotville.

It is intended that a gravity sanitary trunk sewer will be constructed along Talbotville-Gore Road, terminating at the WWTP at the southern end of the settlement area. This will prevent disruption along Sunset Drive, a busier road. It will also allow for the connection of sanitary sewers to both the east and west sides of Talbotville-Gore Road. A future trunk sewer could be installed north of the CN tracks along Sunset Road, if warranted by development.

According to the design criteria for Southwold, a per capita flow of 365 L/cap/d was used. The population for each catchment was determined based on an aerial lot count as well as through the review of proposed subdivision layouts for future development.

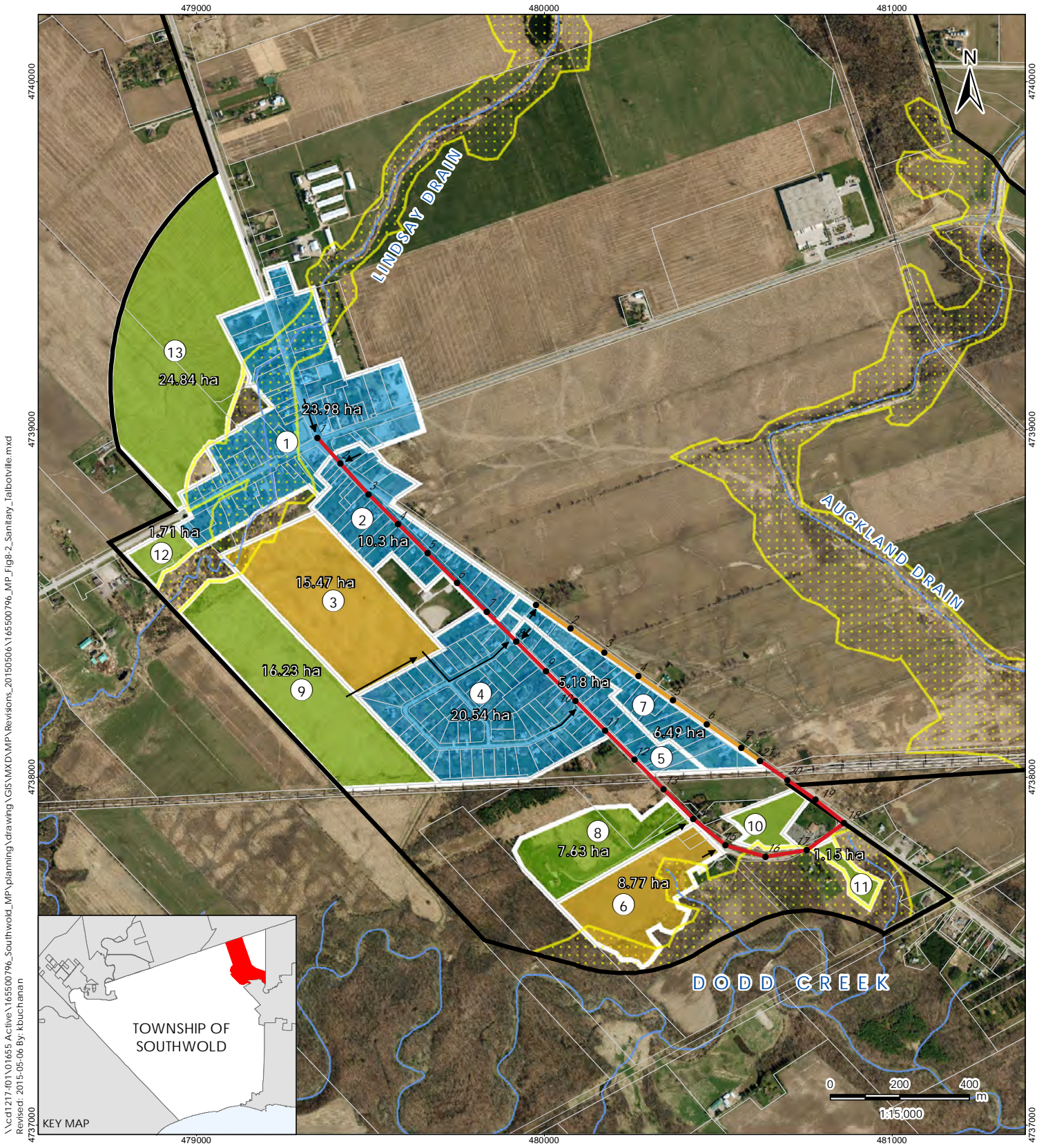
8.7.4 Potential Wastewater Treatment Plant Locations

It is proposed that a new municipal wastewater treatment plant is to be located in the southern end of Talbotville. The plant would discharge to Dodd Creek, or one of its tributaries (pending the completion of the ACS). By locating the wastewater treatment plant in the south end of Talbotville, it results in the smallest distance between Ferndale and the WWTP, if it was determined that flows (existing, future, or both) should be directed to the Talbotville WWTP. Figure 8.3 illustrates the approximate location of a new wastewater treatment plant in Talbotville.

Regulated limits and floodplains restrict potential WWTP locations. Minimum distance separation between residential and other sensitive land uses must also be considered when siting a plant.

As municipally owned land is not available, the Township would likely have to purchase property for a new wastewater treatment plant. The cost for land acquisition was not considered in the development of cost estimates.

In accordance with KCCA policies, the construction of a wastewater plant shall not be located within the regulatory flood hazard limit. Construction could occur subject to prior permission within the regulation limit. In order to obtain a permit from KCCA, demonstration must be provided, by qualified professionals, confirming that the control of flooding, erosion, dynamic beach, pollution, or the conservation of land will not be affected by the proposed development



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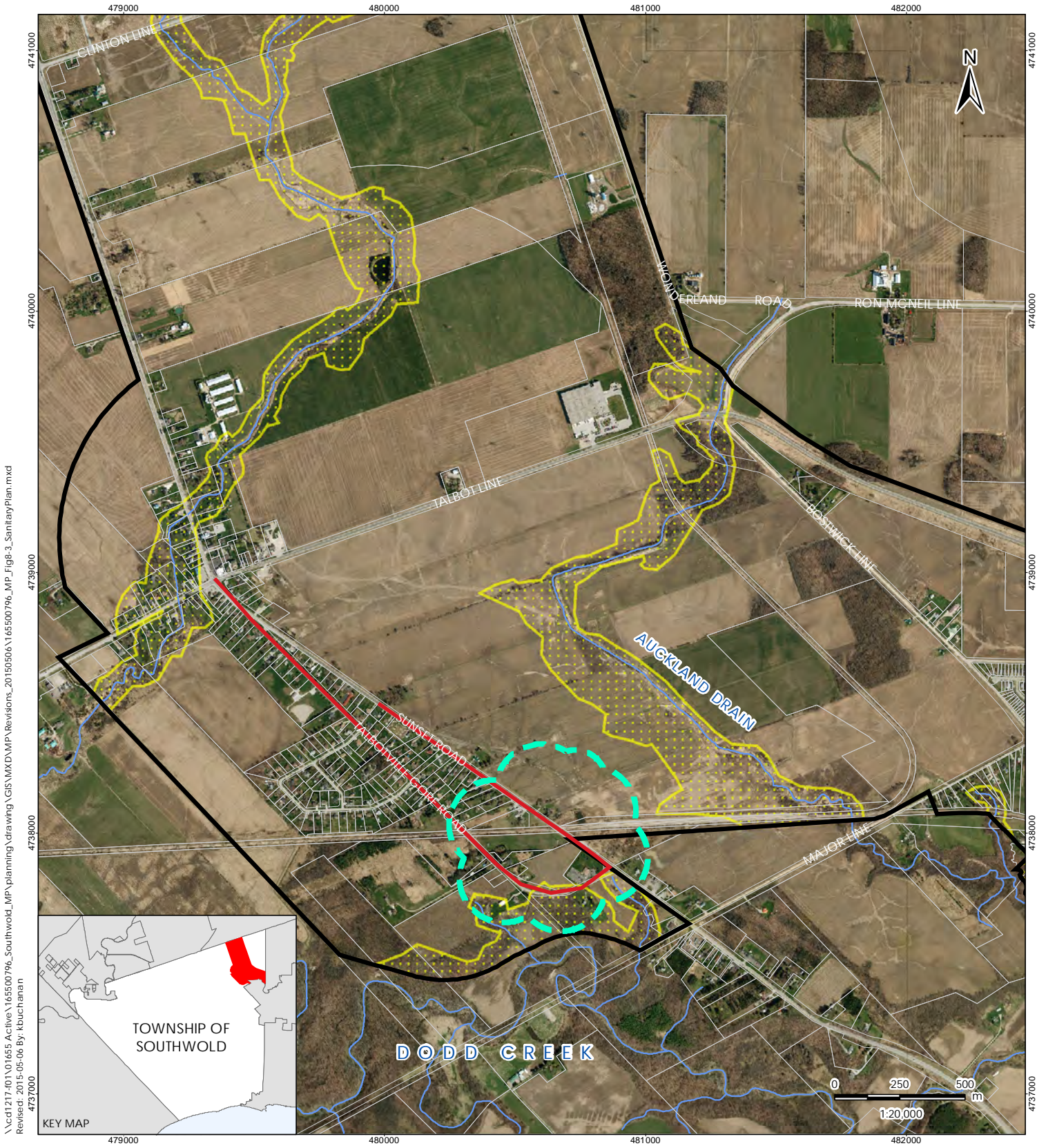
- Legend**
- Settlement Area/Study Area
 - Parcel
 - Approximate Regulated Area
 - Flow Arrow
 - Proposed Sanitary Manhole
 - Proposed Sanitary Sewer
Sunset Rd. Trunk
 - Talbotville Gore Rd. Trunk
 - Existing Development
 - Proposed Development
 - Future Development

Client/Project
 Township of Southwold
 Talbotville & Ferndale
 Master Servicing Plan

Figure No.
 8.2

Title
 Preliminary Talbotville
 Sanitary Catchments

- Notes**
- Coordinate System: NAD 1983 UTM Zone 17N
 - Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
 - 2010 orthoimagery © First Base Solutions, 2015.



May 2015
165500796



Legend

- Settlement Area/Study Area
- Parcel
- Approximate Regulated Area
- Proposed WWTP Location
- Proposed Gravity Sewer

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
3. 2010 orthoimagery © First Base Solutions, 2015.

Client/Project

Township of Southwold
Talbotville & Ferndale
Master Servicing Plan

Figure No.

8.3

Title

Preliminary Sanitary
Servicing Plan

TALBOTVILLE & FERNDALE MASTER SERVICING PLAN

Wastewater Collection and Treatment

(O. Reg. 181/06). The entire facility (treatment plant, tankage, access roads, buildings, etc.) must be situated outside of any regulatory flooding hazard.

In accordance with MOECC policies (Southwestern Region), a wastewater treatment plant must be municipally owned. There cannot be a period where there is private ownership, administration or operation of a facility servicing separately-titled properties. In any event, for a municipally owned facility, the MOECC would expect that the municipality be the proponent/co-proponent and would be heavily involved at every stage of the Schedule C Class EA process. The municipality's position on its ownership and control of the facility should be unequivocal. In essence, it would be a municipal project; the municipality would have the facility designed/built to the standards set by its engineering standards, consultants, etc.

Septage treatment/receiving should also be considered in the design of a new municipal treatment plant. The plant should have the capacity to treat all wastewater generated within the servicing boundary of a settlement area. Multiple plants and outfalls in close proximity to one another are strongly discouraged.

Further determination of the preferred plant location would be accomplished through the completion of a Schedule C Class EA.

8.7.5 Sanitary Collection System Construction Phasing

As a sanitary collection system network does not currently exist within Talbotville, a phased approach would be necessary to implement sanitary sewers. The first phase of construction would involve the installation of sanitary sewers in the vicinity of the southern extent of Talbotville-Gore Road and Sunset Road (south of the CN tracks). The second phase of construction would involve the installation of sanitary sewers along Talbotville-Gore to the northern extent of Talbotville-Gore Road and Shady Lane Crescent (north of the CN tracks). The third phase would involve the remaining sanitary sewers along Talbotville-Gore Road north of the second phase. The phasing would allow construction to proceed logically, starting at the WWTP and heading north. Existing development could be accommodated following the second phase of construction. Proposed development interests would be the primary driver for the implementation and timing of the sanitary trunk construction.

8.7.6 Preliminary Wastewater Treatment Plant Flow Projections

As an existing wastewater treatment plant does not exist within Talbotville, a phased approach should be taken for the construction of a new wastewater treatment plant. This is due to the minimal flows that a wastewater plant would experience initially. Preliminary flows have been projected for each phase, according to existing and future development. Flows from Ferndale have also been accounted for, if it is determined that the Talbotville WWTP will eventually handle those as well. It should be noted that although the phases are listed numerically, allocation of treatment capacity would be given on a "first come first served" basis, as determined by Township staff and Council.

TALBOTVILLE & FERNDALE MASTER SERVICING PLAN

Wastewater Collection and Treatment

Table 8.3: Preliminary Wastewater Treatment Plant Flow Projections

Phase	Flow	Notes
1A	75 m ³ /d	Could accommodate flows from new development within Talbotville
1B	225 m ³ /d	Could accommodate flows from new development within Talbotville
2	550 m ³ /d	Could accommodate flows from new development within Talbotville
3A	1,250 m ³ /d	Could accommodate flows from new development and existing residences within Talbotville
3B	1,750 m ³ /d	Could accommodate flows from Talbotville and Ferndale

Based on preliminary WWTP flow projections, it is estimated that minimum site dimensions of 125 m x 125 m would be required to allow for the initial plant construction, and to also accommodate future plant expansions.

8.7.7 Wastewater Treatment Technology Alternatives

While a Schedule C Class EA will provide the basis for the selection of the preferred treatment technology, a brief overview of technologies that may be evaluated, but are not limited to this list:

- Extended Aeration (EA);
- Sequencing Batch Reactor (SBR); and
- Membrane Bioreactor (MBR).

Treatment technology and plant sizing should consider both current and future needs of the settlement area. This is to ensure that the initial capital investment in a treatment plant is not a “throw away” cost if the next expansion phase deems components of it to be either redundant or undersized. Although package plants are typically designed to be modular in nature, cost savings do not exist to accurately size (or oversize) treatment works initially, rather than installing multiple smaller units in parallel. Operating costs also increase with multiple smaller units. The diversion of flows from the inlet sewer to each module could also create operational issues.

It is imperative that treatment technology be properly evaluated. Items to consider during such evaluation include, but are not limited to:

- Ability for logical and cost effective plant expansion;

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- Ability to meet effluent limits and objectives;
- Operational and maintenance costs;
- Life cycle costs; and
- Proven technology, proof of successful installations within Canada and Southwestern Ontario (similar climate) within the last 10 years.

Each technology listed could be constructed in phases, and have the ability to handle low flows (50 to 100 m³/d). While it is anticipated that a plant would be initially sized for 550 m³/d, it would have the capability to handle smaller flows.

8.7.7.1 Extended Aeration

Extended aeration treatment would require the construction of headworks, aeration tanks, clarifiers, filters and UV. The headworks would consist of screening grit removal. Primary clarifiers would then remove contaminants through sedimentation as well as collect floatables on the surface. Aeration tanks would be fitted with fine bubble aerators to provide air needed by the biomass to perform treatment reactions. The function of the secondary clarifiers is to separate the biomass from the treated effluent and recycle the biomass to the aeration tanks for re-use. Filters and the UV system would provide disinfection and polishing of the final effluent.

Advantages to extended aeration treatment are:

- Proven technology;
- Common technology used by neighbouring operating authorities; and
- Lower life-cycle cost.

Disadvantages to extended aeration treatment are:

- Larger footprint for treatment system (when compared to MBR); and
- May need expensive tertiary filtration equipment to achieve high quality effluent.

8.7.7.2 Sequencing Batch Reactor

The Sequencing Batch Reactor treatment concept is similar to extended aeration except that treatment is achieved in one vessel (i.e., batch tank) rather than two vessels (i.e., aeration tank and clarifier). Treatment is achieved in one vessel by varying the operating conditions over time to provide the necessary treatment and solids/liquid separation. Typical sequenced operation includes a period of ON/OFF aeration similar to a conventional aeration tank, followed by periods of settling where the air is turned OFF and decanting when a mechanism is lowered to

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remove the supernatant. The cycles are repeated and alternated between vessels through the use of proprietary PLC control systems. Because the system relies on robust PLC control, SBR systems are usually purchased as a package from vendors such as ABJ-Sanitaire, Seimens, Fluidyne, etc. Because SBR and EA systems are usually similar in capital costs, the eventual selection is usually based on site-specific factors such as owner preference, effluent limits and space constraints.

Advantages and disadvantages are similar to those for extended aeration treatment.

8.7.7.3 Membrane Bioreactor

Membrane bioreactor technology is similar to the EA process except that solids/liquid separation is achieved through the use of immersed ultra-filtration membranes that operate under vacuum pressure. MBR represents the current state of the art for wastewater treatment and is finding niche applications where space is limited, where stringent effluent limits must be met, and/or where retrofits of existing facilities is proving cost competitive with more traditional expansions.

As MBRs can operate at much higher mixed liquor concentrations compared to extended aeration, this leads to better degradation in a given time span or to smaller required reactor volumes. The MBR process combines the unit operations of aeration, secondary clarification and tertiary filtration into a single process.

Advantages of MBR treatment technology include:

- Achieve very high quality effluent, low in particulate;
- Smaller footprint (when compared to extended aeration); and
- Does not require a tertiary filtration system.

Disadvantages of MBR treatment technology include:

- Higher life-cycle cost due to power costs and costs associated with the replacement of membrane modules.

9.0 STORMWATER MANAGEMENT

The purpose of stormwater management (SWM) is to maintain the hydraulic and hydrologic function of a watershed when changes to land use occur. In simple terms, this requires ensuring *how* and *how much* water flows through a watershed remains consistent over time such that impacts to downstream natural environments are minimal.

As the surfaces of the Talbotville and Ferndale study area are hardened through development, the drainage areas lose absorption capacity. Precipitation contacts these impervious surfaces and runs off overland in quantities and at rates which can be far greater than experienced under pre-development conditions. Increases in the runoff quantity and rate can cause significant erosion and negatively impact downstream flora and fauna. Additionally, water quality can become impaired as runoff entrains pollutants consistent with the new land use. The runoff quality profile of a predominantly agricultural catchment is usually significantly different than a profile from an urban catchment.

SWM features such as constructed wetlands can be implemented in land development projects to polish the quality of runoff, to slow it down and release it at rates manageable for the surrounding environment. As referenced in *Small Settlement Servicing Study*, the goals of the Talbotville and Ferndale study area SWM strategy include:

- Maintaining or improving the existing water balance and infiltration volume;
- Treating stormwater in a manner consistent with all regulations to achieve an appropriate runoff quality;
- Releasing stormwater into downstream watercourses at rates which match existing conditions and do not increase erosion potential; and
- Maintaining in-stream thermal regimes.

Overall, the SWM strategy aims to ensure post-development runoff conditions mimic existing conditions wherever possible.

9.1 EXISTING CONDITIONS

The existing condition of the study area is well-documented in Section 5 of this report and the *Kettle Creek Source Protection Area Assessment Report*. The following discussion is provided to establish additional context for SWM purposes.

9.1.1 Soils

As shown in Figure 5.4, the soils in Talbotville and Ferndale are dominated by clays with some silt till - a soil mix which is moderately impermeable and prone to erosion. Since the soils do not

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easily permit infiltration, the hydraulic system of the study area is mainly surface driven, which is to say, much of the incident precipitation is converted to surface runoff.

9.1.2 Physiography

As shown in Figure 5.5 the Talbotville and Ferndale areas are generally flat with topography tilted south toward lower Dodd Creek. The land use as discretized using SOLRIS classifications is illustrated in Table 9.1 below and in Figure 9.1. Based on aerial photo interpretation much of the “unclassified” area is assessed to be in agricultural use and assumed heavily farmed. The overall imperviousness of the study area is 10%.

Table 9.1: Study Area Existing Land Use

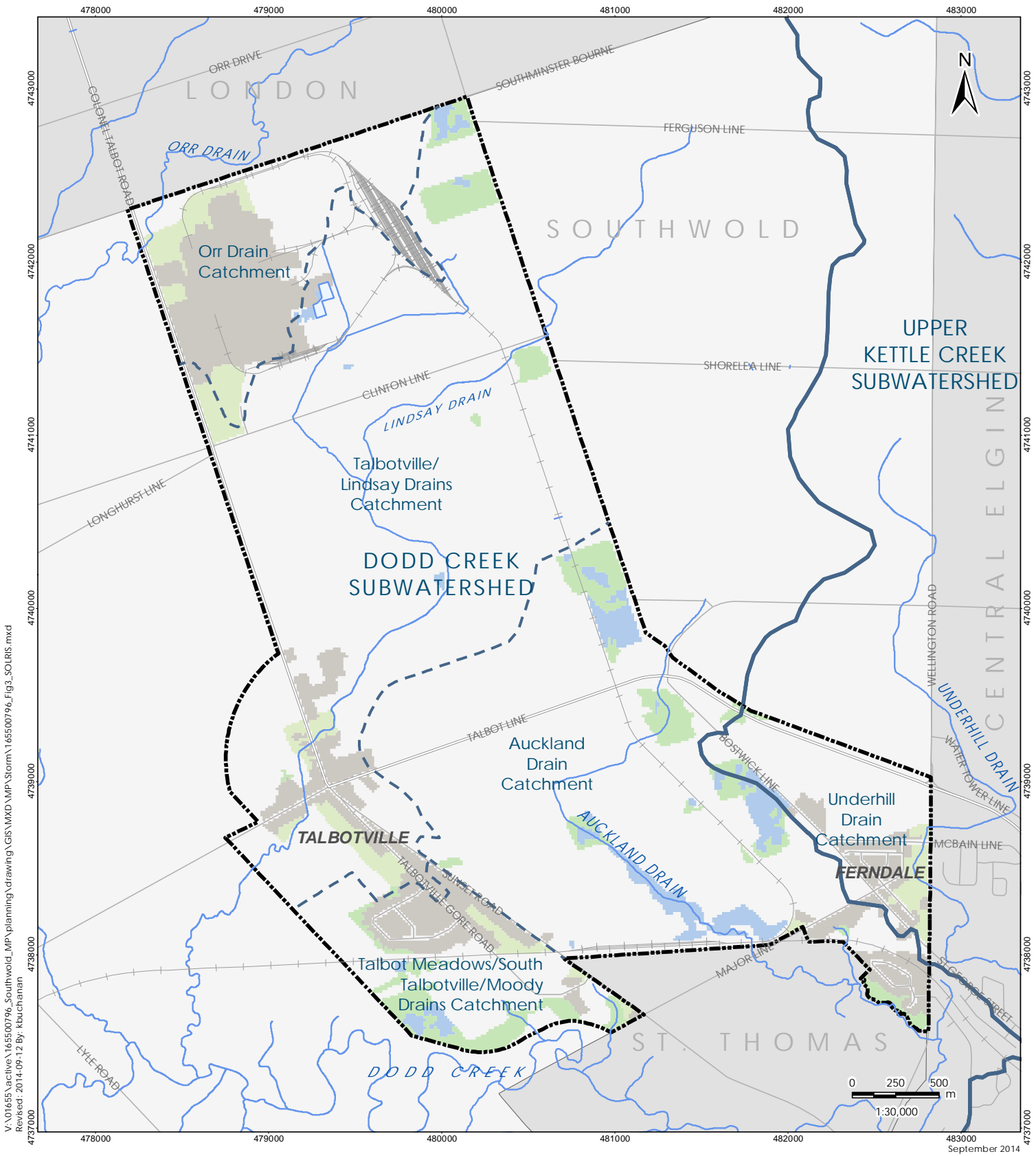
Land Use Category	Area (ha)
Impervious	136
Park/Open Space	43
Unclassified	1,036
Wetland/Open Water	36
Wooded	64
Total	1,315

9.1.3 Hydrologic Setting

As illustrated in Figure 9.2, the 1,315 ha study area drains to two major watercourses: 94% (1,230 ha) drains westerly to Dodd Creek while the remaining 6% (84 ha) in the southeast drains easterly to upper Kettle Creek. Of the 1,230 ha draining to Dodd Creek, 11% (138 ha) drains into the upper reach, above Paynes Mills and via the Orr Drain, while the remainder drains into lower Dodd Creek between Paynes Mills and the Dodd Creek confluence with Kettle Creek. Therefore, the majority of the study area (83%, 1,078 ha) can be characterized as draining into lower Dodd Creek.

Table 9.2: Study Area Catchments

Catchment	Area (ha)
Upper Dodd Creek (via Orr Drain)	138
Lower Dodd Creek	1,078
Upper Kettle Creek	84
Total	1,315



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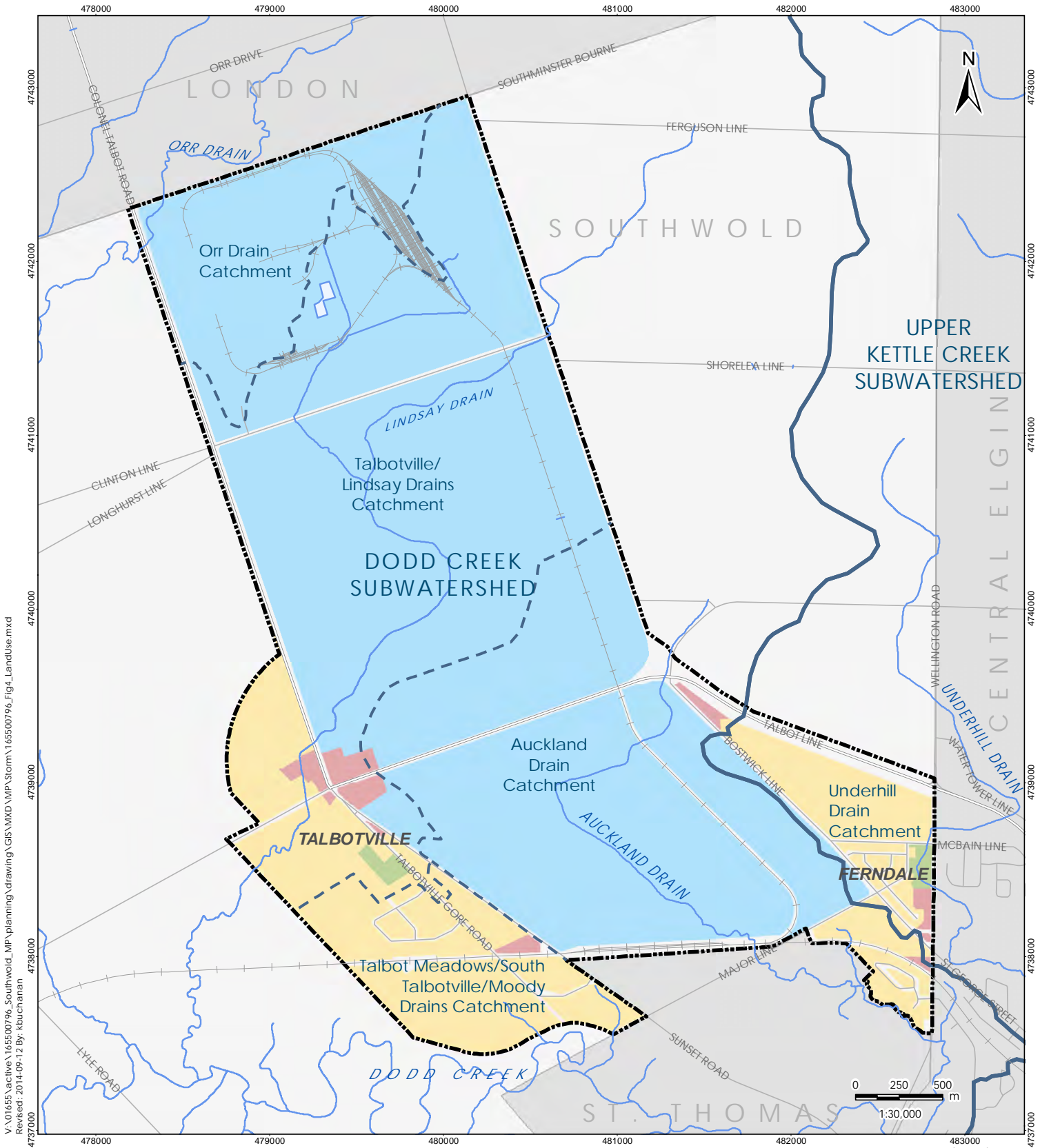
- Legend**
- Study Area
 - Subwatershed
 - Catchment Boundary
- Land Cover Classification (SOLRIS - MNR)**
- Wooded
 - Park/Open Space
 - Impervious
 - Wetland/Open Water
 - Unclassified

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- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2014.

Figure No.
9.1

Title
**Existing Conditions
 Drainage Plan**



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- Legend
- Study Area
 - Subwatershed
 - Catchment Boundary
- Official Plan Proposed Land Use
- Residential
 - Industrial
 - General Commercial
 - Open Space

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Figure No.
9.2

Title
**Proposed Conditions
 Drainage Plan**

9.1.4 Watercourse Quality

The distinction between upper and lower Dodd Creek noted above is important because the quality of the water course degrades consistently from top to bottom. In fact, generally speaking, all three receiving reaches are low quality, warm water watercourses under active erosion and sedimentation.

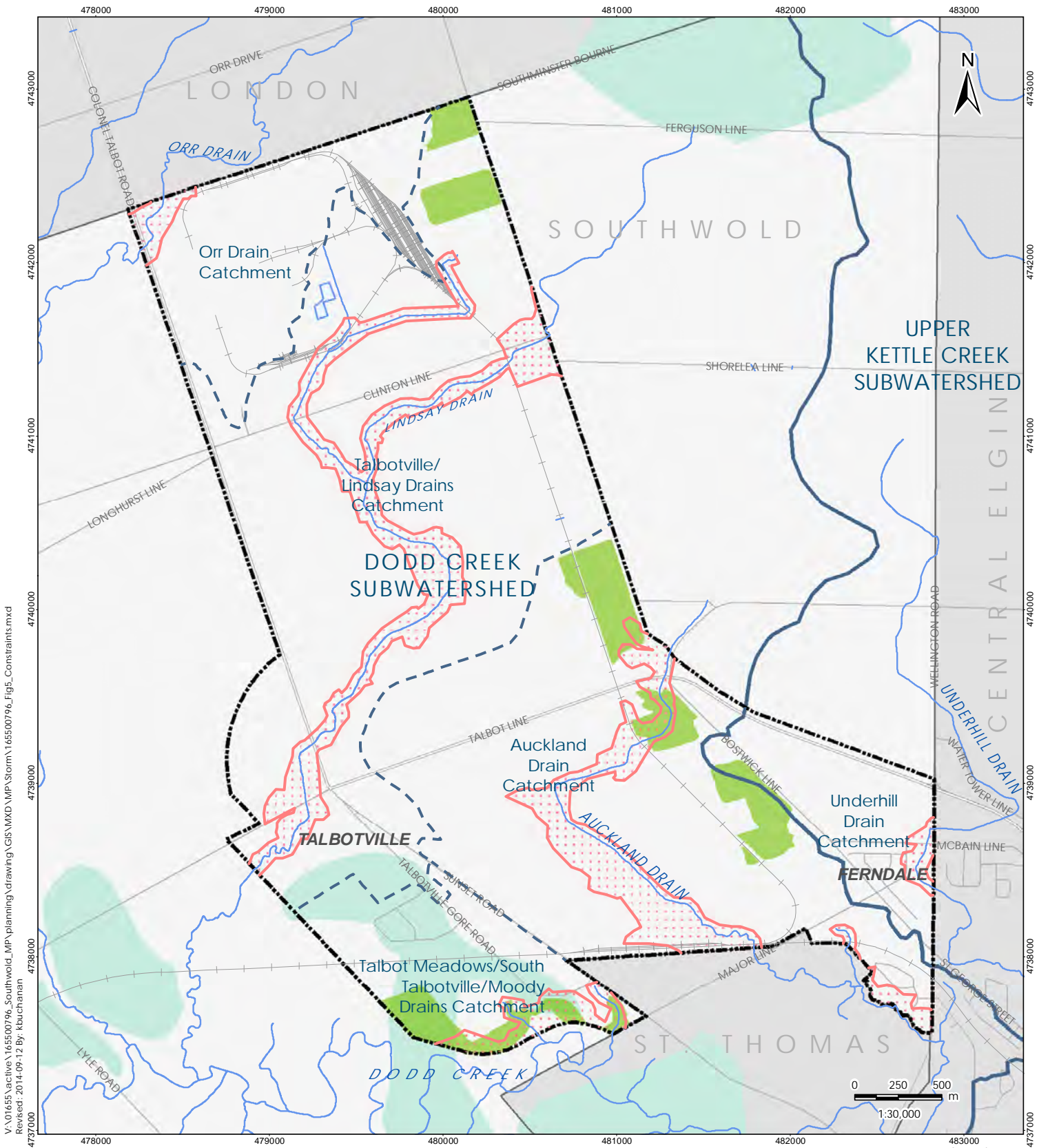
The upstream catchments for both Dodd and Kettle Creeks have little vegetative cover and few wetlands, contributing to the thermally-stressed and low-baseflow nature of these reaches of interest. Water quality is generally poor – warm, nutrient- and bacteria-rich – a profile consistent with other agriculturally-influenced watersheds. The water quality is particularly impacted by low baseflow (a result of being a surface-driven system hydraulic system with little infiltration) and high summer temperatures which drive down dissolved oxygen concentrations and in turn ecological health and diversity. In order of descending water quality, upper Kettle Creek is best, upper Dodd Creek is next best and lower Dodd Creek is the third best of the three.

9.1.5 SWM Siting Constraints

Because of the orientation and distribution of existing natural and man-made features throughout the study area, several factors constrain the siting of stormwater management facilities. For planning purposes, it is recommended SWM features be entirely excluded from the constraints listed below:

- KCCA regulated area;
- Woodlots > 4 ha;
- Existing development limits; and
- Significant Groundwater Recharge Areas (SGRA).

These constraints are also illustrated on Figure 9.3.



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- Legend**
- Study Area
 - Subwatershed
 - Catchment Boundary
 - Woodland > 4.0 hecatres
 - Approximate Significant Groundwater Recharge Area

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Figure No.
9.3

Title
 Location Constraints

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9.1.6 Existing SWM Infrastructure

The existing stormwater management infrastructure in the study area includes:

- Roadside ditches;
- Driveway culverts;
- 8 municipal drains (open);
- 42 municipal drains (closed);
- 1 urban curb-and-gutter storm sewer system (Ferndale); and
- 1 SWM facility (Ferndale).

Figure 9.4 illustrates the locations of existing SWM infrastructure throughout the study area. A complete listing of all municipal drains on the property can be found in Table 9.3.

Table 9.3: Talbotville and Ferndale Municipal Drain Listing

Receiver	Main	Secondary	Tertiary/Lead	
Upper Dodd Creek	Orr Drain	Van Lanen Drain	Van Lanen A	
			Van Lanen B	
Lower Dodd Creek	Lindsay Drain		Lindsay A	
			Lindsay B	
			Lindsay C	
			Lindsay D	
			Lindsay E	
			Lindsay F	
		Henderson Drain		
	Lindsay Drain Extension		Travers Drain	Travers A
			James Fife Drain	James Fife Lead
				James Fife A
			James Fife Award	
		JE Smith Drain		
	Talbotville Drain	Wallis 1992 Drain	Wallis A	
			Wallis B	
Wallis C				
Wallis D				
Wallis E				
Wallis F				
Talbotville Meadows Drainage Works 1992				
South Talbotville Drain		South Talbotville A		
		South Talbotville B		

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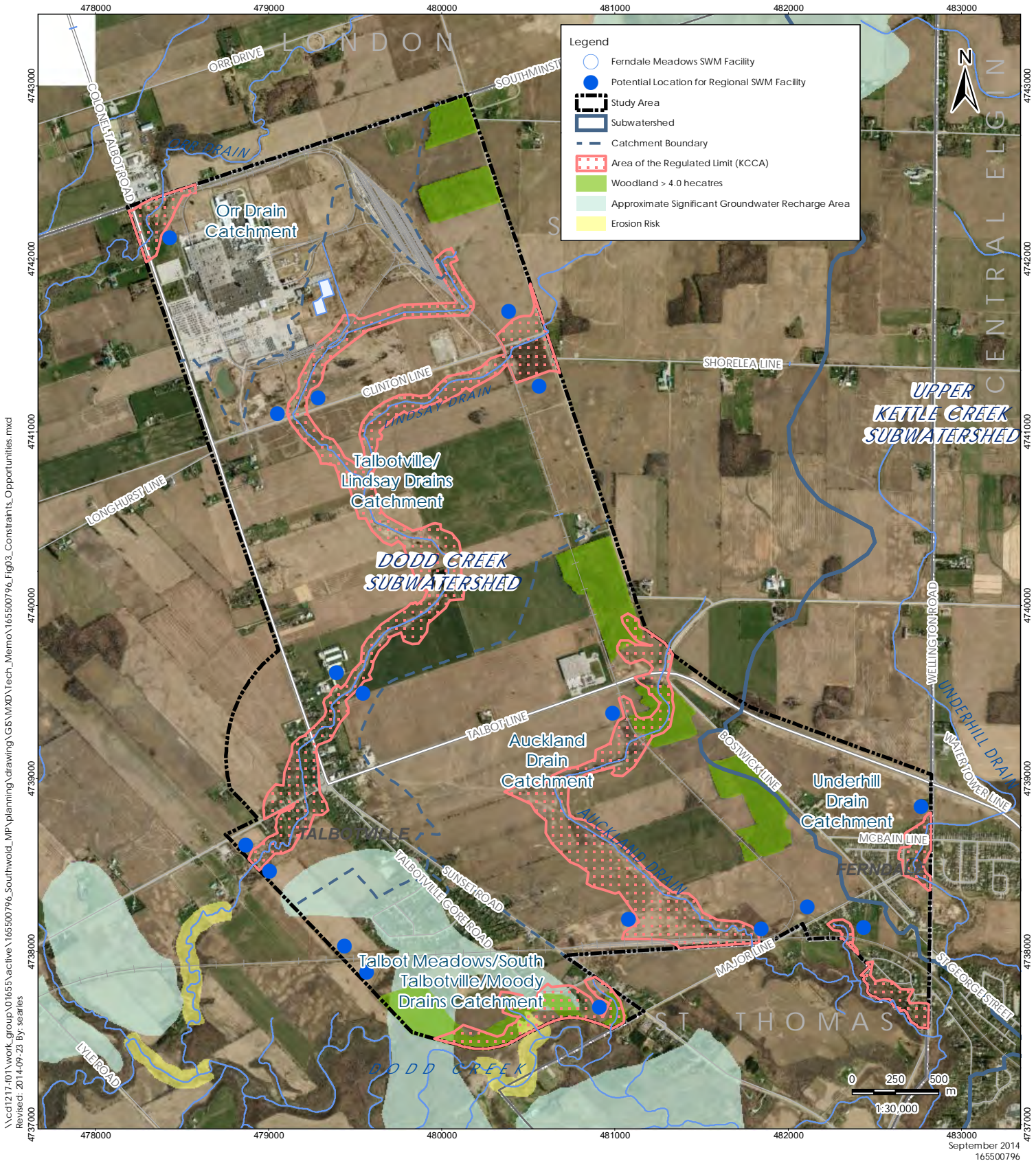
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Receiver	Main	Secondary	Tertiary/Lead
			South Talbotville C
			South Talbotville D
	DL Gilbert Drain	DL Gilbert Auckland Drain	
	Moody Drain		
	Helkaa Drain		
	Auckland Main 1988		Auckland D
			Auckland E
			Auckland F
			Auckland G
			Auckland H
Kettle Creek	Underhill Drain	James McBain Drain	James McBain A
			James McBain B
			James McBain C
			James McBain D
			James McBain E
		Andrews Drain	

The only formal SWM facility is located in the Ferndale Meadows subdivision. Searches of Township and Stantec records were unable to yield a formal design report for the facility, however some documentation was located regarding the rebuilding of the facility outlet and sediment accumulation cleanout, a project tendered and completed in 2008. The work included:

- Supply and installation of a replacement SWM outlet structure including approximately 10 m of 600-mm diameter CSP outlet pipe, 1.5-m diameter perforated outlet riser and rip-rap backfill;
- Removal and disposal of SWM pond sediment; and
- Related works and restoration.

Limited documentation regarding this facility and the above noted work, including a 'SWM Pond Maintenance & Outlet Modification' drawing, has been included in Appendix 9.1 for reference.



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Figure No.
9.4

Title
 Constraints and Opportunities for Stormwater Management

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9.2 DESIGN CRITERIA

Stormwater management design criteria for this study area have been established as a composite of the following guiding documents:

- *Design and Construction Standards*, Township of Southwold (2012); and
- *Stormwater Management Planning and Design Manual*, Ministry of Environment (2003).

Numerous other reports and documents have informed the preparation of this SWM analysis and can be found listed in Section 12.

No subwatershed studies have been specifically completed for the study area; however, as part of *Small Settlement Servicing Study*, SWM objectives were outlined. These include:

- Maintaining or reducing flood risk and impact on downstream or adjacent properties;
- Ensuring runoff water quality does not deteriorate and protection levels as outlined in the MOE March 2003 guidelines are met;
- Completing a hydrogeological assessment which considers water balance, appropriateness of groundwater recharge, interaction of SWM facilities with groundwater and potential impact of underground servicing on groundwater flow;
- Preventing an increase in erosion forces in receiving watercourses;
- Ensuring discharge of runoff is directed to an adequate/legal outlet;
- Ecological review to identify natural heritage features and significant habitat of endangered and threatened species. Prepare an Environmental Impact Study, if development is proposed adjacent to these features;
- Considering thermal impacts of development on receivers; and
- Ensuring that the strategy is appropriate for the configuration, scale and location of the development.

The *Small Settlement Servicing Study* recommends a wide range of SWM controls, including end-of-pipe, conveyance, lot-level and low-impact be considered, preferably in sequence. These recommendations are consistent with the *SWMPD Manual*.

As discussed in Section 5, both Dodd Creek and Kettle Creek have been identified as warm-water habitat; therefore, water quality treatment for all developments shall be provided to Normal Level in accordance with the *SWMPD Manual*. In areas of existing development where redevelopment is proposed, provisions for water quality measures will be evaluated on a site-

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specific basis. In absence of specific subwatershed criteria, future development will be required to control post development flow rates to pre-development rates for all storms up to and including the 100-year storm to mitigate impacts on the receiving watercourse.

9.2.1 Precipitation

Environment Canada operates a weather station at the St. Thomas WWTP, from which 30-year climate data is available for use in hydrologic modeling. The plant is located approximately 4 km south of Ferndale, 5 km from Talbotville and 14 km from the former Ford Motor Company industrial site, making the climate station in reasonable proximity to use in modeling for the study area. The short-duration rainfall intensity-duration-frequency data from Environment Canada is included in Appendix 9.2 for reference.

In each development case, the proponent or proponent's consultant should consider the application of multiple storms with varying storm durations and distribution type in order to recommend the most appropriate for use. In many urban development cases, the 3-hour Chicago storm is used and its application for this study area would be considered reasonable. The 48-hour Regulatory Storm event (Hurricane Hazel) should also be modeled.

9.3 PROPOSED DEVELOPMENT

As shown in Figure 9.2, the proposed, long term land development plan includes expanding the reach of residential and commercial development in each of the town settlement areas and converting much of the currently farmed land to large-scale industrial use. This plan therefore mandates a substantial change in the impervious coverage of the study area. Typically, the impervious coverage in low-density residential developments can range from 30-60%, while those in industrial and light commercial developments can range from 60 to 95%.

Because the native soils do not allow for substantial infiltration, the proposed changes are not expected to have an appreciable impact on the study area's infiltration regime, but a significant increase in peak runoff rates and quantities, and a decrease in the runoff quality as it picks up particulate matter, oils and greases typically associated with urban watersheds is expected.

9.4 STORMWATER MANAGEMENT PRACTICES

Effective stormwater management takes place at every stage of community development. Decisions made during the planning process through scheduling street sweeping all have a significant impact on how runoff from our new urban centres impacts downstream environments. Table 9.4 outlines principles and practices which can be employed to help achieve the SWM goal of hydrologic/hydraulic condition maintenance under developed conditions.

Table 9.4: SWM Practices and Principles

Planning & Design (Prevention)	Engineering (Treatment/Control)	Community Management (Improvement)
Choose approaches which minimize impervious coverage, reduce runoff rates and volumes	Select engineered solutions to sustainably treat and control runoff once it is created and/or polluted	Promote community practices to reduce at-source runoff generation and contamination once the development is complete
<ul style="list-style-type: none"> • Low-impact design • Reduced road widths • Reduced building setbacks to shorten driveways • Imposition of maximum impervious cover limits for development areas/lots • Promotion of high density development • Alternative standards for turn-arounds • Landscape planning to maximize/optimize planting • Permeable pavers 	<ul style="list-style-type: none"> • Reducing lot grading • Roof leader redirection • Rainwater retention on flat roofs • Parking lot surface storage • Attenuation in super-pipes • Soak-away pits • Grassed swales • Pervious infrastructure • Constructed wetlands • Wet Ponds • Vegetated filter strips • Organic or sand filters • Oil/grit separators 	<ul style="list-style-type: none"> • Lawn aeration • Rain barrels • Reduce or eliminate pesticide and fertilizer use • Improved car washing practices • Improved litter and animal waste collection • Downspout disconnection • Road maintenance and street-sweeping practices • Other municipal operation practices

9.4.1 Planning & Design (Prevention)

To the extent feasible, preventing unnecessary hardening during the land use planning phase is an optimal approach to stormwater management because prevention opportunities 1) are typically the least costly option, 2) are often immune to the temporary or catastrophic failure other practices can occasionally experience, and 3) can offer long-term residual benefits.

Prevention techniques focus on reducing the amount of runoff generated from a site and the amount of contamination to which the runoff might be exposed. For example, reducing road

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widths decreases the impervious coverage and, in turn, runoff quantities, but it also reduces the amount of winter salting required, which reduces the salt load on downstream receiving water bodies.

It should be noted, many of the SWM practices in this category may contradict well-established municipal-level design standards, but debate over the rationale of their establishment may be warranted if impacts to stormwater management continue to be appreciable. Preventative options undertaken in community planning and design attempt to limit the unnecessary expansion of impervious coverage in a new development and can significantly reduce peak runoff rates, runoff velocities and the urban “heat island” effect, as well as improve water quality.

9.4.2 Engineered Treatment/Control

Having minimized to the extent feasible the stormwater impacts associated with a change in land use, a treatment-based, traditional approach to stormwater management can be applied for any impacts which have unintentionally been created. According to the *SWMPD Manual*, a combination of lot-level, conveyance and end-of-pipe controls is optimal and required to meet the multiple criteria for development. Lot-level practices should be implemented as a first priority, followed by conveyance controls and end-of-pipe facilities.

9.4.2.1 Lot-Level Controls

Lot-level controls are designed to control stormwater at the source, where rain becomes runoff after contacting a surface with some impermeability. They are typically physical measures which can be implemented within a variety of land uses including residential, institutional, commercial or industrial properties and also installed as a retrofit into existing and/or urbanizing areas. Examples of lot-level controls include:

- Reducing lot grading;
- Redirecting rooftop leaders to ponding areas or infiltration pits;
- Storing/attenuating rainwater on flat roofs;
- Storing/attenuating runoff in parking lots, green spaces or rain barrels;
- Storing/attenuating runoff underground in super-pipes or reservoirs;
- Low-impact lot development practices;
- Rooftop gardens;
- Use of permeable pavement to reduce impervious coverage and promote infiltration;

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- Infiltrating clean runoff in soak-away pits or infiltration galleries/trenches; and
- Polishing runoff with oil/grit separators.

Reduced minimum lot grades from a typical to 2% to as little as 0.5% for lands at least 4 m from buildings creates depression storage, which improves recharge and provides a small reduction in runoff rates. The *SWMPD Manual* suggests depression storage can be increased by 0.5 mm for every 0.5% reduction in grade.

Discharge of roof runoff to ponding areas graded along lot lines or in public areas enhance recharge rates and reduce runoff volume, although much of the potential will be lost in the summer due to increased evapotranspiration. The actual recharge rates and runoff volume reductions are a function of the capacity of the ponding area; therefore, the benefits of ponding areas are more easily quantified than lot grade changes.

Direct conveyance of roof runoff to underground recharge trenches represents a third method of increasing recharge and decreasing runoff volume. This measure offers a greater potential for recharge given that opportunities for evapotranspiration are eliminated. Long term maintenance is a concern since it is difficult to assess whether the facilities are functioning as designed.

Lot-level controls are often incorporated into SWM strategies because of their small scale and dispersed nature, more closely approximating pre-development hydrologic/hydraulic conditions. They can also significantly reduce pollutant loading and peak flow rates since, in many cases, they promote infiltration and are recognized for their suitability in retrofit situations or where land is not available for the construction of an end-of-pipe facility.

However, a significant implementation challenge is the typical location of these measures on private land, rendering maintenance and effectiveness contingent on the actions of the landowner. Landowner education and awareness, therefore, becomes a vital link in the stormwater management strategy and ensuring systems remain effective over time. The successful application of lot-level controls in the study area would require the commitment of the Township and the establishment of creative partnerships with developers and landowners to realize consistent benefits in perpetuity.

9.4.2.2 Conveyance Controls

Conveyance controls are physical measures located where flows are concentrated, typically within the road right-of way and often incorporate infiltration mechanisms. These include swales, ditches, culverts, catch basins, manholes and storm sewers. Examples of conveyance control measures include:

- Grassed swales which attenuate runoff and promote infiltration;
- Pervious pipes/sewers which promote storage and infiltration through perforations;

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- Pervious catchbasins with perforations in the walls or bottoms of the structures; and
- Rural road cross sections which reduce runoff velocity and promote sediment fallout.

Pervious storm sewers or catchbasin leads are promising management practices since they provide an at-source alternative for recharging road runoff; however, pre-treatment would be required to reduce the risk of clogging and maximize longevity of the system. Neither of these systems is recommended in the *SWMPD Manual* unless the results of pilot studies further demonstrate their suitability.

The *SWMPD Manual* identifies grassed swales as an acceptable management practice. The swales contribute to peak flow reduction by reducing the rate of conveyance from roads to the receiving watercourse. Nominal improvements in water quality, runoff volume, and recharge are also expected.

9.4.2.3 End-of-Pipe Controls

End of pipe measures are installed at the end of the storm sewer or conveyance system and are designed to treat and expel runoff acceptably to receiving watercourses, generally at a pre-defined rate. In the 1980s and 1990s, end-of-pipe solutions were design to provide water quantity control for a particular development area and generally consisted of large dry ponds. In the new millennium, the focus of SWM shifted from being relatively site specific to the adoption of an ecosystem approach. Along with this new approach came the need for SWM solutions which not only address the issue of flooding but also water quality and erosion. Lot-level and conveyance controls can help reduce the size of end-of-pipe facilities and save developable land for other purposes. Examples of end-of-pipe measures include:

- Constructed Wetlands;
- Wet Ponds;
- Hybrid wet ponds/wetlands;
- Dry Ponds;
- Infiltration basins;
- Vegetated filter strips;
- Stream/valley buffer strips;
- Organic or sand filters; and
- Oil/grit separators.

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Wet ponds and wetlands are the most effective solutions for improving water quality, reducing runoff volume, and attenuating peak flows, and are the most common type of end-of-pipe control facility in Ontario. They have the potential to remove over 95% of incoming sediment load, relying on a permanent pool and detention/dilution for water quality treatment.

Wetlands are generally more land intensive than their wet pond counter parts, and incorporate a more shallow permanent pool and vegetative uptake for water quality treatment. Often, due to their promoted dense vegetative communities, wetlands can offer better shading and reduced thermal impacts on runoff. Similar to wet ponds, wetlands can effectively provide control for most water quantity, quality and erosion targets.

Dry basins with forebays can also be an effective practice for water quality control but are primarily used for volume reduction and peak flow attenuation. Sediment removal capacities of <65% and concerns of sediment re-suspension put the performance of dry basins below the required water quality control treatment rate for most developments, including the Talbotville/Ferndale study area. Dry basins are recommended as a management practice; however, they must be used in conjunction with other practices to appropriately polish water quality.

Greenway infiltration systems or "open space valleys" are a somewhat unconventional end-of-pipe treatment system but have been successfully employed in various small- and large-scale developments in Ontario. They generally require upstream pre-treatment and coarser soils with higher percolation capacities but do not require a permanent pool to offer quality and quantity benefits. Greenways can also be designed as significant natural amenities which can be incorporated into development plans for recreational purposes.

Filter strips and buffer strips can also provide water quality improvement for typically small drainage areas, although the benefits are not easily quantifiable. As such, filter and buffer strips are generally only recommended as an auxiliary practice, most applicable for institutional, manufacturing, commercial, and multiple family developments that are located adjacent to watercourses or other green-space areas. They can be effectively used in combination with flow spreaders and other natural or planted vegetation to promote infiltration, filtration of pollutants, shade and improved thermal conditions, and reduce overland flow velocities.

Organic or sand filters are considered to be very effective in improving water quality and are now being applied more frequently in Ontario. They filter stormwater through a medium, generally of permeable sand, stone, moss or other organics to remove pollutants and can be designed to be at-surface or sub-surface. Perimeter sand filters are particularly useful around parking lots in commercial, industrial or institutional applications with small drainage areas (i.e., < 5 ha). Organic or sand filters should not be implemented unless a maintenance program is enforced to ensure they remain effective. Organic or sand filters in isolation do not offer water quantity control opportunities.

The latest generation of oil and grit separator systems has demonstrated a consistent ability to polish runoff and improve water quality, and should be considered as an auxiliary practice for parking lots which cannot be feasibly treated by other management practices. OGSs are designed to trap oil, grease and particulate matter in a series of detention chambers/areas and can be effectively used as spill control or pre-treatment for other end-of-pipe solutions such as greenway systems. A number of proprietary and non-proprietary designs are available but most are based on gravity or centrifugal sedimentation for grit and phase separation for oil/grease. OGSs are most effective when implemented for small drainage areas (i.e., < 2 ha) with a high level of impervious cover, are particularly well-suited to sites where space constraints are significant or in retrofit/infill development situations. Similar to sand filters, in isolation, OGSs do not offer water quantity control or infiltration opportunities.

9.4.3 Community Operation & Management (Improvements)

Often considered 'soft' best management practices, community-based prevention focuses on reducing impacts on stormwater through improved management and operation – a joint municipality, developer and resident initiative. As such, these practices would require significant educational and promotional campaigns to maximize effectiveness, but do possess a polarizing quality which would create long-term returns on investment and significantly increase the positive social impact of the development. Engagement with the community can be optimized through educational programming, incentives or innovative approaches to governance, by-law creation and enforcement.

9.5 EVALUATION OF STORMWATER MANAGEMENT ALTERNATIVES

Planning/design and community-oriented prevention practices as outlined above have great potential to improve or augment a treatment-based, engineered SWM strategy; however, their implementation and/or performance can be difficult to quantify as efficacy is not guaranteed. As such, implementation of these types of measures is encouraged whenever feasible, but any net benefits cannot and have not been considered in the evaluation process discussed below. The evaluation criteria for stormwater management alternatives is outlined in Table 9.5.

As illustrated in Table 9.6, each treatment alternative was reviewed for appropriateness given the physical conditions in the Talbotville and Ferndale study area. Since the only region in the study area with soils potentially suitable for infiltration is south of Talbotville, infiltration-related SWM measures were only considered in this area. The physically suitable alternatives were short-listed and further vetted against economic, environmental and social factors. The results of this vetting are illustrated in Table 9.7.

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Table 9.5: Stormwater Management Alternatives Evaluation Criteria

Stage	Category	Description
Long List (Table 9.6)	Physical Feasibility	<ul style="list-style-type: none"> • Physiographic conditions • Minimum and maximum areas served • Land consumption by treatment option
Short List (Table 9.7)	Direct Water Quality Enhancement(s)	<ul style="list-style-type: none"> • Effectiveness of water quality control/polishing
	Economics	<ul style="list-style-type: none"> • Capital costs • Maintenance costs
	Environmental amenity	<ul style="list-style-type: none"> • Ability for treatment option to positively contribute to the community
	Social impact	<ul style="list-style-type: none"> • Safety and liability risks
	Other	<ul style="list-style-type: none"> • Impacts to municipal drainage system • Ownership

As illustrated in Table 9.7, the short-listed alternatives which rated well possessed the ability to meet SWM goals while improving the residential, commercial or industrial communities, creating environmental amenities at a reasonable cost. These included features such as constructed wetlands, wet ponds and various low-impact development (LID) alternatives.

Table 9.6: General Screening of Stormwater Management Practices

Type of Control	Management Practice	Effectiveness ⁽²⁾				Potential For Groundwater Contamination ⁽³⁾	Potential Contribution to Study Area SWM Goals ⁽⁴⁾					
		Water Quality Treatment	Volume Reduction	Runoff Attenuation	Groundwater Recharge		Reduce Sediment Loading	Reduce Nutrient Loading	Reduce Flooding/Flashy Runoff	Reduce Erosion	Increase Clean Recharge	Decrease Runoff Temperature
Lot Level	Reduced Lot Grades	—	×	—	○	—	—	—	●	○	○	—
	Roof Leader to Pervious Surface	○	×	×	—	—	—	○	●	—	—	●
	Roof Leader to Infiltration Pits	○	×	×	●	○	—	—	○	—	●	●
	Rooftop/On-site Storage	—	×	○	×	—	—	—	○	○	—	×
	Infiltration Trenches	○	○	—	●	●	○	○	—	○	●	●
	Oil/Grit Separator	●	×	×	×	—	●	○	×	×	×	×
Conveyance Controls	Pervious Infrastructure	○	○	—	●	●	○	○	—	○	●	○
	Rural Road Cross Sections	○	○	○	—	○	○	○	○	○	○	○
	Grassed Swale	○	○	○	—	—	○	○	○	○	○	●
End-of-Pipe Facilities	Wet Pond ⁽¹⁾	●	●	●	—	○	●	●	●	●	—	×
	Wetland ⁽¹⁾	●	●	●	—	○	●	●	●	●	—	×
	Dry Basin with Forebay ⁽¹⁾	○	●	●	—	○	○	○	●	●	—	×
	Infiltration Basin ⁽¹⁾	○	●	●	●	●	●	○	●	●	●	○
	Infiltration Trench	○	○	—	●	●	○	○	—	○	●	●
	Filter Strip	○	×	—	—	—	○	○	—	—	—	○
	Buffer Strip	○	×	—	—	—	○	○	—	—	—	○
	Filters	●	×	—	—	—	○	○	—	—	—	—

NOTES
 1) Includes Extended Detention.
 2) Ranking: ● Highly Effective ○ Moderately Effective — Nominally Effective × Not Effective
 3) Ranking: ● High Potential ○ Moderate Potential — Low Potential. × No Potential
 4) Ranking: ● Meets Goal ○ Contributes to Goal — Nominal Contribution to Goal × No Contribution

Table 9.7: Short Listed Screening of Stormwater Management Practices

Type of Control	Management Practice	Talbotville Settlement Area						Industrial Lands						Ferndale Settlement					
		Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration	Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration	Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration
Lot Level	Reduced Lot Grades	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
	Roof Leader to Pervious Surface	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
	Roof Leader to Infiltration Pits	○	●	●	×	×	○	×	●	●	×	×	×	×	●	●	×	×	×
	Rooftop/On-site Storage	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
	Infiltration Trenches	○	○	○	×	×	○	×	○	○	×	×	×	×	○	○	×	×	×
	Oil/Grit Separator	●	●	○	×	×	●	●	●	○	×	×	●	●	●	○	×	×	●
Conveyance Controls	Pervious Infrastructure	○	○	○	×	×	○	×	○	○	×	×	×	×	○	○	×	×	×
	Rural Road Cross Sections	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
	Grassed Swale	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
End-of-Pipe Facilities	Wet Pond ⁽¹⁾	●	●	○	●	○	●	●	●	○	●	○	●	●	●	○	●	○	●
	Wetland ⁽¹⁾	●	●	○	●	●	●	●	●	○	●	●	●	●	●	○	●	●	●
	Dry Basin with Forebay ⁽¹⁾	●	●	○	●	○	●	●	●	○	●	○	●	●	●	○	●	○	●
	Infiltration Basin ⁽¹⁾	○	○	○	●	○	○	×	○	○	●	○	×	×	○	○	●	○	×
	Infiltration Trench	○	○	○	×	×	○	×	○	○	×	×	×	×	○	○	×	×	×
	Filter Strip	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Buffer Strip	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Filters	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
<p>NOTES</p> <p>1) Includes Extended Detention.</p> <p>Key ● = Yes; ○ = Limited/Moderate; × = No</p>																			

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9.5.1 Regional SWM Facilities

As part of the SWM analysis for this study area, regional SWM facilities – facilities which capture drainage from multiple properties and generally a large area – have been considered. Regional facilities are feasible for certain candidate catchments as illustrated on Figure 9.4 and are generally found at the bottom of catchment areas, outside constraints and close to roads to minimize the required reach of infrastructure. Regional SWM facility locations are often marshaled by the alignment of regional roads and railways which define major storm drainage patterns from large areas. Potential regional SWM facilities are outlined in Table 9.8.

Table 9.8: Potential Regional SWM Facilities

Potential Regional Facility	Catchment Area (ha)	Estimated Developed Impervious (%)	Estimated SWM Block Size - Low (ha)	Estimated SWM Block Size - High (ha)	Outlet/Receiver Quality
Auckland Drain North	76	70	5	8	Good
Auckland Drain South West	200	70	14	20	Good
Auckland Drain South East	61	70	4	6	Good
Moody	91	57	6	9	Good
Underhill Drain	52	57	4	5	Good
Lynhurst	61	64	4	6	Good
Orr Drain	138	70	10	13	Moderate
Lindsay Drain 'A' West	66	70	5	6	Moderate
Lindsay Drain 'A' East	30	70	2	3	Moderate
Lindsay Drain	60	70	4	6	Moderate
Talbotville Meadows	91	57	6	9	Moderate
Talbotville Drain North	155	0.68	10.8	15.5	Poor
Talbotville Drain South	195	0.69	13.6	19.5	Poor

9.6 PROPOSED SWM STRATEGY

Ultimately, the best approach to SWM - and the one proposed for this study area - utilizes several of the short-listed alternatives in sequence, where the short list can serve as a menu of suitable options for designers. This approach is typically referred to as “cascading” or a “treatment train” and has been demonstrated to provide the best opportunities for stormwater control and treatment. A cascading approach including “prevention” and “improvement” measures with preference for closer-to-source alternatives is recommended. Discussion within the SWM report for each development should focus on how the benefits of the cascading approach have been realized.

Table 9.9: Stormwater Management Preferred Alternatives

	Talbotville	Industrial Lands	Ferndale
Area	~91 ha	~1,140 ha	~84 ha
Proposed Land use	Residential/Commercial	Industrial	Residential/Commercial
Prevention	See complete list above		
Lot-level Control	Reduced lot grades Roof leader to pervious surfaces Rooftop/on-site storage		
Conveyance Control	Storm sewer/grassed swales (preferred) Rural road cross sections		
End-of-pipe control	Constructed wetland (preferred) Wet pond Filter strip Buffer strip Filters Oil/grit separators		
Infiltration measures	Not recommended	Not applicable	Not applicable
Improvement	See complete list above	See complete list above	See complete list above

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	Talbotville	Industrial Lands	Ferndale
Retrofit/Extension	None	None	Confirmation of Ferndale Meadows SWM capacity recommended
Regional facility	Regional facility recommended for consideration outletting to Moody Drain	Optional for preferred outlets to 1) Auckland Drain, or 2) Orr Drain	Regional facility recommended for consideration outletting to Underhill Drain
Trigger/Timing	Development	Development	Development
Cost Estimate	\$350,000	N/A	\$300,000
Funding	Developer/Township	Developer	Developer/Township

At this time, the development plans for the study area lack the required detail to allow for more comprehensive proposal or costing of specific stormwater management control strategies. Typically, at a master servicing plan stage, additional information regarding lot fabric delineation, major road alignment or existing infrastructure, as examples, is available to inform the SWM analysis and hydrologic/hydraulic modelling. In this case, only land use designations are given and therefore only general SWM recommendations can be made at this time. As more development details become available, more specific SWM strategy recommendations can be offered.

Lot-level controls are important components of stormwater control; however, each should be considered based on required maintenance, reliability of the maintaining party and expectation of long-term performance before approvals are granted. Any privately-owned lot-level control will have a higher risk of failure due to the lack of municipal control.

For small infill developments where SWM measures are not practical or effective to implement, cash-in-lieu of SWM measures can be used to fund stormwater projects elsewhere in the community or study area.

9.6.1 Talbotville Settlement

The proposed SWM strategy for the Talbotville settlement area includes a regional SWM treatment train at the southern extent of the proposed residential expansion which outlets to the Moody Drain. By outletting in this location, runoff from the settlement is contributed to Dodd Creek downstream of a reach particularly sensitive to erosion. This regional facility is intended to

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collect and treat runoff from the Talbot Meadows/South Talbotville/Moody Drains catchment area.

As shown on Figure 9.3, the reach of the Talbotville Drain immediately downstream of the study area is susceptible to erosion. As such, the northern extents of the Talbotville development area will be controlled using neighbourhood- or development-level treatment trains with emphasis on closer-to-source options from the above menu.

Infiltration measures are not being proposed in the Talbotville settlement area.

9.6.2 Industrial Lands

Given the current uncertainty of the development plan for the industrial lands, it is difficult to recommend a SWM strategy for these areas with any accuracy or vigor. Inclusion of regional facilities in the Auckland Drain catchment may be feasible, depending on the development plan of industrial blocks in the southern half of the catchment and access to the drain itself. A regional facility may also be feasible in the Orr Drain catchment; however, the outlet quality is considered to be less than with the Auckland Drain as reaches downstream of the study area may be sensitive to erosion.

9.6.3 Ferndale Settlement

SWM for the Ferndale settlement area is recommended to be a regional treatment train which can accommodate all new residential and commercial development in the Underhill Drain catchment. Erosion in downstream reaches of the Drain or in upper Kettle Creek is not believed to be a concern and, as such discharge from a regional facility may be acceptable.

10.0 SUMMARY OF COST OPINIONS

10.1 LEVELS OF COST OPINIONS

ASTM E 2516-06 (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). Section 7.5.4 of ASTM E 2516 acknowledges that other “secondary” characteristics impact the accuracy of the estimate, and provides as follows:

“In summary, estimate accuracy will generally be correlated with estimate classification (and therefore the level of project definition), all else being equal. However, specific accuracy ranges will typically vary by industry. Also, the accuracy of any given estimate is not fixed or determined by its classification category. Significant variations in accuracy from estimate to estimate are possible if any of the determinants of accuracy, such as differing technological maturity, quality of reference cost data, quality of the estimating process, and skill and knowledge of the estimator vary. Accuracy is also not necessarily determined by the methodology used or the effort expended. Estimate accuracy must be evaluated on an estimate-by-estimate basis, usually in conjunction with some form of risk analysis process.”

The ASTM standard, shown in Table 10.1, illustrates the typical accuracy ranges that may be associated with the general building industries.

Table 10.1: ASTM E 2516-06 Accuracy Range of Cost Opinions for General Building Industries

Cost Opinion Class	Expressed As % of Complete Definition	Anticipated Accuracy Range for Building and General Construction Industry
5	0% to 2%	-20% to -30%/ +30% to +50%
4	1% to 15%	-10% to -20%/ +20% to +30%
3	10% to 40%	-5% to -15%/ +10% to +20%
2	30% to 70%	-5% to -10%/ +5% to +15%
1	50% to 100%	-3% to -5%/ +3% to +10%

Below is a general description of the various classes within a typical five-level cost opinion classification system. Always keep in mind that many factors influence cost opinion accuracy and any cost opinion accuracy must be evaluated on a case-by-case basis.

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Summary of Cost Opinions

10.1.1 Class 5

Other definitions: Class V, Level 1, Class D. This is an order of magnitude cost opinion, also referred to as a parameter or conceptual cost opinion. It is generally used for strategic business or capital planning, assessment of viability, or for comparative purposes to establish a base ranking of alternatives. There is usually a very low level of project definition and limited information available. The cost opinion accuracy can be up to +100%. A Class 5 cost opinion is based upon historical sources, other analogous work, and the experience of the individual. Some percentage breakdown by major work category may be inferred from a review of similar projects that have been completed or estimated in detail. Its basis can be "cost per square meter", "cost per unit" or multiplier of primary equipment cost. Sometimes expression as a range of values is better received and understood than a single number with a stated accuracy of $\pm 50\%$ (\$50,000 to \$150,000 rather than \$100,000 $\pm 50\%$). This cost opinion is usually not detailed, except perhaps for subtotals of major components and with qualifications as to accuracy. As with all levels, the accuracy must be kept in mind when rounding off the significant figures. For example a \$100,000 Class 5 cost opinion would be rounded up to the nearest \$10,000 and never the nearest \$100 or \$1,000.

10.1.2 Class 4

Other definitions: Class IV, Level 2, Class C. This is generally referred to as a preliminary, feasibility, schematic design, predesign, authorization or basic system cost opinion. It is used for detailed planning, evaluation of alternatives, confirm economic viability, preliminary budget approval and cash flow projections. At this stage the project concept and scope have been established and enough work completed to define capacities and processes resulting in block schematics, plot plans, process flow diagrams, general arrangement drawings and infrastructure requirements. The cost opinion is based on elemental units using historical costs, standard estimating references, supplier quotes and historical data from similar projects.

10.1.3 Class 3

Other definitions: Class III, Level 3, Class B. This is a target, budget, or control cost opinion, also referred to as a design development cost opinion. It is used for budget authorization and set the design control budget to confirm and monitor design direction. This is the point at which the project begins to have firm definition, and detailed work has begun. This cost opinion is usually prepared when our work is from 10% to 40% complete. It is based on unit takeoffs from general arrangements, definitive discipline layouts, P & ID's, single lines, block diagrams, preliminary equipment selection, etc. Unit pricing is obtained from supplier quotes, pricing inquiries, historical data from similar work, pricing data books, all viewed toward industry pricing trends and factors.

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Summary of Cost Opinions

10.1.4 Class 2

Other definitions: Class II, Level 4, Class A. A Class 2 cost opinion is known as a definitive, detailed or master control, tender/bid or pre-tender/pre-Bid Cost opinion and is based on 90% completion of construction documents. It is prepared using detailed material take-offs and is really a "shadow" cost opinion of what is expected to be bid by the contractors. It is used to:

- Prepare the bid form;
- Anticipate bid prices and update project cost opinion;
- Check pricing during evaluations; and
- Prepare the format for construction progress payments, cost tracking, and change/variation control.

10.1.5 Class 1

Other definitions: Class M, Level 5. A Class 1 cost opinion is known as a detailed, final execution phase, definitive, current control, or change order cost opinion. It is prepared from fully completed design documentation employing a high level of takeoff breakdown. These may be used for contractor bid negotiations, subcontractors for bid preparation, as the final control base for bid checking, change/variation control, and claim or dispute resolution. These require a significant level of effort and are not typically prepared for all projects. They may only be prepared for critical or selected parts of the project for specific reasons. All levels of cost opinions must be expressed in appropriate significant figures. For example even a Class 1 cost opinion would be rounded up to at least the next \$1,000, or higher depending on project size. A "round off" budget item line can be inserted just above the project total.

10.1.6 Level of Cost Opinion for this Study

For the cost opinions provided in this report, Stantec considers these to be Class 4. Based upon the above discussion, Stantec does not guarantee the accuracy of this opinion of probable cost. The actual final cost of the project will be determined through the bidding and construction process.

10.2 WATER SUPPLY AND DISTRIBUTION

The preferred alternative for water servicing was determined to be the extension of existing municipal services. Table 10.2 summarizes the cost opinion for major municipal projects identified through the Class EA process. A majority of future works would be classified as Schedule A+ projects and include the extension of water distribution services for new development, following the developers proposed road pattern. Costs associated with this work are not included in the Master Servicing Plan.

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Summary of Cost Opinions

Table 10.2: Water Supply and Distribution Opinion of Probable Costs

#	Item	Cost
1	Sunset Drive (Between Talbot Line and Clinton Line) <ul style="list-style-type: none"> Upsizing or twinning of watermains Length: 2,100 m Diameter: TBD (subject to development of industrial lands) 	\$1,050,000
2	Sunset Drive (between Talbot Line and Major Line) <ul style="list-style-type: none"> Upsizing or twinning of watermains Length: 1,900 m Diameter: TBD (subject to development of industrial lands) 	\$950,000
3	Southminster Borne (Between Sunset Drive and Wonderland Road) and Wonderland Road (between Southminster Bourne and Clinton Line) <ul style="list-style-type: none"> Extension of potential future servicing Length: 3,500 m Diameter: TBD (subject to development of industrial lands) 	\$1,400,000
Notes: 1) Construction costs are -10% / +30% 2) Costs do not include Engineering, Inspection/Testing, or H.S.T.		

10.3 WASTEWATER COLLECTION AND TREATMENT

Table 10.3 summarizes the cost opinion for all major municipal projects identified through the Class EA process for both Ferndale and Talbotville. With the exception of the new wastewater treatment plant which would require a Schedule C Class EA, the remaining projects would be classified as Schedule B projects and have met the requirements of the Class EA process through the Master Servicing Plan.

Table 10.3: Wastewater Collection and Treatment Opinion of Probable Costs

#	Description	Cost
Talbotville		
1	New Municipal Wastewater Treatment Plant <ul style="list-style-type: none"> Rated for: 100 m³/d Rated for: 550 m³/d Rated for: 1,250 m³/d Rated for: 1,750 m³/d 	\$1,500,000 \$5,700,000 TBD (Schedule C) TBD (Schedule C)

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Summary of Cost Opinions

#	Description	Cost
2	New Sanitary Sewer Collection System <ul style="list-style-type: none"> Existing development and trunk sewers 	\$1,500,000
Ferndale		
1	Partial Upgrades to St. George Street Sewer <ul style="list-style-type: none"> Upsizing of gravity sanitary sewer along St. George Street from Ryan Street to just north of the CN right of way Length: 575 m 	\$1,380,000
2	Twin St. George Street Sewer <ul style="list-style-type: none"> Installation a second gravity sanitary trunk sewer of along St. George Street Length: 1,375 m 	\$3,300,000
3a	Redirect Flow from Woodland Road Pumping Station <ul style="list-style-type: none"> Installation of a sanitary forcemain through an easement terminating at the Parkins Street sewer Upgrades to the Woodland Road Pumping Station Length: 285 m 	\$285,000
3b	Redirect Flow from Woodland Road Pumping Station <ul style="list-style-type: none"> Installation of a sanitary forcemain through an easement terminating at the St. George Street Pumping Station Upgrades to the Woodland Road Pumping Station Length: 615 m 	\$400,000
4a	Redirect Flow from Crescent Avenue Pumping Station <ul style="list-style-type: none"> Installation of a sanitary forcemain via the CN right of way terminating at the St. George Street Pumping Station Upgrades to the Crescent Avenue Pumping Station Length: 1,475 m 	\$625,000
4b	Redirect Flow from Crescent Avenue Pumping Station <ul style="list-style-type: none"> Installation of a sanitary forcemain along St. George Street terminating at the St. George Street Pumping Station Upgrades to the Crescent Avenue Pumping Station Length: 1,740 m 	\$705,000
5a	New Pumping Station and Forcemain to Talbotville WWTP <ul style="list-style-type: none"> Construction of a new pumping station and forcemain to a new wastewater treatment plant in Talbotville Forcemain to be installed along Major Line and along Sunset 	\$1,985,000

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Summary of Cost Opinions

#	Description	Cost
	Drive <ul style="list-style-type: none">Length: 3,275 m	
5b	New Pumping Station and Forcemain to Talbotville WWTP <ul style="list-style-type: none">Construction of a new pumping station and forcemain to a new wastewater treatment plant in TalbotvilleForcemain to be installed along CN right of wayLength: 2,675 m	\$1,845,000
Notes: <ul style="list-style-type: none">1) Construction costs are -10% / +30%2) Costs do not include Engineering, Inspection/Testing, or H.S.T.		

10.4 STORMWATER MANAGEMENT

At this time, the development plans for the study area lack the required detail to allow for more comprehensive proposal or costing of specific stormwater management control strategies. Typically, at a master servicing plan stage, additional information regarding lot fabric delineation, major road alignment or existing infrastructure, as examples, is available to inform the SWM analysis and hydrologic/hydraulic modelling. In this case, only land use designations are given and therefore only general SWM recommendations can be made at this time. As more development details become available, more specific SWM strategy recommendations can be offered.

11.0 CONCLUSIONS

11.1 OVERVIEW

The Municipal Class EA enables the planning of municipal infrastructure to be undertaken in accordance with an approved procedure designed to protect the environment. The Class EA process provides a decision-making framework that enables the requirements of the Environmental Assessment Act to be met in an effective manner. Experience has demonstrated that considerable social, economic, and environmental benefits are achieved by applying the Class EA concept to municipal infrastructure projects.

The following summarizes the results of the Class EA for the Talbotville & Ferndale Master Servicing Plan.

11.2 CONSULTATION

In accordance with the requirements of the Class EA, a Notice of Project Commencement, PIC Notices and Notice of Completion were published in a local newspaper. All appropriate comments received were incorporated into the Master Servicing Plan (Project File). A list of relevant public and agency contacts were developed at the onset of the project.

A list of relevant Aboriginal communities was also developed at the onset of the project. An Aboriginal Communications Log was completed for this project and documents the consultation process with Aboriginal communities contacted as part of the Class EA process.

11.3 WATER SUPPLY AND DISTRIBUTION ALTERNATIVES

Water servicing to existing and future development areas within Talbotville and Ferndale would utilize the existing Southwold water distribution system. The following water servicing alternatives were developed to address the problem opportunity statement:

Alternative 1: Do Nothing

Alternative 2: Private Water Servicing

Alternative 3: Extend Servicing of EAPWSS

Alternative 4: Extend Existing Municipal Servicing System

Alternative 4 "Extend Existing Municipal Servicing System" was selected as the **preferred alternative**.

11.4 WASTEWATER COLLECTION AND TREATMENT ALTERNATIVES

There is no municipal wastewater treatment infrastructure within Ferndale; however, wastewater flows generated by existing development is conveyed via municipal sanitary sewers to the St. Thomas WWTP. Sewer capacity issues exist upstream of the St. George Street Pumping Station which limit the amount of flow which can be conveyed from Ferndale to the St. Thomas WWTP.

The following wastewater collection and treatment alternatives for Ferndale were developed to address the problem opportunity statement:

Alternative F1: Do Nothing

Alternative F2: Limit Growth

Alternative F3: Partial Upgrades of St. George Street Gravity Sewer

Alternative F4: Twin St. George Street Gravity Sewer

Alternative F5: Redirect Flow from Woodland Road Pumping Station

Alternative F6: Redirect Flow from Crescent Avenue Pumping Station

Alternative F7: New Pumping Station to Talbotville Wastewater Treatment Plant

Alternative F8: Utilize Existing Ford Motor Company Wastewater Treatment Plant

Alternative F5 “Redirect Flow from Woodland Road Pumping Station” and **Alternative F6** “Redirect Flow from Crescent Avenue Pumping Station” were selected as the **preferred alternatives**; however, other alternatives could be implemented as well.

There is no municipal wastewater collection or treatment infrastructure within Talbotville. Existing development within the settlement area is serviced by private on-site septic systems.

The following wastewater collection and treatment alternatives for Talbotville were developed to address the problem opportunity statement:

Alternative T1: Do Nothing

Alternative T2: Limit Growth

Alternative T3: St. Thomas Wastewater Treatment Plant via St. George Street Gravity Sewer

Alternative T4: St. Thomas Wastewater Treatment Plant via Alternate/New Trunk Sewer

Alternative T5: New Wastewater Treatment Plant in Talbotville

Alternative T6: Utilize Existing Ford Motor Company Wastewater Treatment Plant

Alternative T5 "New Wastewater Treatment Plant in Talbotville" was selected as the **preferred alternative**.

11.5 STORMWATER MANAGEMENT

Ultimately, the best approach to SWM - and the one proposed for this study area - utilizes several of the short-listed alternatives in sequence, where the short list can serve as a menu of suitable options for designers. This approach is typically referred to as "cascading" or a "treatment train" and has been demonstrated to provide the best opportunities for stormwater control and treatment. A cascading approach including "prevention" and "improvement" measures with preference for closer-to-source alternatives is recommended. Discussion within the SWM report for each development should focus on how the benefits of the cascading approach have been realized.

At this time, the development plans for the study area lack the required detail to allow for more comprehensive proposal or costing of specific stormwater management control strategies. Typically, at a master servicing plan stage, additional information regarding lot fabric delineation, major road alignment or existing infrastructure, as examples, is available to inform the SWM analysis and hydrologic/hydraulic modelling. In this case, only land use designations are given and therefore only general SWM recommendations can be made at this time. As more development details become available, more specific SWM strategy recommendations can be offered.

Lot-level controls are important components of stormwater control; however, each should be considered based on required maintenance, reliability of the maintaining party and expectation of long-term performance before approvals are granted. Any privately-owned lot-level control will have a higher risk of failure due to the lack of municipal control.

For small infill developments where SWM measures are not practical or effective to implement, cash-in-lieu of SWM measures can be used to fund stormwater projects elsewhere in the community or study area.

The proposed SWM strategy for the Talbotville settlement area includes a regional SWM treatment train at the southern extent of the proposed residential expansion which outlets to the Moody Drain. By outletting in this location, runoff from the settlement is contributed to Dodd Creek downstream of a reach particularly sensitive to erosion. This regional facility is intended to collect and treat runoff from the Talbot Meadows/South Talbotville/Moody Drains catchment area.

Given the current uncertainty of the development plan for the industrial lands, it is difficult to recommend a SWM strategy for these areas with any accuracy or vigor. Inclusion of regional facilities in the Auckland Drain catchment may be feasible, depending on the development

TALBOTVILLE & FERNDALE MASTER SERVICING PLAN

Conclusions

plan of industrial blocks in the southern half of the catchment and access to the drain itself. A regional facility may also be feasible in the Orr Drain catchment; however, the outlet quality is considered to be less than with the Auckland Drain as reaches downstream of the study area may be sensitive to erosion.

SWM for the Ferndale settlement area is recommended to be a regional treatment train which can accommodate all new residential and commercial development in the Underhill Drain catchment. Erosion in downstream reaches of the Drain or in upper Kettle Creek is not believed to be a concern and, as such discharge from a regional facility may be acceptable.

TALBOTVILLE & FERNDAL MASTER SERVICING PLAN

References

12.0 REFERENCES

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TALBOTVILLE & FERNDAL MASTER SERVICING PLAN

References

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Ontario Ministry of the Environment (1993). Stormwater Management Planning & Design Manual.

Ausable Bayfield Conservation Authority. Stormwater Management Policies & Technical Guidelines.

Kettle Creek Conservation Authority. Upper Kettle Creek Watershed Study.

Kettle Creek Conservation Authority. Water Quality in Kettle Creek Report Card 1991-1995.



Appendix 2.1

Contact List



Southwold Master Servicing Plan
Contact List

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal
Government Contacts										
Federal	Environment Canada	Mr.	Rob	Dobos	Environmental Protection Operations Division - Ontario	Manager, Environmental Assessment Secti	PO Box 5050, 867 Lakeshore Road	Burlington	ON	L7R 4A6
Provincial	Ministry of Natural Resources and Forestry	Ms.	Andrea	Fleischhauer	Aylmer District	District Planner	615 John St.N.	Aylmer	ON	N5H 2S8
Provincial	Ministry of Environment and Climate Change	Mr.	Craig	Newton	Southwestern Region	Regional Environmental Assessment Coordi	733 Exeter Road	London	ON	N6E 1L3
Provincial	Ministry of Environment and Climate Change	Mr.	Scott	Abernethy	Southwestern Region	Team Leader Surface Water Evaluator	733 Exeter Road	London	ON	N6E 1L3
Provincial	Ministry of Environment and Climate Change	Mr.	Roland	Plante	Southwestern Region	Water Inspector	3232 White Oak Rd	London	ON	N6E 1L8
Provincial	Ministry of Environment and Climate Change	Ms.	Angela	Whiteley	Southwest Regional Office	District Supervisor	733 Exeter Road	London	ON	N6E 1L4
Provincial	Ministry of Environment and Climate Change	-	-	-	Environmental Assessment & Approvals Branch	Project Evaluator, Project Review Unit	2 St. Clair Avenue West, Floor 12A	Toronto	ON	M4V 1L5
Provincial	Ministry of Municipal Affairs and Housing	Mr.	Bruce	Curtis	Community Planning and Development	Manager	659 Exeter Road, 2nd floor	London	ON	N6E 1L3
Provincial	Ministry of Agriculture, Food and Rural Affairs	Mr.	Drew	Crinklaw	Southwestern Ontario	Rural Planner	667 Exeter Road	London	ON	N6E 1L3
Provincial	Ministry of Transportation	Ms.	Heather	McClintock	Design and Contract Standards Office	Maintenance Standards	301 St. Paul Street, 2nd Floor	St. Catherines	ON	LR2 7R4
Provincial	Ministry Infrastructure	Mr.	Chris	Gianekos	Infrastructure Policy and Planning Division	Assistant Deputy Minister	Frost Building S 7 Queen's Park Cres. 6th Floor	Toronto	ON	M7A 1Y7
Provincial	Ministry of Health and Long-Term Care	Mr.	Tony	Amalfa	Environmental Health Policy & Programs		393 University Avenue, 21st Floor	Toronto	ON	M7A 2S1
Provincial	Ministry of Tourism, Culture and Sport	Ms.	Penny	Young	Culture Services Unit	Heritage Planner	401 Bay Street Suite 1700	Toronto	ON	M7A 0A7
Provincial	Ministry of Tourism, Culture and Sport	Mr.	Joe	Muller	Culture Services Unit	Heritage Planner	401 Bay Street Suite 1700	Toronto	ON	M7A 0A7
Provincial	Ministry of Tourism, Culture and Sport	Mr.	Chris	Stack		Manager	900 Highbury Avenue	London	ON	N5Y 1A4
Municipal, MPs, MPPs										
Local	County of Elgin	Mr.	Clayton	Watters	Engineering Services	Manager of Engineering Services	450 Sunset Drive	St. Thomas	ON	N5R 5V1
Local	County of Elgin	Mr.	Mark	McDonald	Administration	CAO	450 Sunset Drive	St. Thomas	ON	N5R 5V1
Local	County of Elgin	Mr.	Steve	Evans		Planner	450 Sunset Drive	St. Thomas	ON	N5R 5V1
Local	City of St. Thomas	Mr.	Wendall	Graves	-	City Clerk	545 Talbot St	St. Thomas	ON	N5P 3V7
Local	Town of Aylmer	Ms.	Heather	Adams	-	Administrator	46 Talbot St. W 24 1st Ave	Aylmer	ON	N5H 1J7
Federal	Federal MP	Mr.	Joe	Preston		MP-Elgin-Middlesex-London	Unit 2 750 Talbot Street	St. Thomas	ON	N5R 4M5
Provincial	Provincial MPP	Mr.	Jeff	Yurek		MPP-Elgin-Middlesex-London	Suite 201 West Wing 99 Edward Street	St. Thomas	ON	N5P 1E2
Elgin	Elgin - St. Thomas Health Unit	Ms.	Catherine	Preete				St. Thomas	ON	N5P 1Y8
		Mr.	Tom	Copeland	Wastewater and Drainage Engineering, City of London	Division Manager	300 Dufferin Ave, PO Box 5035	London	ON	N6A 4L9
Conservation Authority										
Local	Kettle Creek Conservation Authority	Mr.	Joe	Gordon	-	Director of Operations	44015 Ferguson Line	St. Thomas	ON	N5P 3T3
Aboriginal Contacts										
Provincial	Southern First Nations Secretariat	Ms.	Jolene	Whiteye	-	Acting Manager Technical Services	22361 Austin Line	Bothwell	ON	N0P 1C0
Local	Chippewas of the Thames	Chief	Joe	Miskokomon	-	Chief	RR#1	Muncey	ON	N0L 1Y0
Local	Chippewas of the Thames	Ms.	Rolanda	Elijah	-	Lands and Environment Director	320 Chippewa Road	Muncey	ON	N0L 1Y1
Local	Oneida Nation of the Thames	Chief	Joel	Abram	-		2212 Elm Ave.	Southwold	ON	N0L 2G0
Local	Oneida Nation of the Thames	Ms.	Laura	Phillips	-	Councillor	2212 Elm Ave.	Southwold	ON	N0L 2G0
Local	Oneida Nation of the Thames	Ms.	Holly	Elijah	-	Council Assistant	2212 Elm Ave.	Southwold	ON	N0L 2G0
Local	Munsee-Delaware Nation	Chief	Roger	Thomas	-		RR#1	Muncey	ON	N0L 1Y0
Local	Bkejwanong Territory (Walpole Island)	Chief	Burton	Kewayosh	-		RR #3	Wallaceburg	ON	N8A 4K9
Local	Bkejwanong Territory (Walpole Island)	Mr.	Jared	Macbeth	-	Project Review Coordinator	RR3	Wallaceburg	ON	N8A 4K9
Local	Caldwell First Nation	Chief	Louise	Hillier	-		P.O.Box 388	Leamington	ON	N8H 3W3
Local	Metis Nation of Ontario	Mr.	Doug	Wilson	-	Chief Operating Officer	500 Old St. Patrick Street, Unit 3	Ottawa	ON	K1N 9G4
Local	Metis Nation of Ontario	Mr.	Paul	Heighington	-	Senior Policy Advisor	500 Old St. Patrick Street, Unit 3	Ottawa	ON	K1N 9G4
Other										
	Walter Ostojic & Sons Ltd.	Mr.	Joe	Ostojic			76A Progress Drive	St. Thomas	ON	N5P 4G5
	Heath Street Advisors	Mr.	Tom	Albrecht			1006 Waterloo Street	London	ON	N6A 3X5
	Ricor Engineering	Mr.	Rick	Dykstra			531 Talbot Street	London	ON	N6A 2S5
	DHP Contracting	Mr.	Dave	Sparenberg			94 Curtis Street	St. Thomas	ON	N5P 1J2
	Pittao Homes						22628 Richmond Street	London	ON	N5X 4B2
	Royal LePage	Mr.	Dennis	Broome			166 Sunset Drive	St. Thomas	ON	N5R 3B9
		Mr.	Bob	McCaig			PO Box 589	St. Thomas	ON	N5P 4B1
		Mr.	David	Burton			32 Gladstone Ave	St. Thomas	ON	N5R 2L4
	Cyril J. Demeyere Ltd	Mr.	Deren	Lyle			261 Broadway, P.O. Box 460	Tillsonburg	ON	N4G 4H8
Owner		Mr. and M	Jim	Robbins			10295 Greenpark Drive	St. Thomas	ON	N5P 3T2
Owner		Mr.	Olive	Vincent			10295 Greenpark Drive	St. Thomas	ON	N5P 3T2
Owner		Mr.	Harold	Tebo			39824 Shady Lane Cres.	St. Thomas	ON	N5P 3T2
		Mr.	Coby	Tebo			39824 Shady Lane Cres.	St. Thomas	ON	N5P 3T2
Owner		Mr.	Steve	Keane			39846 Shady Lane Cres.	St. Thomas	ON	N5P 3T2
Owner		Mr.	Don	Tomchick			10284 Greenpark Drive	St. Thomas	ON	N5P 3T2
Owner			M.	White			39749 Shady Lane Cres.	St. Thomas	ON	N5P 3T2
Owner		Mr.	Duane	Goode			41471 Major Line	St. Thomas	ON	N5P 3T1
Owner		Ms.	Kathy	Goode			41439 Major Line	St. Thomas	ON	N5P 3T1
Realter for Owner			A	Teixeira			40002 Shady Lane Cres.	St. Thomas	ON	N5P 3T2
		Mr.	William	Brown			10049 Florence St.	St. Thomas	ON	N5P 4L7
Owner		Mr. and M	Robert	Murphy			41319 Major Line	St. Thomas	ON	N5P 3T1
Owner		Mr.	Jamie	McBain			45889 John Wise Line	St. Thomas	ON	N5P 3S9
Owner		Mr.	Colin	McBain			6415 Centennial Road	St. Thomas	ON	N5P 3S8

Southwold Master Servicing Plan
Contact List

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal
Owner		Ms.	Donna	Lizmore			10637 Sunset Road	St. Thomas	ON	N5P 3T2
Talbotville Gore		Mr.	Dave	Sparenberg			13 Kantor Crt.	St. Thomas	ON	N5R 0A1
Councillor		Mr.	Ian	Chard			7957 Argyle Street	Fingal	ON	N0L 1K0
Prospective Mayor		Mr.	Hans	VanVoorn			10055 Florence Street	St. Thomas	ON	N5P 4L7
Deputy Mayor		Mr.	Grant	Jones						
			Pat	Kozak			35 Vineden Drive	St. Thomas	ON	N5P 2M7
		Mr.	Malcolm	McKellar			12 Highview Drive	St. Thomas	ON	N5R 5G1
		Ms.	Alyce	Hoy			122-200 Chestnut Street	St. Thomas	ON	N5R 5P3
		Mr. and M	Travis	Felker			16 Compton Place	London	ON	N6C 4G4
		Ms.	Heather	Brady			41990 McBain Line	St. Thomas	ON	N5P 3T1
		Mr.	Rob	Robbins			46 Maple Street	St. Thomas	ON	N5R 1Y9
P/O		Mr.	Joe	McKinnon			37111 Talbot Line	Shedden	ON	N0L 2E0
Agency		Mr.	Jim	Reffle			Elgin St. Thomas Public Health Agency			
Owner			Lina	Pittao			14387 Ilderton Road	Ilderton	ON	N0M 2A0
Owner		Mr.	Bob	McCaig			39956 Bush Line	St. Thomas	ON	N5P 3S9
Owner		Mr. and M	Ray	Leatherdale			57 Edward Street	St. Thomas	ON	N5P 1Y5
Owner		Mr.	Jim	Hamilton			39819 Shady Lane Cres.	St. Thomas	ON	N5P 3T2
Owner		Mr. and M	Don	Weaver			39950 Shady Lane Cres.	St. Thomas	ON	N5P 3T2
		Ms.	Camila	Fajardo			Fanshawe College			
		Ms.	Michelle	Cormier			Fanshawe College			
		Ms.	Jeannette	Palmer			Fanshawe College			
Neighbouring Municipality		Mr.	John	Dewancker			P.O. Box 520, City Hall	St. Thomas	ON	N5P 3V7
Owner		Ms.	Janett	Pennings			39958 Longhurst Line	St. Thomas	ON	N5P 3T2
Realtor	Royal LePage	Mr.	Greg	Earl			808 Talbot Street	St. Thomas	ON	N5P 1E2
		Mr.	John	McBain			55 Queen Street	St. Thomas	ON	N5R 3J4
Public		Mr.	Nick	Doelman			41640 Ron McNeil Line, R.R. #6	St. Thomas	ON	N5P 3T1
Block of land South East of Talbotville		Mr.	Don	McCaig			40252 Bush Line	St. Thomas	ON	N5P 3S9
McBain			J.	Ostojic			39465 Bush Line	St. Thomas	ON	N5P 3S9
Owner		Mr. and M	Keith	Locke			39958 Shady Lane Cres., R.R. # 7	St. Thomas	ON	N5P 3T2
		Mr.	Jason	Small						



Appendix 2.2

Public and Agency Responses





Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

March 6, 2014
File: 165500796

Peter Reed
Infrastructure Ontario
1 Dundas St.W. Suite 2000
Toronto, ON M5G 2L5

Dear Mr. Reed,

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

The purpose of the *Talbotville / Ferndale Master Servicing Plan* is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the municipality. Specifically, the Master Servicing Plan is to address the provision of water, wastewater, and stormwater management for existing and future growth areas for the Talbotville / Ferndale settlement area as defined in the Township's Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.

This study is being conducted as a Master Plan (Phases 1 and 2) under the Municipal Class Environmental Assessment process (Municipal Engineer's Association, as amended in June 2007 and 2011). Under this process, agency and public input is invited for incorporation into the planning and design for this study. The first Public Information Centre to introduce this study will be held on:

Date: Wednesday, March 19, 2014
Time: 6:30pm to 8:30pm (open house format)
Location: Keystone Complex, 35921 Talbot Line, Shedden ON

If you have any questions, comments or concerns, please contact the undersigned at your earliest convenience.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in blue ink that reads "Michele Oxlade".

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

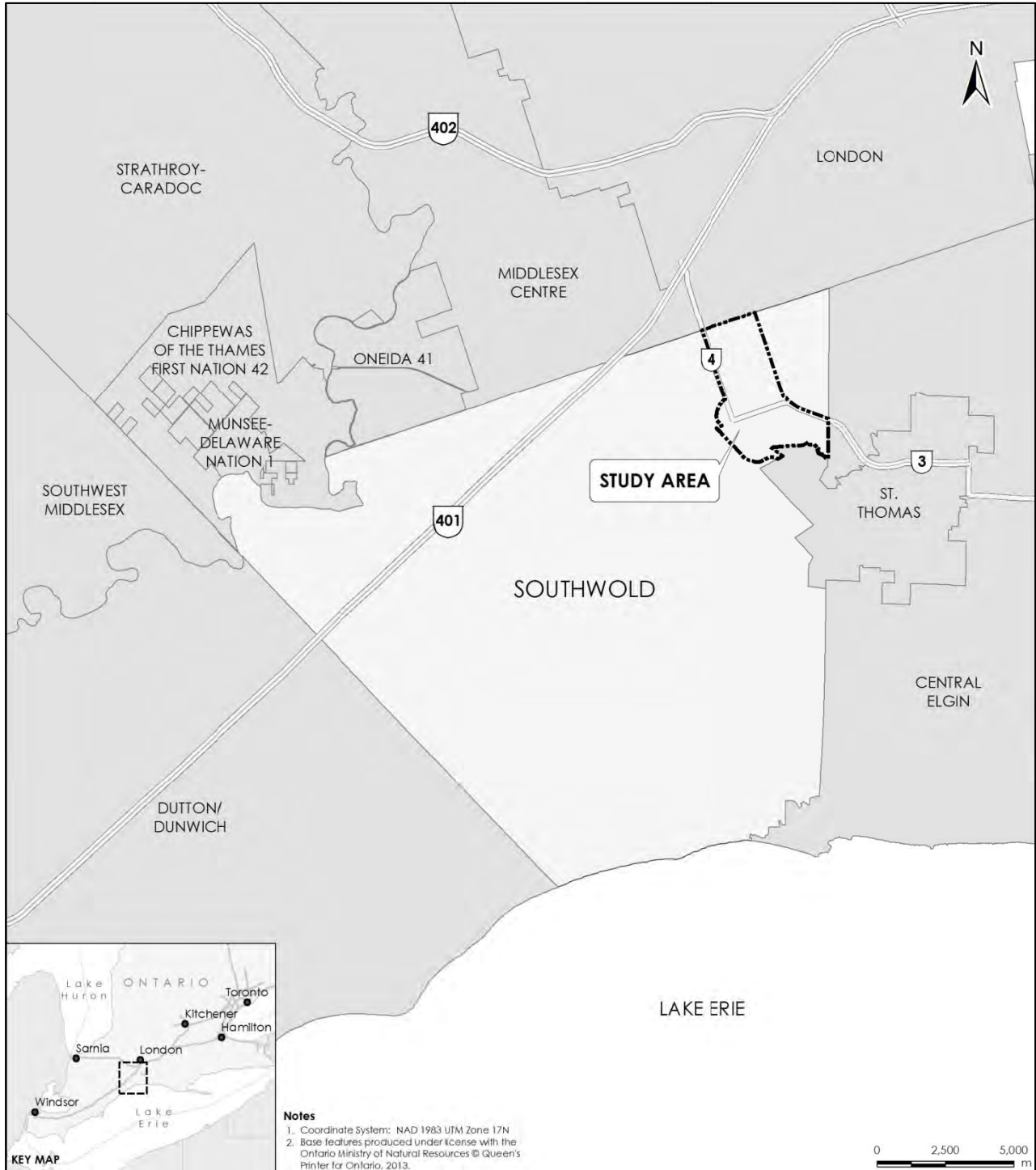
c. Donna Clermont, Township of Southwold, CAO/Clerk



March 6, 2014
Peter Reed

Page 2 of 4

Reference: Talbotville/Ferndale Master Servicing Plan





Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

March 6, 2014
File: 165500796

Bill Armstrong
Ministry of Environment
733 Exeter Road
London, ON N6E 1L3

Dear Mr. Armstrong,

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

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If you have any questions, comments or concerns, please contact the undersigned at your earliest convenience.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in blue ink that reads "Michele Oxlade".

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

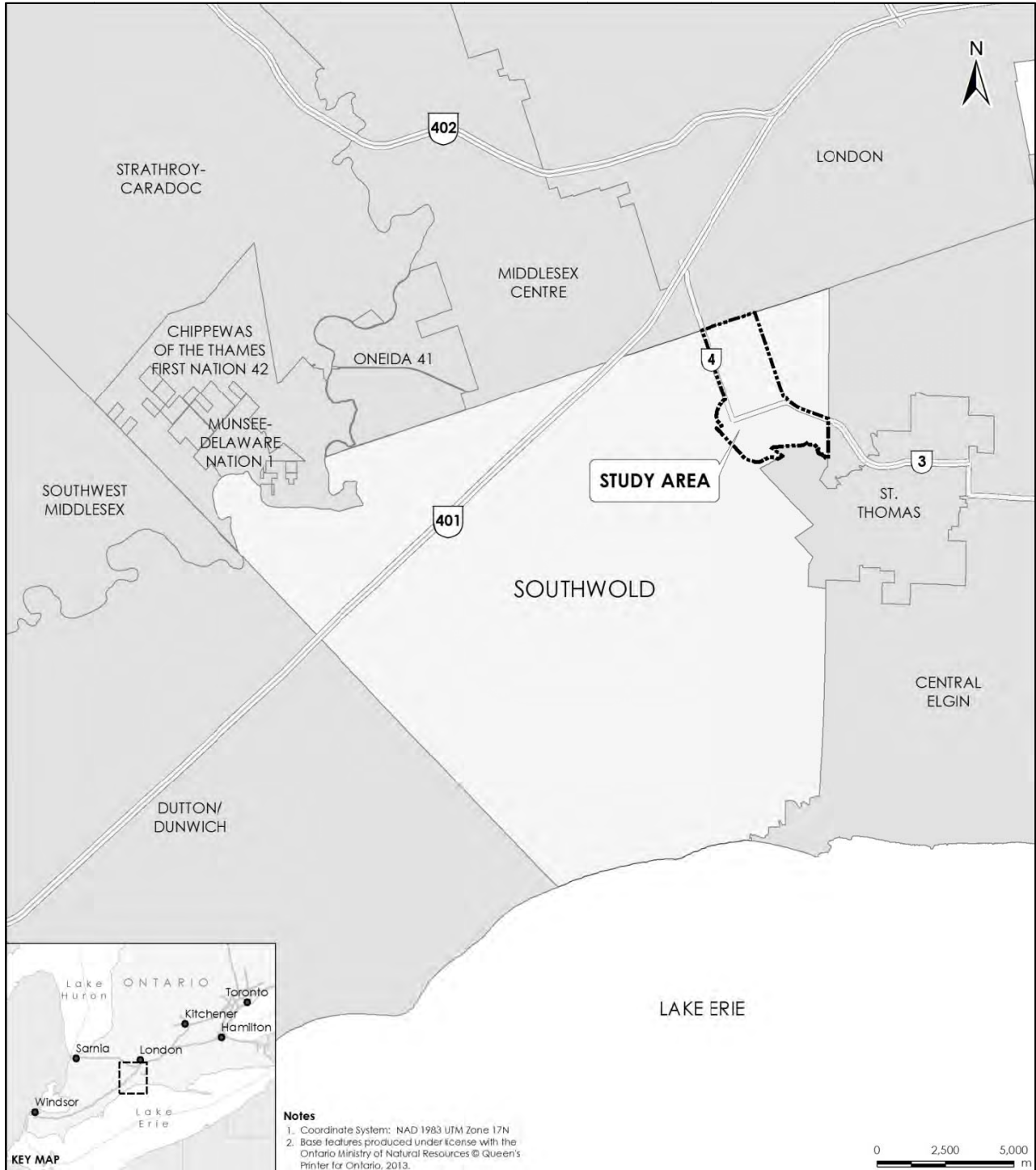
c. Donna Clermont, Township of Southwold, CAO/Clerk



March 6, 2014
Bill Armstrong

Page 2 of 4

Reference: Talbotville/Ferndale Master Servicing Plan





Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7

March 6, 2014
File: 165500796

Attention: Attention
Recipient's Address

Dear Recipient's Name,

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

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Date: Wednesday, March 19, 2014
Time: 6:30pm to 8:30pm (open house format)
Location: Keystone Complex, 35921 Talbot Line, Shedden ON

If you have any questions, comments or concerns, please contact the undersigned at your earliest convenience.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink that reads "M. Oxlade".

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator
Phone: (519) 675-6652
Fax: (519) 645-6575
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk

From: [Dan Pujdak](#)
To: [Oxlade, Michele](#)
Cc: [Kathleen Padulo](#); [Sally Gaikezheyongai](#)
Subject: Talbotville Ferndale Master Servicing Plan
Date: Monday, March 10, 2014 2:05:15 PM

Hello Michele,

Thank you for your correspondence with respect to the Talbotville/Ferndale Master Servicing Plan.

Chiefs of Ontario is an aggregate organization that works with First Nation communities in Ontario on broad level issues. We are not a rights-holding organization nor have First Nations in Ontario mandated Chiefs of Ontario to consult. Therefore, we cannot and do not consult on behalf of First Nations communities.

The enclosed map notes that several First Nations communities are in the vicinity of your project. I recommend that you contact them directly.

Canadian law recognizes a duty to consult whenever a contemplated project, action or decision may result in affects to established or potential First Nations rights. For questions related to the duty to consult, kindly contact the Ontario Ministry of Aboriginal Affairs.

Best Regards,

Dan Pujdak
Senior Policy Analyst, Environment
Chiefs of Ontario
111 Peter St., Unit 804
Toronto ON M5V 2H1
416 597 1266 ext 256
1877 517 6527 toll free



From: [Preete, Catherine](#)
To: [Oxlade, Michele](#)
Subject: Southwold PIC Presentation
Date: Tuesday, September 30, 2014 9:07:54 AM

This message has been archived.

Hi Michele,

My manager and I reviewed the presentation and have no additional comments to add to your proposal. Looks really good. J

Regards,

Catherine Preete

Public Health Inspector

Elgin St. Thomas Public Health

1230 Talbot Street

St. Thomas, ON N5P 1G9

Ph: 519-631-9900 Ext. 1275

Fax: 519-633-0468

Email: cpreete@elginhealth.on.ca <<mailto:cpreete@elginhealth.on.ca>>

Website: www.elginhealth.on.ca <<http://www.elginhealth.on.ca/>>

<<http://www.facebook.com/ESTPH>> <<http://www.linkedin.com/company/elgin-st-thomas-public-health>>

<<http://elginhealth.on.ca/index.asp?ParentID=9&MenuID=307>>

P Please don't print this e-mail unless you really need to.

From: Oxlade, Michele [mailto:Michele.Oxlade@stantec.com]
Sent: Wednesday, September 24, 2014 11:09 AM
To: Preete, Catherine
Subject: Southwold PIC Presentation

Good Morning Catherine,

Please find attached a copy of the presentat

Attachments:

image001.png	(1 KB)
image002.gif	(0 KB)
image003.gif	(1 KB)
image004.png	(23 KB)

**Ministry of Tourism,
Culture and Sport**

Culture Services Unit
Programs and Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416 314 5424
Fax: 416 212 1802

**Ministère du Tourisme,
de la Culture et du Sport**

Unité des services culturels
Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto ON M7A 0A7
Tél: 416 314 5424
Télé: 416 212 1802



October 3, 2014 (EMAIL ONLY)

Michele Oxlade
Stantec Consulting Ltd.
171 Queens Avenue, Suite 500
London, ON N6A 5J7
E: michele.oxlade@stantec.com

MTCS file #: 0000858
Proponent: Township of Southwold
Subject: Notice of Public Information Centre #2
Talbotville / Ferndale Master Servicing Plan
Location: Township of Southwold / Elgin County

Dear Michele Oxlade:

Thank you for providing the Ministry of Tourism, Culture and Sport (MTCS) with the Notice of Public Information Centre for this project. MTCS's interest in this EA project relates to its mandate of protecting, conserving and preserving Ontario's culture heritage, which includes:

- Archaeological resources, including land-based and marine resources;
- Built heritage resources, including bridges and monuments; and,
- Cultural heritage landscapes.

Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources.

Archaeological Resources

Your EA project may impact archaeological resources and you may screen the project with the MTCS [Criteria for Evaluating Archaeological Potential](#) to determine if an archaeological assessment is needed. MTCS archaeological site data is available at archaeologicalsites@ontario.ca. A municipal archaeological review procedure using an archaeological management plan may also be used to determine archaeological potential where one exists. If your EA project area exhibits archaeological potential, then an archaeological assessment by an *Ontario Heritage Act* (OHA) licensed archaeologist, who is responsible for submitting the report directly to MTCS for review, is recommended.

Built Heritage and Cultural Heritage Landscapes

The attached MTCS checklist *Screening for Impacts to Built Heritage and Cultural Heritage Landscapes* helps determine whether your EA project may impact cultural heritage resources. Municipal Clerks can provide information on property registered or designated under the *Ontario Heritage Act*.

If your EA project has the potential to impact heritage resources, MTCS recommends that a Heritage Impact Assessment (HIA) be prepared by a qualified consultant. Our Ministry's [Info Sheet #5: Heritage Impact Assessments and Conservation Plans](#) outlines the scope of HIAs. Please send HIAs to MTCS for review, and make them available to local organizations or individuals who have expressed interest in heritage.

Environmental Assessment Reporting

All technical heritage studies and their recommendations are to be addressed and incorporated into EA projects. Please advise MTCS whether an archaeological assessment and/or a heritage impact assessment will be completed for your EA project, and provide them to MTCS before issuing a Notice of Completion. If your screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file. MTCS is in no way liable if the information in the completed checklists is found to be inaccurate or incomplete.

Thank-you for circulating MTCS on this project: please continue to do so through the EA process, and contact me for any questions or clarification.

Sincerely,

Chris Mahood
Heritage Planner
chris.mahood@ontario.ca
416-314-5424

Copied to: Donna Clermont, Township of Southwold, cao@southwold.ca

Please notify MTCS if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out a determination of their nature and significance.

If human remains are encountered, all activities must cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Consumer Services must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

Screening for Impacts to Built Heritage and Cultural Heritage Landscapes

This checklist is intended to help proponents determine whether their project could affect known or potential cultural heritage resources. The completed checklist should be returned to the appropriate Heritage Planner or Heritage Advisor at the Ministry of Tourism and Culture.

Step 1 – Screening for Recognized Cultural Heritage Value

YES	NO	Unknown	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Is the subject property designated or adjacent* to a property designated under the <i>Ontario Heritage Act</i> ?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2. Is the subject property listed on the municipal heritage register or a provincial register/list? (e.g. Ontario Heritage Bridge List)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Is the subject property within or adjacent to a Heritage Conservation District?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4. Does the subject property have an Ontario Heritage Trust easement or is it adjacent to such a property?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5. Is there a provincial or federal plaque on or near the subject property?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6. Is the subject property a National Historic Site?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	7. Is the subject property recognized or valued by an Aboriginal community?

Step 2 – Screening Potential Resources

YES	NO	Unknown	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Built heritage resources
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Does the subject property or an adjacent property contain any buildings or structures over forty years old[†] that are:
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	▪ Residential structures (e.g. house, apartment building, shanty or trap line shelter)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	▪ Farm buildings (e.g. barns, outbuildings, silos, windmills)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	▪ Industrial, commercial or institutional buildings (e.g. a factory, school, etc.)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	▪ Engineering works (e.g. bridges, water or communications towers, roads, water/sewer systems, dams, earthworks, etc.)
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	▪ Monuments or Landmark Features (e.g. cairns, statues, obelisks, fountains, reflecting pools, retaining walls, boundary or claim markers, etc.)
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2. Is the subject property or an adjacent property associated with a known architect or builder?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. Is the subject property or an adjacent property associated with a person or event of historic interest?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4. When the municipal heritage planner was contacted regarding potential cultural heritage value of the subject property, did they express interest or concern?
YES	NO	Unknown	Cultural heritage landscapes
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. Does the subject property contain landscape features such as:
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	▪ Burial sites and/or cemeteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	▪ Parks or gardens
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	▪ Quarries, mining, industrial or farming operations
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	▪ Canals
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	▪ Prominent natural features that could have special value to people (such as waterfalls, rocky outcrops, large specimen trees, caves, etc.)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	▪ Evidence of other human-made alterations to the natural landscape (such as trails, boundary or way-finding markers, mounds, earthworks, cultivation, non-native species, etc.)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6. Is the subject property within a Canadian Heritage River watershed?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7. Is the subject property near the Rideau Canal Corridor UNESCO World Heritage Site?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. Is there any evidence from documentary sources (e.g., local histories, a local recognition program, research studies, previous heritage impact assessment reports, etc.) or local knowledge or Aboriginal oral history, associating the subject property/ area with historic events, activities or persons?

Note:

If the answer is "yes" to any question in Step 1, proceed to Step 3.

The following resources can assist in answering questions in Step 1:

Municipal Clerk or Planning Department – Information on properties designated under the Ontario Heritage Act (individual properties or Heritage Conservation Districts) and properties listed on a Municipal Heritage register.

Ontario Heritage Trust – Contact the OHT directly regarding easement properties. A list of OHT plaques can be found on the website: [Ontario Heritage Trust](#)

Parks Canada – A list of National Historic Sites can be found on the website: [Parks Canada](#)

Ministry of Tourism and Culture – The Ontario Heritage Properties Database includes close to 8000 identified heritage properties. Note while this database is a valuable resource, it has not been updated since 2005, and therefore is not comprehensive or exhaustive. [Ontario Heritage Properties Database](#)

Local or Provincial archives

Local heritage organizations, such as the municipal heritage committee, historical society, local branch of the Architectural Conservancy of Ontario, etc.

Consideration should also be given to obtaining oral evidence of CHRs. For example, in many Aboriginal communities, an important means of maintaining knowledge of cultural heritage resources is through oral tradition.

If the answer is "yes" to any question in Step 2, an evaluation of cultural heritage value is required. If cultural heritage resources are identified, proceed to Step 3.

If the answer to any question in Step 1 or to questions 2-4, 6-8 in Step 2, is "unknown", further research is required.

If the answer is "yes" to any of the questions in Step 3, a heritage impact assessment is required.

If uncertainty exists at any point, the services of a qualified person should be retained to assist in completing this checklist. All cultural heritage evaluation reports and heritage impact assessment reports must be prepared by a qualified person. Qualified persons means individuals (professional engineers, architects, archaeologists, etc.) having relevant, recent experience in the identification and conservation of cultural heritage resources. Appropriate evaluation involves gathering and recording information about the property sufficient to understand and substantiate its heritage value; determining cultural heritage value or interest based on the advice of qualified persons and with appropriate community input. If the property meets the criteria in Ontario Regulation 9/06 under the Ontario Heritage Act, it is a cultural heritage resource.

† The 40 year old threshold is an indicator of potential when conducting a preliminary survey for identification of cultural heritage resources. While the presence of a built feature that is 40 or more years old does not automatically signify cultural heritage value, it does make it more likely that the property could have cultural heritage value or interest. Similarly, if all the built features on a property are less than 40 years old, this does not automatically mean the property has no cultural heritage value. Note that age is not a criterion for designation under the *Ontario Heritage Act*.

Step 3 – Screening for Potential Impacts		
YES	NO	Will the proposed undertaking/project involve or result in any of the following potential impacts to the subject property or an adjacent* property?
<input type="checkbox"/>	<input type="checkbox"/>	Destruction, removal or relocation of any, or part of any, heritage attribute or feature.
<input type="checkbox"/>	<input type="checkbox"/>	Alteration (which means a change in any manner and includes restoration, renovation, repair or disturbance).
<input type="checkbox"/>	<input type="checkbox"/>	Shadows created that alter the appearance of a heritage attribute or change the exposure or visibility of a natural feature or plantings, such as a garden.
<input type="checkbox"/>	<input type="checkbox"/>	Isolation of a heritage attribute from its surrounding environment, context or a significant relationship.
<input type="checkbox"/>	<input type="checkbox"/>	Direct or indirect obstruction of significant views or vistas from, within, or to a built or natural heritage feature.
<input type="checkbox"/>	<input type="checkbox"/>	A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces.
<input type="checkbox"/>	<input type="checkbox"/>	Soil disturbance such as a change in grade, or an alteration of the drainage pattern, or excavation, etc.

* For the purposes of evaluating potential impacts of development and site alteration "adjacent" means: contiguous properties as well as properties that are separated from a heritage property by narrow strip of land used as a public or private road, highway, street, lane, trail, right-of way, walkway, green space, park, and/or easement or as otherwise defined in the municipal official plan.

DIRECT CONSULTATION

MINISTRY OF TOURISM, CULTURE, AND SPORT

n/a

ONTARIO HERITAGE TRUST

n/a

MUNICIPALITY/TOWNSHIP

Emailed Southwold Township Planner (unidentified) at Planning@WestElgin.net on April 2, 2015 – Feedback pending

Consulted County of Elgin Culture Map available online (http://elginmapping.ca/maps/?Viewer=County_Culture)

INDIRECT CONSULTATION

PLAQUES

Federal

Parks Canada: None (searched "Southwold", "Elgin", and "Talbotville" at http://www.pc.gc.ca/apps/dfhd/search-recherche_eng.aspx)

Provincial

Ontario Heritage Trust: None (used municipality search at <http://www.heritagetrust.on.ca/Resources-and-Learning/Online-Plaque-Guide.aspx>)

Municipal

Various: None (Culture Map)

NATIONAL HISTORIC SITE

National Historic Sites and Monuments Board of Canada: None (same search terms at <http://www.historicplaces.ca/en/home-accueil.aspx>)

BURIAL SITE OR CEMETERY

Yes. Talbotville Cemetery on Talbot Line, west portion of study area

CANADIAN HERITAGE RIVER

Canadian Heritage Rivers System: No

TRAILS AND OTHER LOCAL RESOURCES

Historical Societies: n/a

Municipal Heritage Committees: n/a

From: [Jennifer Dow](#)
To: [Oxlade, Michele](#)
Subject: Talbotville/Ferndale Master Servicing Plan
Date: Thursday, March 27, 2014 9:02:07 AM
Attachments: @

This message has been archived.

Hi Michele,

I was wondering if you could please add me to your distribution list for any documents, meetings or notices regarding this project.

I would like to keep up to date on the project as it moves forward.

Thank you,
Jennifer Dow

Water Conservation Supervisor
Kettle Creek Conservation Authority
Tel: (519) 631-1270 ext.228
Fax: (519) 631-5026
www.kettlecreekconservation.on.ca <<http://www.kettlecreekconservation.on.ca/>>

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Attachments:

image001.jpg	(6 KB)
image002.jpg	(3 KB)
image003.jpg	(3 KB)



Appendix 2.3

Aboriginal Communications Log



Aboriginal Community Name	Contact Information	Notice of Commencement &		Notice of PIC 2 Date: Sept 11, 2014	PIC 2 Package Information - Sept 25,	Notice of Completion Date:	Additional Communication
Chippewas of the Thames	Chief Joe Miskokomon Ms. Brenda French 320 Chippewa Rd. Muncey, ON N0L 1Y1	Delivered by Canada Post Letter mail	Chief Joe Miskokomon Fallon Burch	Delivered by Canada Post Letter mail	Chief Joe Miskokomon Fallon Burch		May 28, 2014 - Letter from Fallon Burch requesting completed studies to determine if there are any impacts associated with the project. Oct 2, 2014 Met with Fallon Burch & Rolanda Elijah (Director of Lands and Environment) See attached summary to MOE for meeting notes.
Munsee-Delaware Nation	Chief Patrick Waddilove Mr. Paul Henry 290 Jubilee Rd. Muncey, ON N0L 1Y1	Delivered by Canada Post Letter mail	Chief Patrick Waddilove	Delivered by Canada Post Letter mail	Chief Roger Thomas		March 31, 2015, Phone message left for Chief Thomas. Project is concluding and would like to provide the opportunity for comments. Email with PIC information also provided to Chief Thomas. Read Receipt received for email. No correspondence received to date.
Oneida Nation of the Thames	Chief Joel Abram Ms. Laura Phillips 2212 Elm Ave. Southwold, ON N0L 2G0	Delivered by Canada Post Letter mail	Chief Joel Abram Ms. Laura Phillips Ms. Holly Elijah	Delivered by Canada Post Letter mail	Chief Joel Abram Laura Phillips Holly Elijah		March 31, 2015, Phone message left for Councillor Abram. Project is concluding and would like to provide the opportunity for comments. Email with PIC information also provided to Chief Doxtator and Councillor Abram. Read Receipt received for both emails. No correspondence received to date.
Bkejwanong Territory (Walpole Island)	Chief Burton Kewayosh Ms. Nanette Kewayosh RR#3 Wallaceburg, ON N8A 4A9	Delivered by Canada Post Letter mail	Chief Burton Kewayosh Ms. Nanette Kewayosh	Delivered by Canada Post Letter mail	Chief Burton Kewayosh Ms. Nanette Kewayosh		Oct 20, 2014 Met with Dean Jacobs and Jared Macbeth. Provided project information. They would like to continue to receive project information.
Caldwell First Nation	Chief Louise Hillier PO Box 388 Leamington, ON N8H 3W3	Delivered by Canada Post Letter mail	Chief Louise Hillier	Delivered by Canada Post Letter mail	Chief Louise Hillier		March 13, 2014. Conversation with Chief Hillier regarding another project she requested the PIC 1 information. Email sent April 2, 2014 with copy of boards attached. Email Sept 15, 2014 - 8 days is not sufficient notice of a PIC. The Chief and Council will be out of town on the 23rd and will not be able to attend the PIC. They would like to schedule a meeting to discuss the project. Oct 3, 2014 Met with Chief Hillier. See attached summary to MOE for meeting notes. January 5, 2014 sent email asking if community would like to provide comments. Jan 5, 2015 Email from Chief Hillier. Caldwell would like confirmation that remediation will be done with native wildflowers and grass mix and will be restored immediately to minimize the opportunity for phragmites to take root.
Moravian of the Thames				Justin Logan - emailed Sept 18, 2014. Community was not previously on contact list.	Justin Logan		Have reviewed documentation and do not require additional consultation.

Aboriginal Community Name	Contact Information	Notice of Commencement &		Notice of PIC 2 Date: Sept 11, 2014	PIC 2 Package Information - Sept 25,	Notice of Completion Date:	Additional Communication
Southern First Nations Secretariat	Ms. Jolene Whiteye Mr. Michael George 22361 Austin Line Bothwell, ON N0P1C0	Delivered by Canada Post Letter mail	Ms. Jolene Whiteye	-	-	-	-
Chiefs of Ontario	Ms. Kathleen Padulo 111 Peter St. - Suite 804 Toronto, ON N5V 2H1	Delivered by Canada Post Letter mail	-	-	-	-	March 10, 2014 Chiefs of Ontario is not a tight-holding organization nor have First Nations in Ontario mandated Chiefos of Ontario to consult. They will not be contacted further.
Ministry of the Environment	Mr. Christopher Behaviolos 135 St Clair Ave W - 3rd Floor Toronto, ON M4P 1V5	Delivered by Canada Post Letter mail	-	-	-	-	-
Ministry of Aboriginal Affairs	Wendy Comet, Ashley Johnson 160 Bloor St. 9th Floor Toronto, ON M7A 2E6	Delivered by Canada Post Letter mail	-	-	-	-	No response received.



Appendix 2.4

Aboriginal Consultant Responses



ABORIGINAL CONSULTATION



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

March 6, 2014
File: 165500796

Bill Armstrong
Ministry of Environment
733 Exeter Road
London, ON N6E 1L3

Dear Mr. Armstrong,

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

The purpose of the *Talbotville / Ferndale Master Servicing Plan* is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the municipality. Specifically, the Master Servicing Plan is to address the provision of water, wastewater, and stormwater management for existing and future growth areas for the Talbotville / Ferndale settlement area as defined in the Township's Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.

This study is being conducted as a Master Plan (Phases 1 and 2) under the Municipal Class Environmental Assessment process (Municipal Engineer's Association, as amended in June 2007 and 2011). Under this process, agency and public input is invited for incorporation into the planning and design for this study. The first Public Information Centre to introduce this study will be held on:

Date: Wednesday, March 19, 2014
Time: 6:30pm to 8:30pm (open house format)
Location: Keystone Complex, 35921 Talbot Line, Shedden ON

If you have any questions, comments or concerns, please contact the undersigned at your earliest convenience.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in blue ink that reads "Michele Oxlade".

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

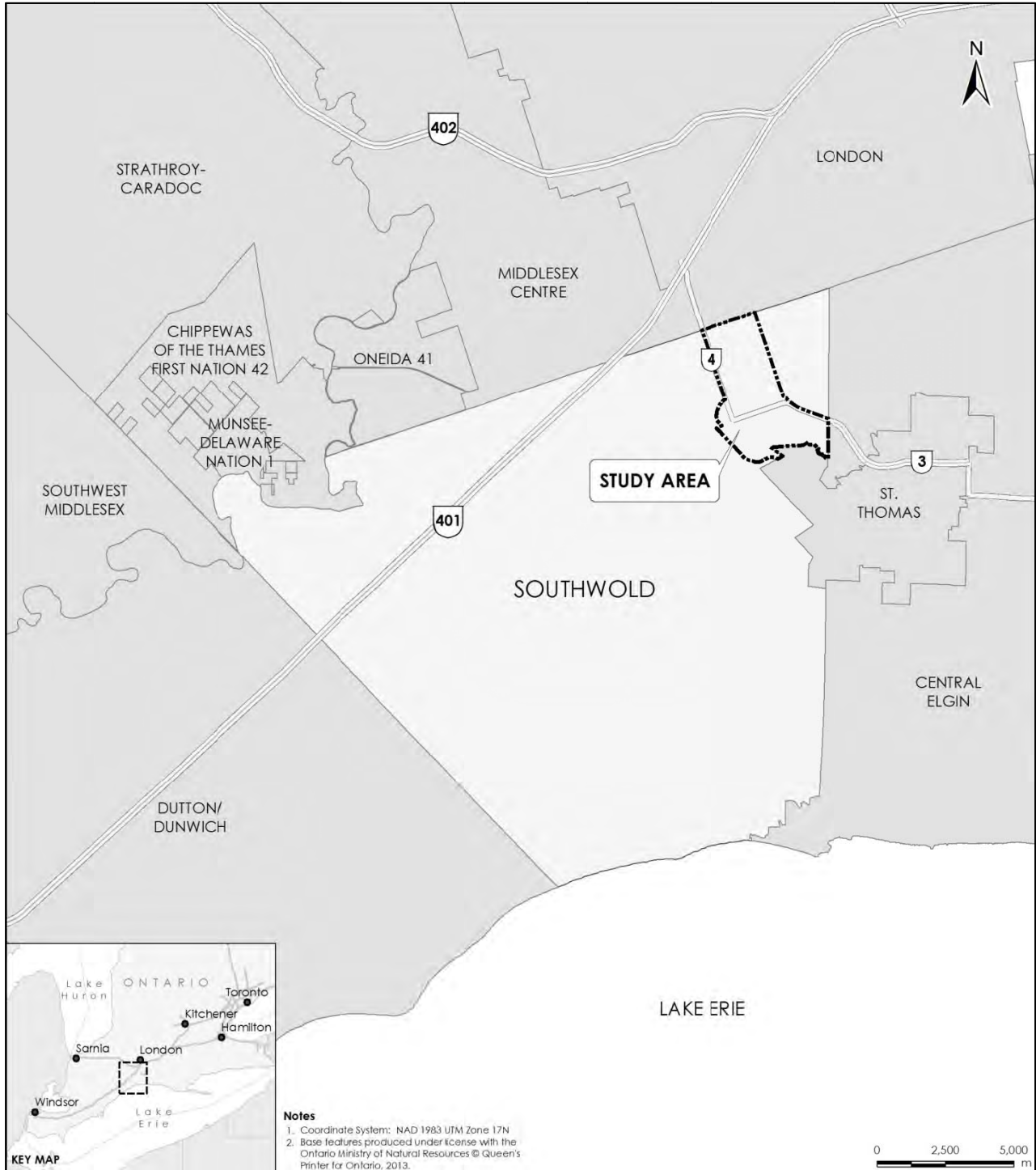
c. Donna Clermont, Township of Southwold, CAO/Clerk



March 6, 2014
Bill Armstrong

Page 2 of 4

Reference: Talbotville/Ferndale Master Servicing Plan





Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7

March 6, 2014
File: 165500796

Attention: Attention
Recipient's Address

Dear Recipient's Name,

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

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Time: 6:30pm to 8:30pm (open house format)
Location: Keystone Complex, 35921 Talbot Line, Shedden ON

If you have any questions, comments or concerns, please contact the undersigned at your earliest convenience.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator
Phone: (519) 675-6652
Fax: (519) 645-6575
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7

March 6, 2014
File: 165500796

Attention: David Pickles
Ministry of Aboriginal Affairs
Aboriginal and Ministry Relationships Branch
160 Bloor Street East, 9th Floor
Toronto, ON M7A 2E6

Dear Mr. Pickles,

Reference: Notice of Commencement for the Talbotville/Ferndale Master Servicing Plan

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

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We respectfully request any information specific to Aboriginal federal and provincial land claims and litigation that may be within the supplied project study area. Please refer to the attached map for the location of the study area.

This project is being conducted as a Master Plan under the Municipal Class Environmental Assessment process for Municipal Water and Wastewater Projects (Municipal Engineer's Association, as amended 2007 & 2011). Under this process, agency and public input is invited for incorporation into the planning and design of this project.

If you have any comments, questions or concerns, please contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

Michele Oxlade, B.Sc., EPt, Env SP
Environmental Coordinator
Phone: (519) 675-6652
Fax: (519) 645-6575
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: 519-645-6575

March 6, 2014
File: 165500796

Attention: Wendy Comet
Ministry of Aboriginal Affairs
Aboriginal and Ministry Relationships Branch
160 Bloor Street East, 9th Floor
Toronto, ON M7A 2E6

Dear Ms. Comet,

Reference: Notice of Commencement for the Talbotville/Ferndale Master Servicing Plan

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

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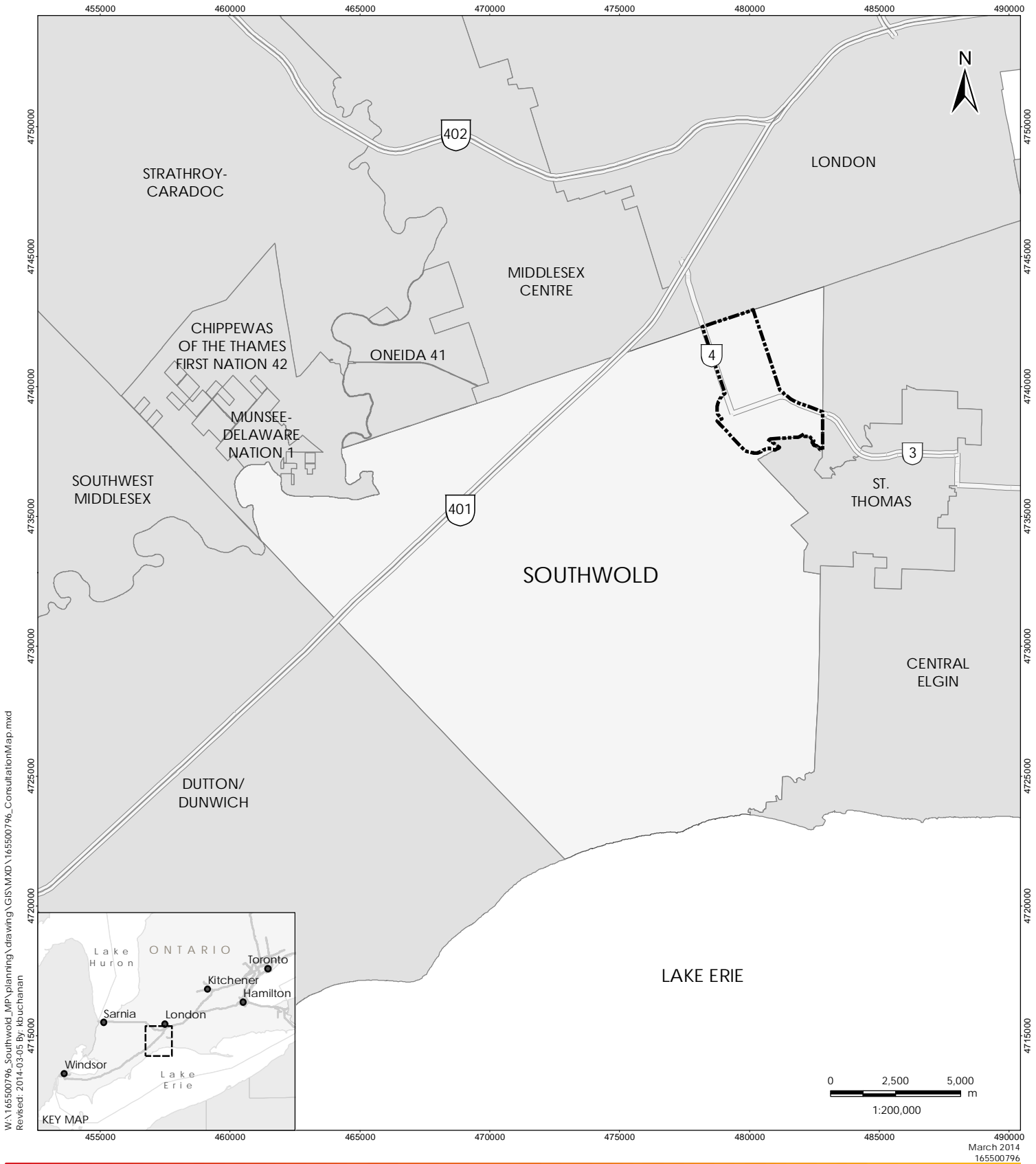
If you have any comments, questions or concerns, please contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

Michele Oxlade, B.Sc., EPt, Env SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Ashley Jonson, MAA, Strategic Policy and Planning Division, Donna Clermont, Township of Southwold, CAO/Clerk



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 Revised: 2014-03-05 By: kbuchanan

March 2014
165500796

	<p>Legend</p> <p> Study Area</p>	<p>Client/Project</p> <p>Township of Southwold Talbotville/Ferndale Settlement Area Master Servicing Plan Municipal Class EA PH 1 & 2</p> <hr/> <p>Figure No.</p> <p style="text-align: center; font-size: 24px;">1</p> <hr/> <p>Title</p> <p style="text-align: center; font-size: 24px;">Study Area</p>
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- Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7

March 6, 2014
File: 165500796

Aboriginal Affairs and Northern Development Canada
Consultation and Accommodation Unit
300 Sparks Street
Ottawa, ON K1A 04A

To Whom it May Concern,

Reference: Notice of Commencement for the Talbotville/Ferndale Master Servicing Plan

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

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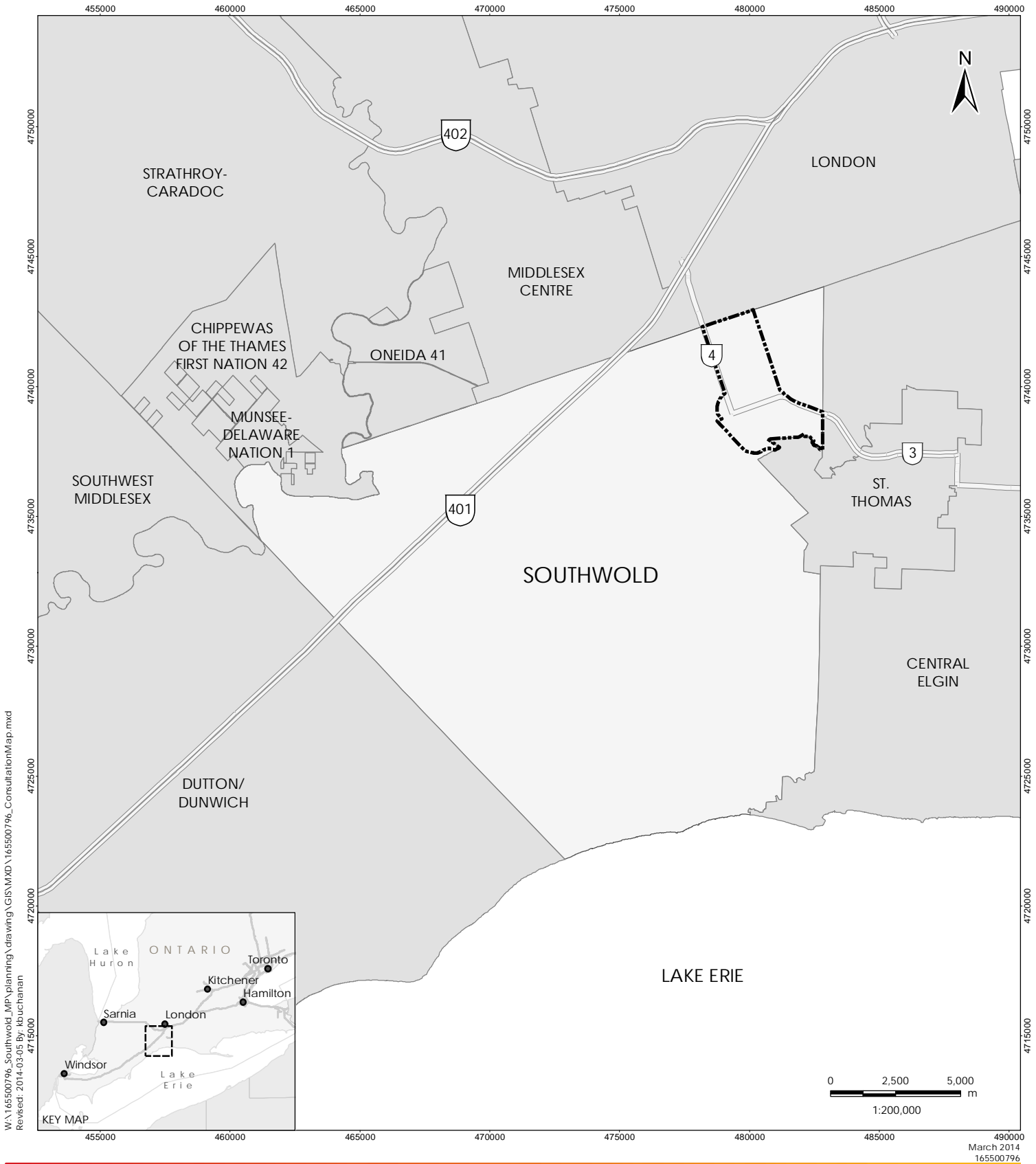
If you have any comments, questions or concerns, please contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator
Phone: (519) 675-6652
Fax: (519) 645-6575
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk



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 Revised: 2014-03-05 By: kbuchanan

March 2014
165500796

	<p>Legend</p> <p> Study Area</p>	<p>Client/Project</p> <p>Township of Southwold Talbotville/Ferndale Settlement Area Master Servicing Plan Municipal Class EA PH 1 & 2</p> <hr/> <p>Figure No.</p> <p style="text-align: center; font-size: 24px;">1</p> <hr/> <p>Title</p> <p style="text-align: center; font-size: 24px;">Study Area</p>
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- Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.

Oxlade, Michele

From: Postmaster@inac.gc.ca on behalf of Environmental Assessment Coordination ON
<EACoordination_ON@aandc-aadnc.gc.ca>
Sent: Thursday, March 06, 2014 5:34 PM
To: Oxlade, Michele
Subject: Re: Request for Consultation Information (Message Received)

Thank you for your email. The Department will respond to your request shortly.

**MINISTRY OF THE ENVIRONMENT AND
CLIMATE CHANGE CORRESPONDENCE**

From: Oxlade, Michele
To: bill.armstrong@ontario.ca
Cc: [Oliveira, Nelson](#); [Gorrie, Cameron](#)
Subject: Aboriginal Consultation
Date: Tuesday, October 14, 2014 2:10:00 PM

Dear Bill,

I wanted to let you know that on Thursday October 2, 2014 myself and Cameron Gorrie met with consultation staff from Chippewas of the Thames First Nation at their offices located in the Health Centre on the reserve. We then met with Chief Hillier of Caldwell First Nation at their offices in Leamington on October 3, 2014. These meetings were both in regards to the Southwold Class EA and the Ilderton WWTF Class EA. The following is a summary of the communities requests and notes that were discussed during the meetings.

Southwold Master Servicing Plan

-
Chippewas of the Thames First Nation

1. Requests to be included in all project consultation going forward including any additional EAs, project siting, design and construction relating to a new WWTP.
2. Requests to review and provide comment on all project documentation.
3. Requests an Aboriginal monitor from their community to be present for any Stage 2 + site investigations,
4. The historic trading area located along the Thames River to be investigated and included in documentation
5. The Community will be formally requesting a presentation to be delivered to the Senior Management Team and Band Council. The preferred date for this meeting is the last week of October or the first week of November. This presentation is to illustrate to the band the process and requirements needed to produce a Servicing Study. Southwold is a good comparison for the community to learn from.

Caldwell First Nation

1. Requests to be included in all project consultation going forward including any additional EAs, project siting, design and construction relating to a new WWTP.
2. Requests to review and provide comment on all project documentation.
3. Requests an Aboriginal monitor from their community to be present for any Stage 2 + site investigations,
4. Requests the Project File and future ESR to include specific information on the management of Common Reed (*Phragmites australis* subsp. *australis*) which is an intensive invasive species known to move into disturbed areas.

Ilderton WWTF Class EA

-
[Redacted]

[Redacted]

[Redacted]

[Redacted]

Best Regards,
Michele

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator/Technologist
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Celebrating 60 years of community, creativity, and client relationships.

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**FIRST NATIONS COMMUNITY
CONSULTATION**

**SUPPLEMENTAL INFORMATION PROVIDED
WITH COMMUNITY LETTER DATED
SEPTEMBER 25, 2014**

Talbotville & Ferndale Master Servicing Plan

Public Information Centre #2

September 23, 2014



TOWNSHIP OF
Southwold



Outline

- Introduction
- Municipal Class Environmental Assessment
- Planning Considerations
- Guiding Principles
- Natural Environment & Cultural Review
- Aboriginal Consultation
- Small Settlement Study, Provincial Policy Statement & Population Projections
- Water Supply & Distribution
- Wastewater Collection & Treatment
- Stormwater Management
- Opinion of Probable Costs
- Funding Opportunities
- Next Steps
- Questions



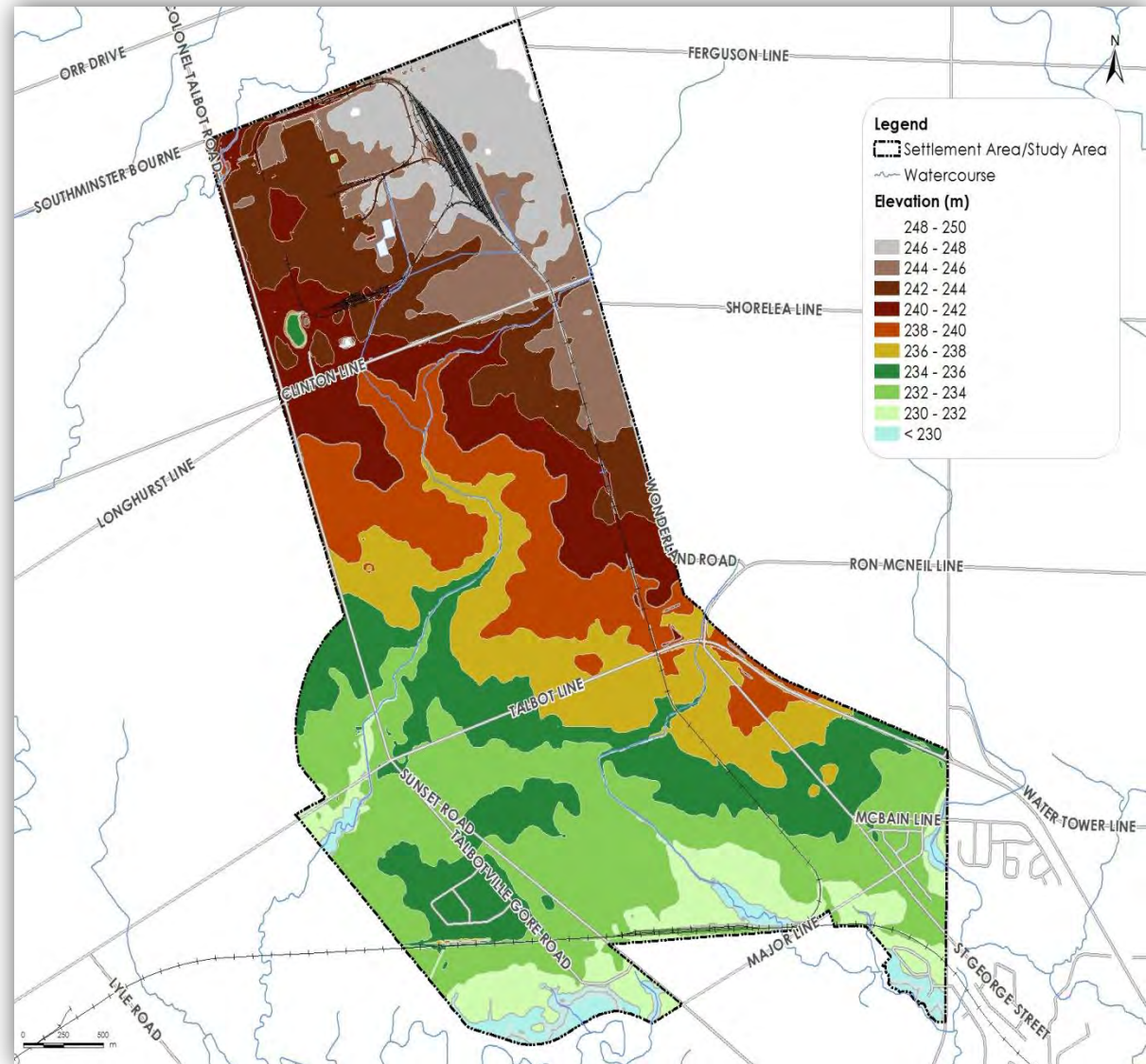
Introduction

- The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas
- The Township is seeking to improve development opportunities within the Talbotville & Ferndale settlement areas with the completion of a Master Servicing Plan to provide full municipal servicing



Master Servicing Plan

- Currently the Township is serviced with water and limited wastewater infrastructure
- The Master Servicing Plan should be reflective of the development and growth goals of the Township, in accordance with the Adopted Official Plan. To ensure this, a set of guiding principles or priorities will be developed with consideration for:
 - Preference for long term servicing solutions over interim solutions
 - All services to be fully funded through adequate planning, budgeting and identified revenue streams, development charges, etc.
 - Servicing solutions should be developed which minimize risk to the Township, users, and others



Municipal Class Environmental Assessment (EA)

- Municipal Class EA (MCEA October 2000, as amended in 2007 & 2011)
 - This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class EA, which is an approved process under the EA Act
- Environmental Assessment (EA) is a decision making process to promote good environmental assessment planning, with key features being:
 - Early consultation
 - Consideration of reasonable range of alternatives
 - Assessment of environmental effects
 - Systematic evaluation of alternatives
 - Clear documentation and traceable decision making
- Public Involvement
 - The role of those members of the public with an interest in the study are to provide background information to advise the proponent (Township) of their support and concerns, and to review and provide comments and input about the study findings (as the project progresses)
 - Members of the public with an interest in the study can ask to be placed on the mailing list to receive notification of the consultation opportunities for this project

Problem/Opportunity Statement

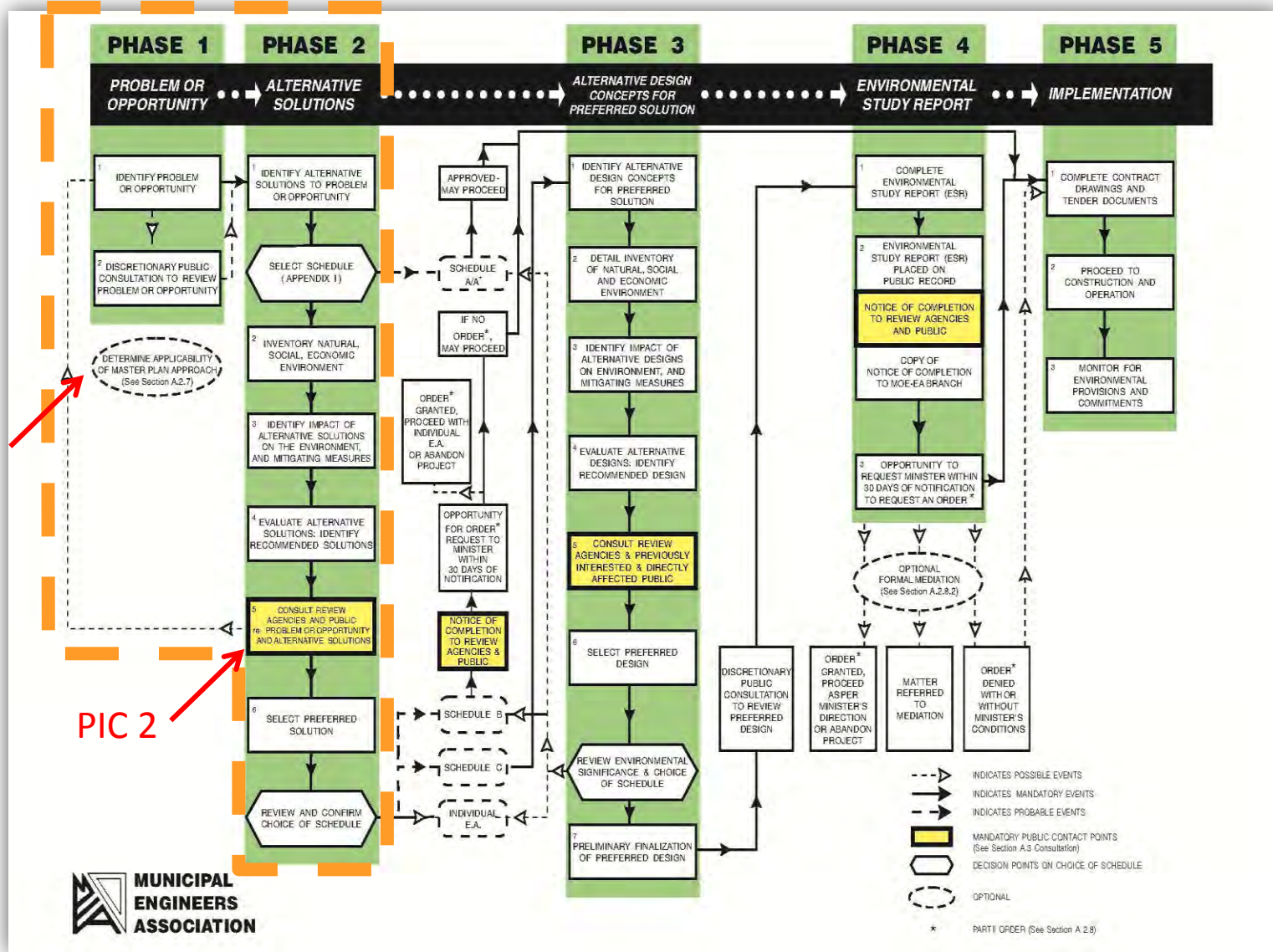
- The following problem statement was developed for the Talbotville & Ferndale Master Servicing Plan:
 - The purpose of the Talbotville & Ferndale Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the township. Specifically, the Master Servicing Plan is to address the provision of water, wastewater, and stormwater management for existing and future growth areas for the Talbotville / Ferndale settlement area as defined in the Township's Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.



Municipal Class Environmental Assessment (EA)

PIC 1

PIC 2



Planning Considerations

- The study area includes the entire Talbotville/Ferndale settlement areas including the lands designated for industrial use as defined in the Township's Official Plan



Existing Infrastructure

- Talbotville
 - Water: fully serviced
 - Wastewater: no services (on-site septic systems)
- Ferndale
 - Water: fully serviced
 - Wastewater: partially serviced (existing development is fully serviced, growth area is not serviced)
- Industrial Lands*
 - Water: partially serviced
 - Wastewater: partially serviced
 - * Former Ford property is on municipal water and has a private sewage treatment facility on site
- There is limited stormwater management infrastructure within the Township

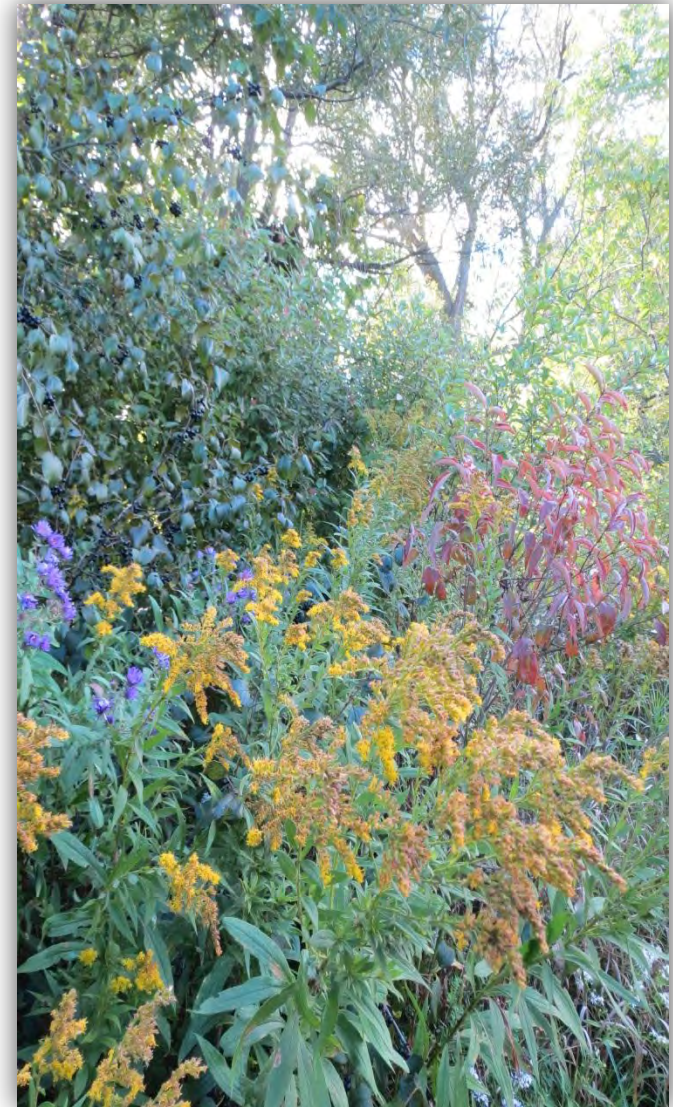


Guiding Principles

- The following guiding principles were developed for this Master Servicing Plan (MSP):
 - The MSP is developed in a logical, consistent and fair manner that reflects the values of the Township of Southwold (Council, Staff, Community)
 - The MSP should align with and build upon the goals and objectives for the Township with respect to servicing of existing and growth areas as noted in the Adopted Official Plan per the Provincial Policy Statement and Small Settlement Study
 - The MSP should align with the Municipal Servicing Objectives defined in the Adopted Official Plan including ensuring that servicing is provided in a sustainable and financially viable manner and that planned growth is accommodated through the efficient use of existing municipal infrastructure
 - The MSP developed meets the requirements of current regulations and establishes a proactive plan to achieve compliance with regulations to be phased in by the federal and provincial government
 - The MSP addresses the state and condition of current infrastructure as well as future infrastructure needs in order to provide the Township with an overall blueprint for infrastructure management
 - Technical analysis based on data collection and modeling is undertaken to provide a full understanding of key systems under the expected range of conditions over the study period to the level required for decisions to be made
 - Key problems and opportunities facing the Township with regard to municipal water, wastewater, and stormwater infrastructure are properly identified, including opportunities to time work with other capital projects
 - Past work, current knowledge and future trends and technology are adequately analyzed and identified to the Township
 - Cost effective, sustainable and timely solutions are developed
 - For the Township to have an interdepartmental consensus as to the Master Plan strategy based on Stantec's work

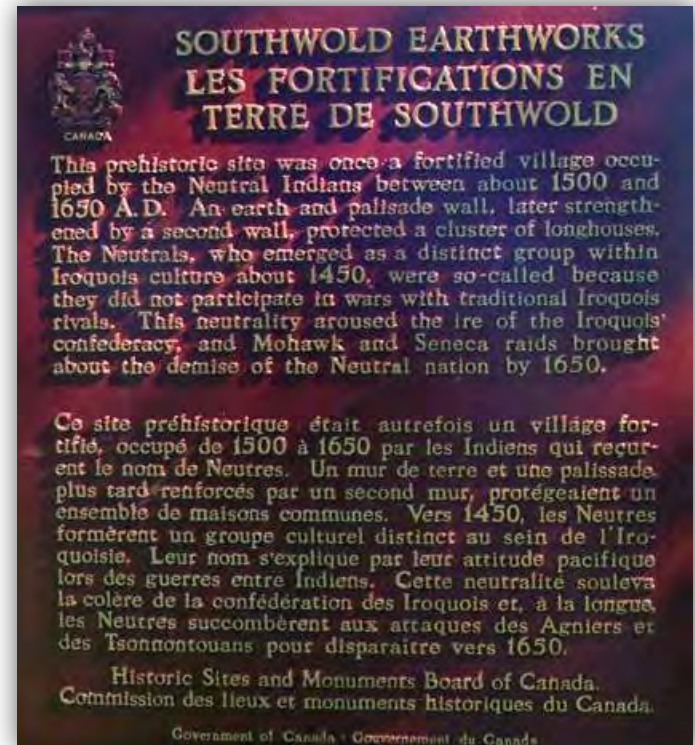
Natural Environment Review

- The study area is in the jurisdiction of the Kettle Creek Conservation Authority (KCCA)
 - Dodd Creek subwatershed
 - Upper Kettle Creek subwatershed
- Portions of the study area are in the KCCA Area of the Regulated Limit
 - Any development, construction or site alteration proposed within the regulated area may require prior written approval from the conservation authority
- KCCA 2012 Watershed Report Card indicates water quality has improved from 2008
- Ministry of Natural Resources (MNR) does not indicate any wetlands within the study area, however several significant woodlands (greater than 4 ha) are present
- Potential for at-risk wildlife species (field survey may be required to determine presence/absence prior to initiating any future work)
 - Monarch Butterfly
 - Acadian Flycatcher
 - Bobolink
 - Eastern Meadowlark
 - American Badger
- Department of Fisheries and Oceans (DFO) mapping does not identify at-risk fish or mussel species in the study area



Cultural Environment Review

- Consultation with Ministry of Tourism, Culture and Sport
 - Identify Archaeological potential within the study area
 - Identify Cultural/Heritage resource potential within the study area
- Consultation with Aboriginal Communities may identify local areas of cultural interest (ongoing)
- Consultation with municipal heritage planners, if required
- A Stage 1 and 2 Archaeological Assessment may be required

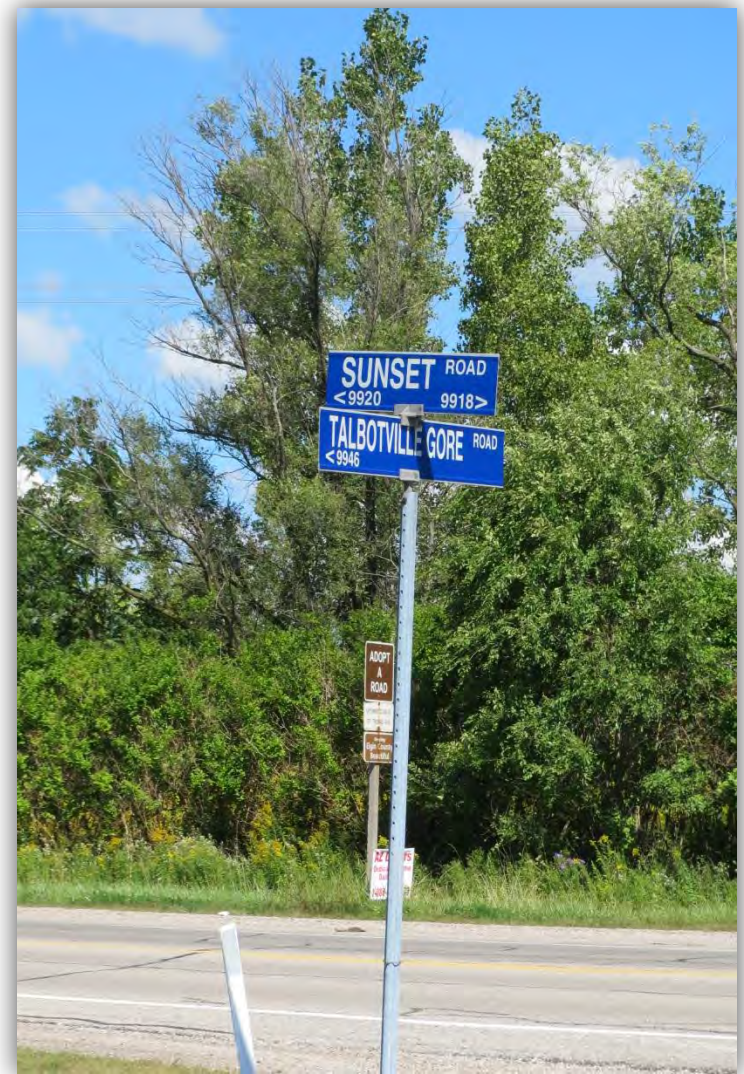


Aboriginal Consultation

- The study area for the Master Plan falls within the Treaty territory of several First Nations communities
- Notices and project information is provided to Aboriginal Communities throughout the EA process
- Project team is committed to meaningful consultation and maintaining open lines of communication with interested communities, including providing opportunities to meet with the project team and discuss alternatives
- The following First Nations communities have been included as part of the Aboriginal Consultation for the Master Plan:
 - Bkejwanong Territory (Walpole)
 - Caldwell First Nation
 - Chippewas of the Thames First Nation
 - Moravian of the Thames
 - Munsee-Delaware Nation
 - Oneida Nation of the Thames

Small Settlement Servicing Study (2013)

- The Small Settlement Servicing Study was intended to determine alternatives for providing services to settlement areas
- Required by the Ministry of Municipal Affairs and Housing and the MOE to demonstrate consistency with the servicing policies of the Provincial Policy Statement 2005
- Settlement areas are the primary growth centres where full municipal or communal services are required to achieve forecasted growth
 - Development is generally constrained in both Settlements and Hamlets by the absence of wastewater treatment facilities



Provincial Policy Statement

- Relevant excerpts for the Small Settlement Area Servicing Study from the Provincial Policy Statement include
 - Requirement for infrastructure and public services facilities, be available or planned, suitable for proposed development over the long term and protect public health and safety
 - Wastewater treatment facilities must be available or planned
 - Servicing be coordinated, efficient, and cost effective and integrated with planning for growth to accommodate projected needs, use of existing services should be optimized
 - Growth must be planned to efficiently use existing municipal services as the first priority and to efficiently use existing private communal services as the second priority where municipal services are unavailable
 - Sufficient reserve capacity prior to any new lot creation (if new development is on private services, reserve capacity allotted in case of private system failure)
 - Hierarchy of servicing systems: municipal sewage and water services are the preferred method of servicing, partial servicing only permitted to address failed individual on-site services or to allow infilling and rounding out of development in settlement areas

Population Projections

- Population projections for Talbotville and Ferndale were based upon the *Addendum to Allocation of Equivalent Residential Units Tables and Responses to OMAFRA and MMAH Land Supply Review and Small Settlement Servicing Study* for the next 20 years (2012)
- Talbotville
 - Existing population is approximately 462 people (165 dwellings)
 - Estimated equivalent residential units available (ERU) for future development is approximately 600 units
- Ferndale/Lynhurst
 - Existing population is approximately 588 people (210 dwellings)
 - Estimated equivalent residential units (ERU) for future development is approximately 270 units

	Existing	Future	Total
Talbotville	462	1,800	2,262
Ferndale/Lynhurst	588	810	1,398

Population based on 3 people/ERU for existing development

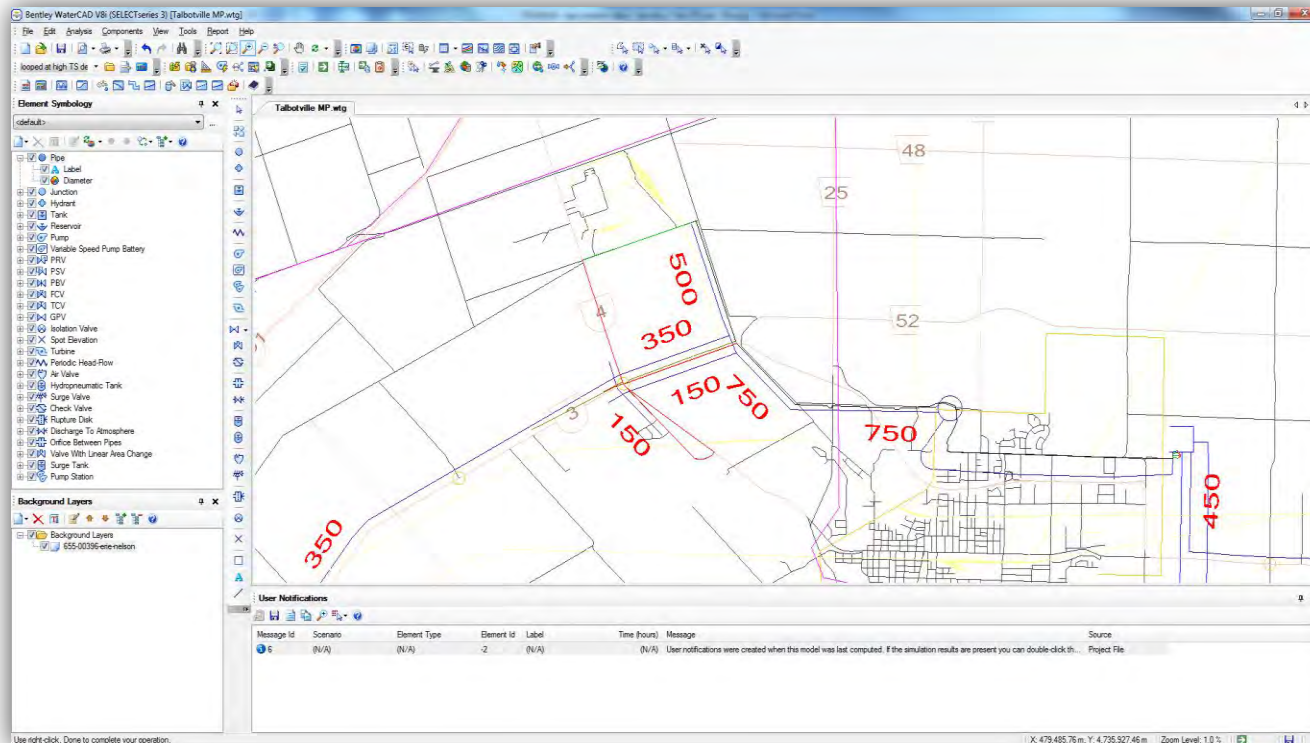
Water Supply & Distribution

- Currently serviced off the St. Thomas Area Secondary Water Supply System (STASWSS)
- Supply to the STASWSS via the Elgin Area Primary Water Supply System (EAPWSS)
- Rated capacity of system is 54,605 m³/day
- Currently operating at about 23% of rated capacity at maximum daily flows
- STASWSS and EAPWSS do not allocate supply to any individual municipality, supply is available on an aggregate basis
- Closure of Ford Motor Company (over 270 m³/day) provides additional capacity for future growth



Southwold Water Distribution System

- Southwold Water Distribution System is a licensed system
 - Consists of watermains, hydrants, valves, blow-offs
 - Existing system is relatively well looped, however some dead ends are present
 - Supplies water to the Dutton-Dunwich Water Distribution System through interconnect at Iona Road
 - Supplies St. Thomas Water Distribution System through interconnect on Fingal Line at the municipal boundary
 - Currently, several areas are flushed regularly to maintain adequate chlorine residual



Servicing Options

- Do Nothing
 - No impact on natural or social environment
 - Not consistent with the Adopted Official Plan (not considered further)
- Private Water Servicing
 - Moderate impact to the natural and social environment
 - Not consistent with the Provincial Policy Statement (PPS) and Adopted Official Plan (not considered further)
- Extend Servicing Of EAPWSS
 - Highest impact to natural environment (involves long pipeline connection)
 - Construction disruption anticipated (worst of all options)
 - Provides additional servicing connection/security
 - Highest capital and operating cost option as supply line would be required in addition to local watermains
 - Would likely require storage, booster pumping and rechlorination facilities
- **Extend Existing Municipal Servicing System (preferred alternative)**
 - Work would be situated within existing or proposed road allowances and majority of complex crossings have been completed (minor natural environment impacts)
 - Construction disruption anticipated
 - Consistent with the PPS
 - Lowest cost option for municipal servicing
 - Utilizes existing capacity and infrastructure
 - Consideration to be given to system security and redundancy

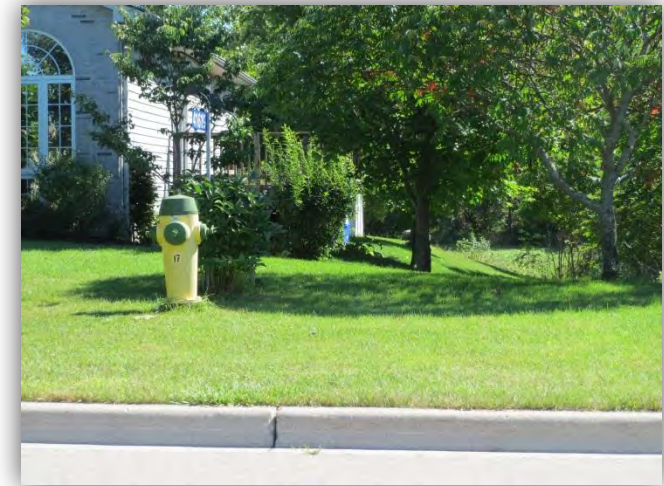
Key Issues & Constraints

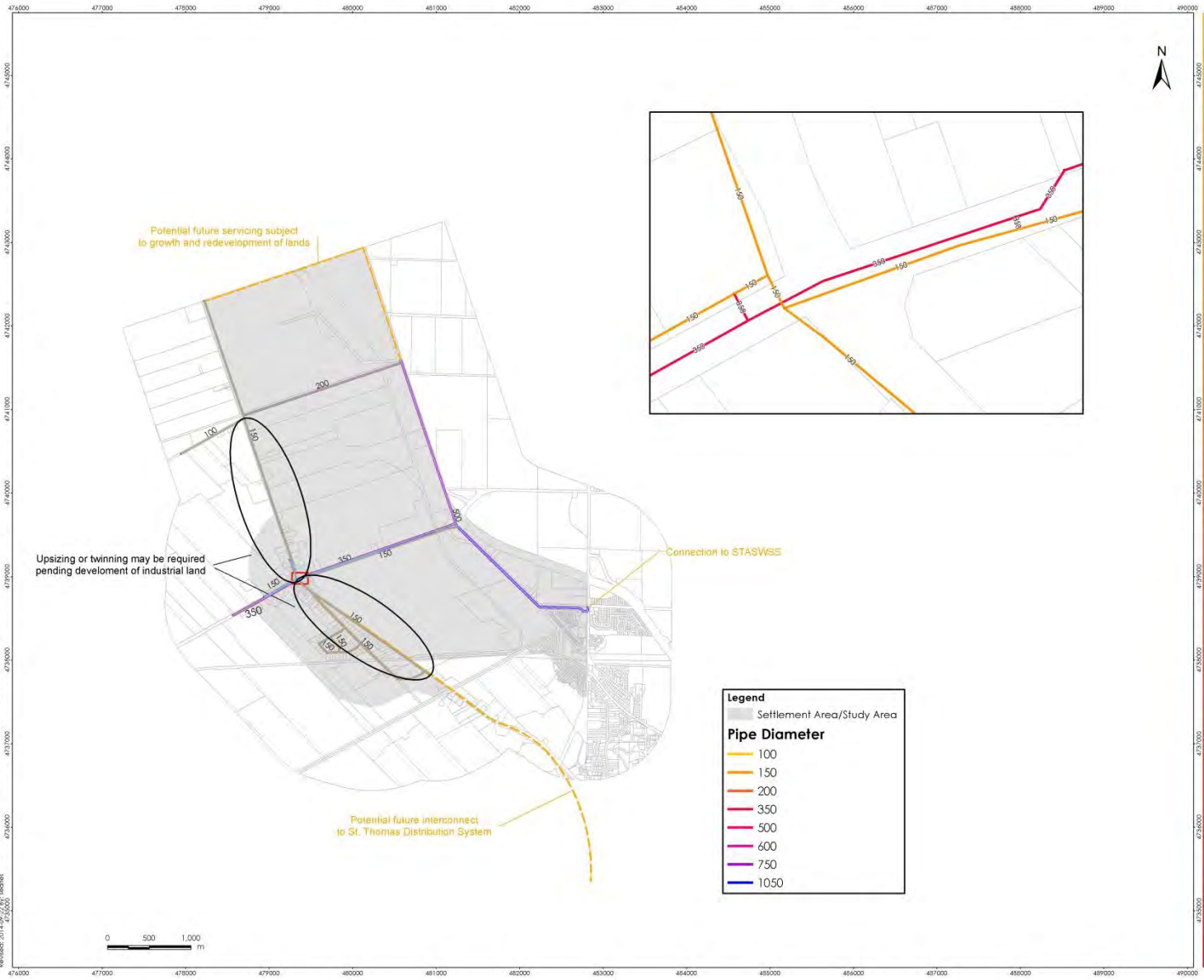
- Preliminary modeling suggests that existing system should be capable of servicing future growth initiatives
 - Pressures above 50 psi in existing service areas
 - Water turnover in sections of larger diameter trunks is low, suggesting capacity is available
- In general, new municipal watermains would be constructed at the same time as new sanitary sewers to minimize overall costs
- Local mains will need to be extended to connect to existing trunk mains
- Some existing watermains may need to be twinned or oversized to accommodate development depending on provision of fire flow (pumper truck versus direct feed) and potential and type of industrial development
 - Primarily along Sunset Drive (150 mm at present)
- Looping needs to be considered to minimize potential for stagnant water and to improve fire flow supply
 - May impact staging requirements for new developments



Key Issues & Constraints

- Currently only one major supply line into the settlement areas
 - No storage in place
 - Major emergency event (i.e., watermain break) would result in disruption to potable water supply
- St. Thomas is currently undertaking a study to review extension of servicing to Sunset Drive/Major Line
 - Outcome of study may involve a further interconnection, with potential pressure zone separation
 - May help alleviate dead end condition in this area
 - May provide additional emergency connection in the event of interruption to Talbot Line supply
- Sizing of watermains to address
 - Potential for stagnant water impacts
 - Maintain MOE recommended minimum servicing pressures under average day, maximum day, and peak hour flows
 - Provide adequate fire flow provision (flow rate at minimum pressure)
- Future works will be generally classified as Schedule A+ projects per Class EA (obligations met by this Master Plan)





Legend

Legend

■ Settlement Area/Study Area

Pipe Diameter

- 100
- 150
- 200
- 350
- 500
- 600
- 750
- 1050



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
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 3. Orthoimagery © First Base Solutions, 2014.

September 2014
146590796

Client/Project
Township of Southwold
Talbotville/Ferndale
Master Servicing Plan

Figure No.
3

Water System Model

Wastewater Servicing

- The Township of Southwold does not currently have a wastewater collection/treatment system
- Existing development is serviced either by private on-site systems or sent to the St. Thomas WWTP via the St. George Street Pumping Station
- According to the Official Plan, all new development, redevelopment, intensification and infill will require municipal sanitary sewage services
 - The Township will make no commitment or approve any development that would cause the capacity of the St. Thomas sewage treatment plant to be exceeded. In certain cases, improvements to the sanitary sewer system may be required before development may proceed. Such improvements may include the provision of a new pumping station and/or sewer line extensions.
- St. Thomas has confirmed that there is sufficient treatment capacity to accommodate the proposed growth within Ferndale
- Sewer capacity issues exist upstream of the St. George Pumping Station which limit the amount of flow which can be conveyed from Ferndale to St. Thomas
- The Township acknowledges that full municipal water and sanitary sewage services are the preferred method of servicing new development within the Settlement Area
- Partial municipal services for new development will be discouraged where viable alternatives can be feasibly undertaken
- Until full municipal services or an adequate alternative to partial services are provided, development will be restricted to infilling and rounding out existing development

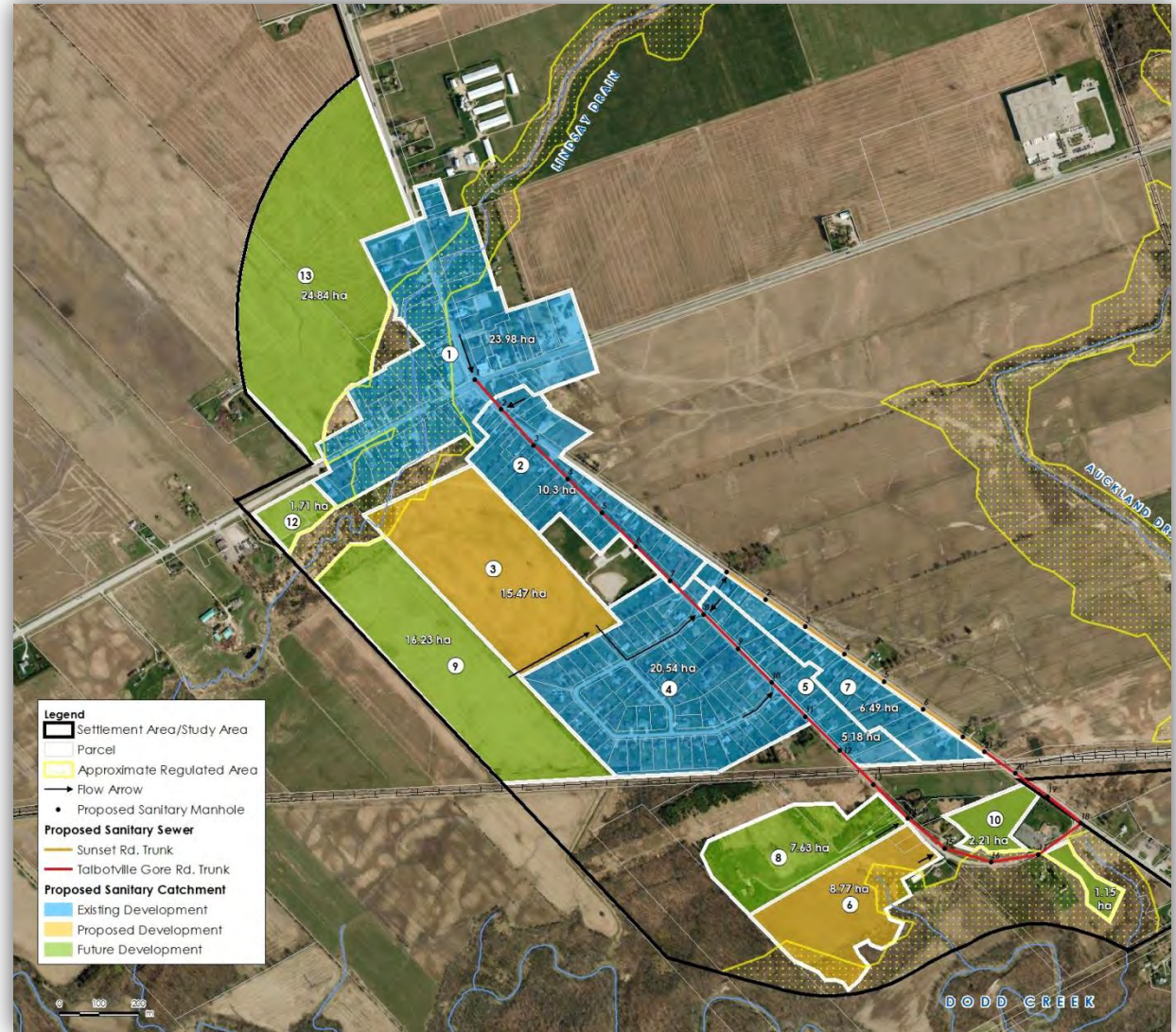
Wastewater Servicing Alternatives

- Do Nothing
 - This option would result in no wastewater treatment capacity in Talbotville and would significantly limit community growth
- Utilize St. Thomas WWTP
 - Continue to send existing sanitary flows to St. Thomas WWTP from Ferndale
 - If development is unable to send additional flows to St. Thomas, construct pumping station and forcemain to Talbotville
- Utilize Existing WWTP at Former Ford Motor Company Property
 - Existing plant is oversized for projected sanitary flows, future intentions for site unknown
 - Majority of flows would need to be pumped, based on topography
- **New Municipal WWTP (preferred alternative)**
 - Construct a new municipal wastewater treatment plant within Talbotville to service existing and future development within Talbotville
 - Conveyance of sanitary flows achieved by gravity sewers rather than through pump stations and forcemains
 - Determine location for WWTP which would allow for future conveyance of flows from Ferndale to Talbotville WWTP



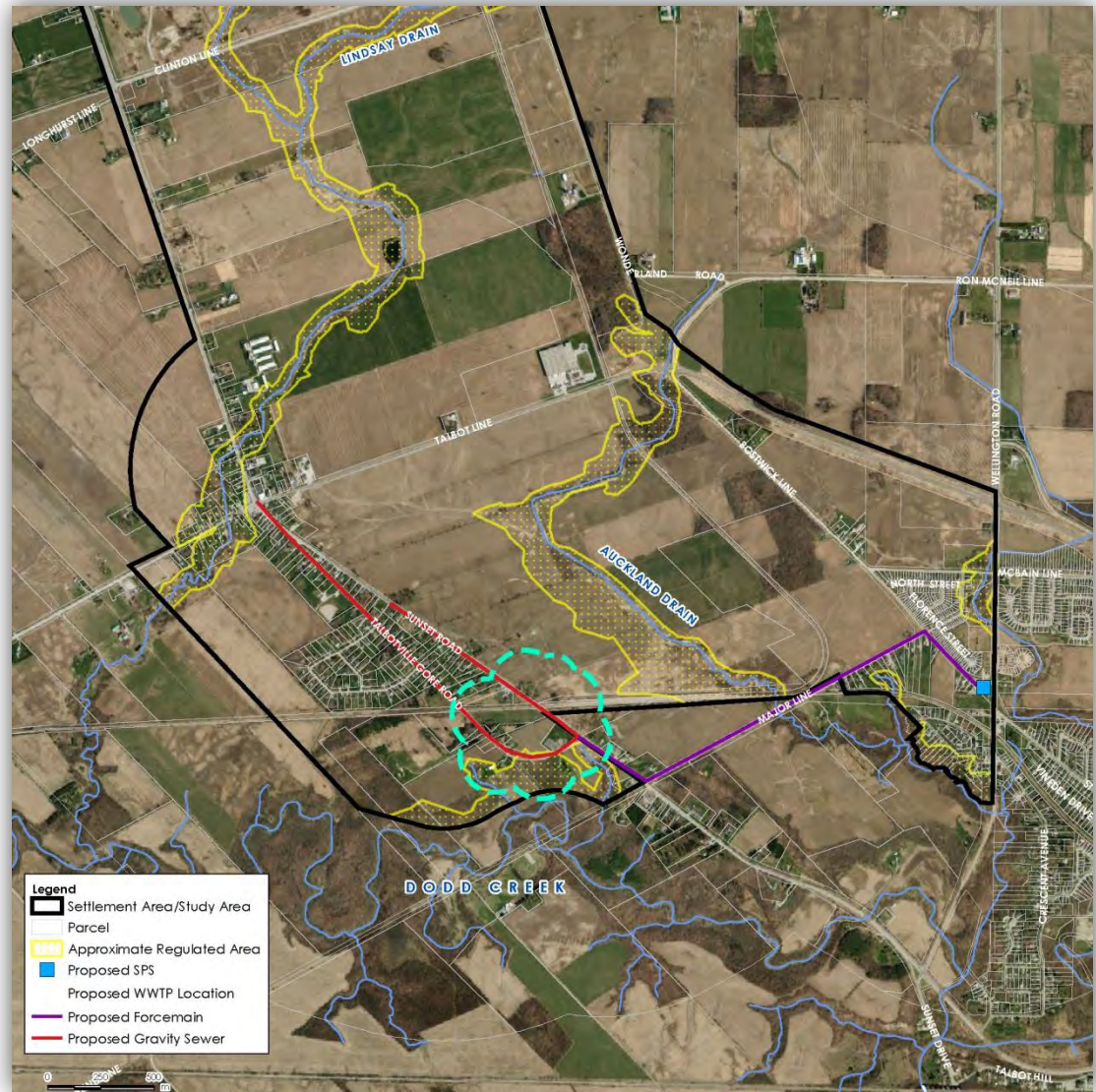
Talbotville Sewershed

- Topography tends to fall towards Dodd's Creek to the south, however, Lindsay Drain creates fall to the northwest as well
- High point near the Talbotville Meadows subdivision
- Preference for gravity sewers versus pumping station and forcemain where possible
- Sewershed has been divided into 13 segments based upon existing and future development parcels



Potential WWTP Locations

- Regulated limits and floodplain restrict potential WWTP locations
- The MOE recommends minimum separation distances between new residential developments and other sensitive land uses and existing sewage treatment facilities (Guideline D-2 Compatibility between Sewage Treatment & Sensitive Land Use)
 - Capacity greater than 500 m³/day but less than 25,000 m³/day → 100 m (minimum) / 150 m (recommended)
 - Minimum separation distance may be difficult if WWTP is located within the developed area of Talbotville
- Three locations were evaluated (Lindsay Drain and Dodd's Creek – two locations) and based on the preferred sewershed routing, Dodd's Creek was selected
- As municipally owned land is not available, Township would likely have to purchase land for plant



Collection System Construction Phasing

- Phase 1
 - Construction of sanitary sewers in the vicinity of the southern extent of Talbotville-Gore Road and Sunset Road (south of CN tracks)
- Phase 2
 - Construction of sanitary sewers along Talbotville-Gore Road to northern extent of Talbotville-Gore Road and Shady Lane Crescent (north of CN tracks)
- Phase 3
 - Construction of sanitary sewers along Talbotville-Gore Road north of Phase 2
- Approximate flows associated with each phase are presented below:

	Population	Flow (m ³ /day)	Total Flow (m ³ /day)
Phase 1A	200	75	75
Phase 1B	375	140	215
Phase 2	900	330	545
Phase 3A (all Talbotville)	1,925	700	1,245
Phase 3B (including all Ferndale)	1,400	510	1,755

Flows from Ferndale, although depicted in Phase 3B may be sent to the WWTP prior based on development needs

Industrial Contributions

- In accordance with the Adopted Official Plan, there is approximately 412 ha of land designated industrial within the Talbotville Settlement Area
- The former Ford Motor Company property houses its own WWTP sized for 3,200 m³/day
- Development of industrial lands to the south of the former Ford property could result in a wide range of sanitary flows dependent on both type and size of industry
- In order to size a new plant efficiently for current and projected residential flows, it is assumed that the municipal plant will undergo a separate expansion or industrial lands may be serviced through on-site treatment plants (similar to Ford) to accommodate much larger industrial flows and variable effluent quality
- Future industrial lands could generate wastewater flows upwards of 9,000 m³/day upon full build-out based upon Township design standards



New Wastewater Treatment Plant

- Potential treatment technologies may include SBR, EA and MBR
- Each technology could be constructed in phases, can also handle low flows (50 - 100 m³/day)
- Initial development (i.e., less than 50 m³/day) would likely not contribute enough flow to run a new plant, may result in storage and trucking
- Plant would likely be sized initially for 545 m³/day with capability to handle smaller flows
- Next phase would be for 1,245 m³/day
- Further determination of treatment types, ultimate flows and WWTP siting would be reviewed through a Schedule C Class EA which would include an Assimilate Capacity Study of the receiving body



Stormwater Management

- Provide a strategic level assessment of the options for providing stormwater management for new development
- Required when a rural area is urbanized and its intent is to mitigate impacts of run off quantity and quality
- Stormwater management options will:
 - Identify area stormwater treatment objectives and goals based on outlets
 - Identify appropriate application of municipal drains and storm sewers
 - Identify appropriate options for providing stormwater management for new developments, including lot level controls, conveyance controls, and centralized “regional” end of collection treatment and system controls



Stormwater Management

- The purpose of stormwater management is to maintain the hydraulic and hydrologic function of a watershed when land use changes
 - Minimize impacts on downstream natural environments
- Impacts of land development on water resources
 - Increase in runoff quantity and rates can cause significant erosion issues and negatively impact downstream flora and fauna
 - Negative water quality impacts as runoff contacts developed surfaces and entrains new pollutants
- Stormwater management features such as constructed wetlands or infiltration galleries are implemented in land development projects to control the quality of runoff to slow it down and release it at rates which our natural environment can manage



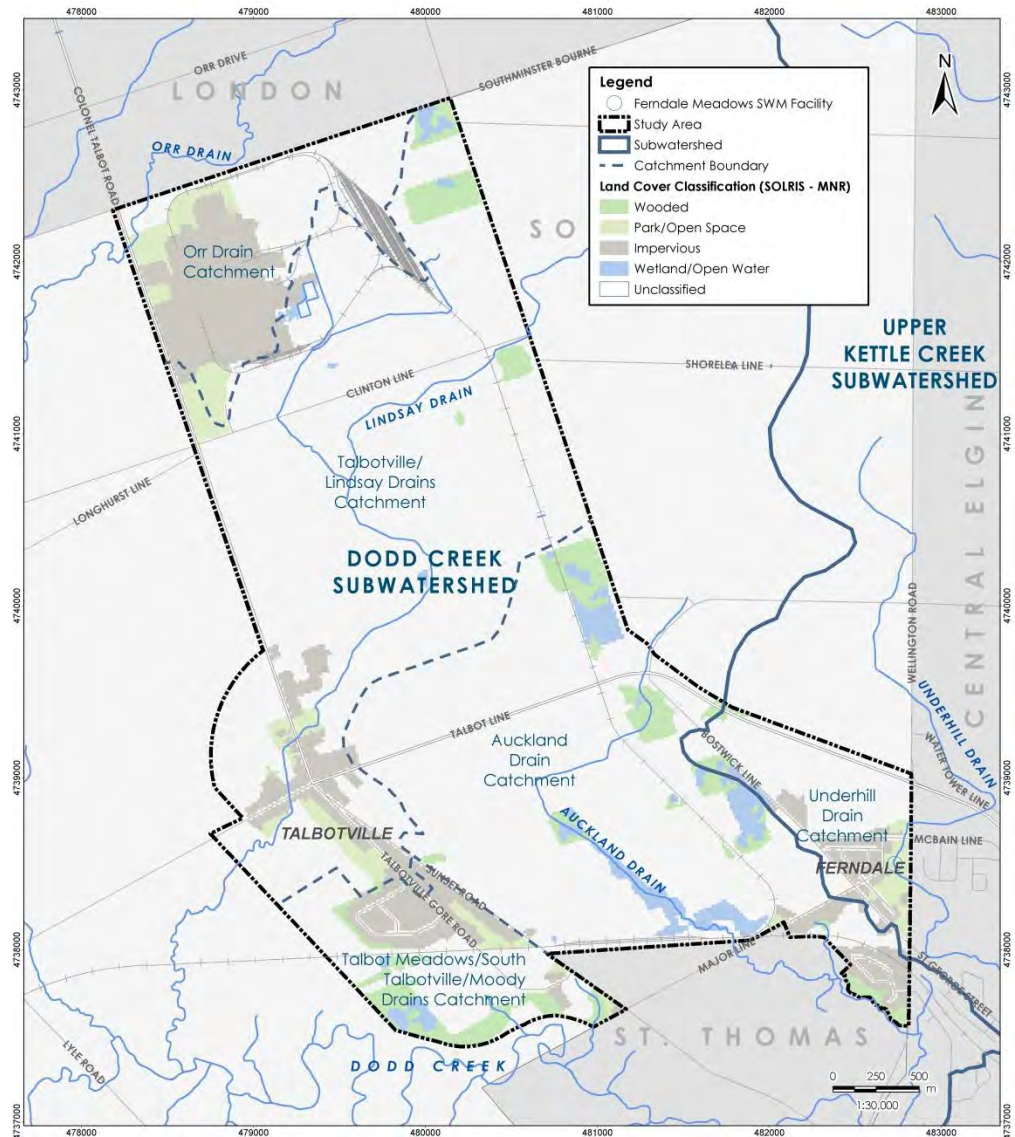
Stormwater Management Strategy

- Amount of water - its peak flow rate, total volume – flowing off the study area remains manageable and does not pose a threat to the downstream environment or increase risks for erosion
- The amount of runoff leaving the study area is of appreciable quality so as to not have a negative impact on downstream flora and fauna
- Interaction between surface water and groundwater is maintained
- Catchment flow patterns are maintained between existing and post development conditions
- Overall, the goal of the SWM strategy is to have post-development runoff conditions mimic existing conditions where possible



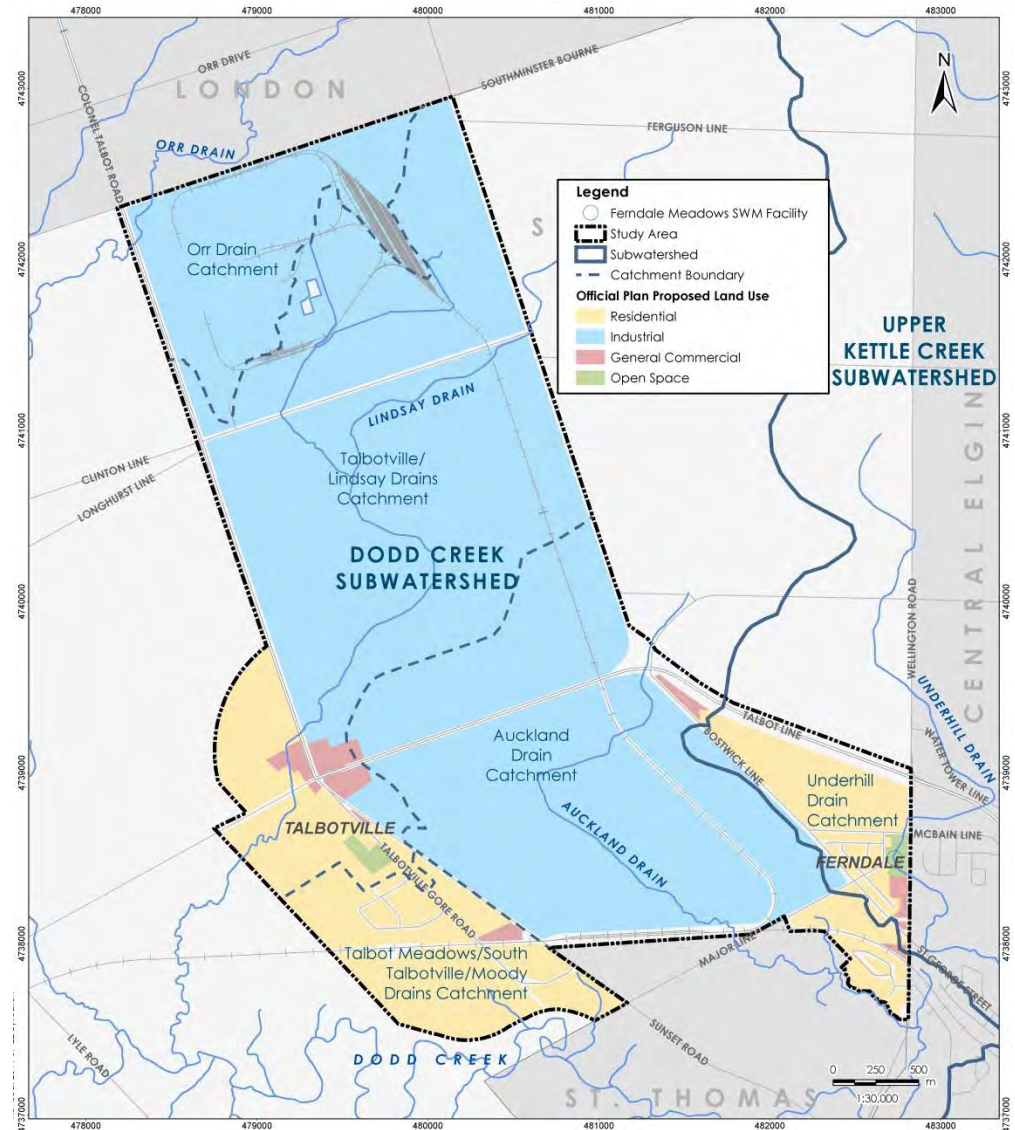
Existing Conditions

- Land use: intense agriculture (70-80%)
- Soils: impermeable and erodible
 - Soil type dominated by clays (moderately impermeable and prone to erosion)
 - Hydraulic system is mainly surface driven
- Drainage: Dodd Creek (94%) and Kettle Creek (6%)
 - Study area drains to two watercourses
 - Distinction between Upper and Lower Dodd Creek is important because the quality of the watercourse degrades consistently from top to bottom
- Watercourse quality: poor
 - Generally all receiving reaches are low quality, warm water watercourses under active erosion and sedimentation
- Water quality: poor
 - Water, nutrient and bacteria rich (consistent with other agriculturally-based watersheds)
 - Impacted by low baseflow



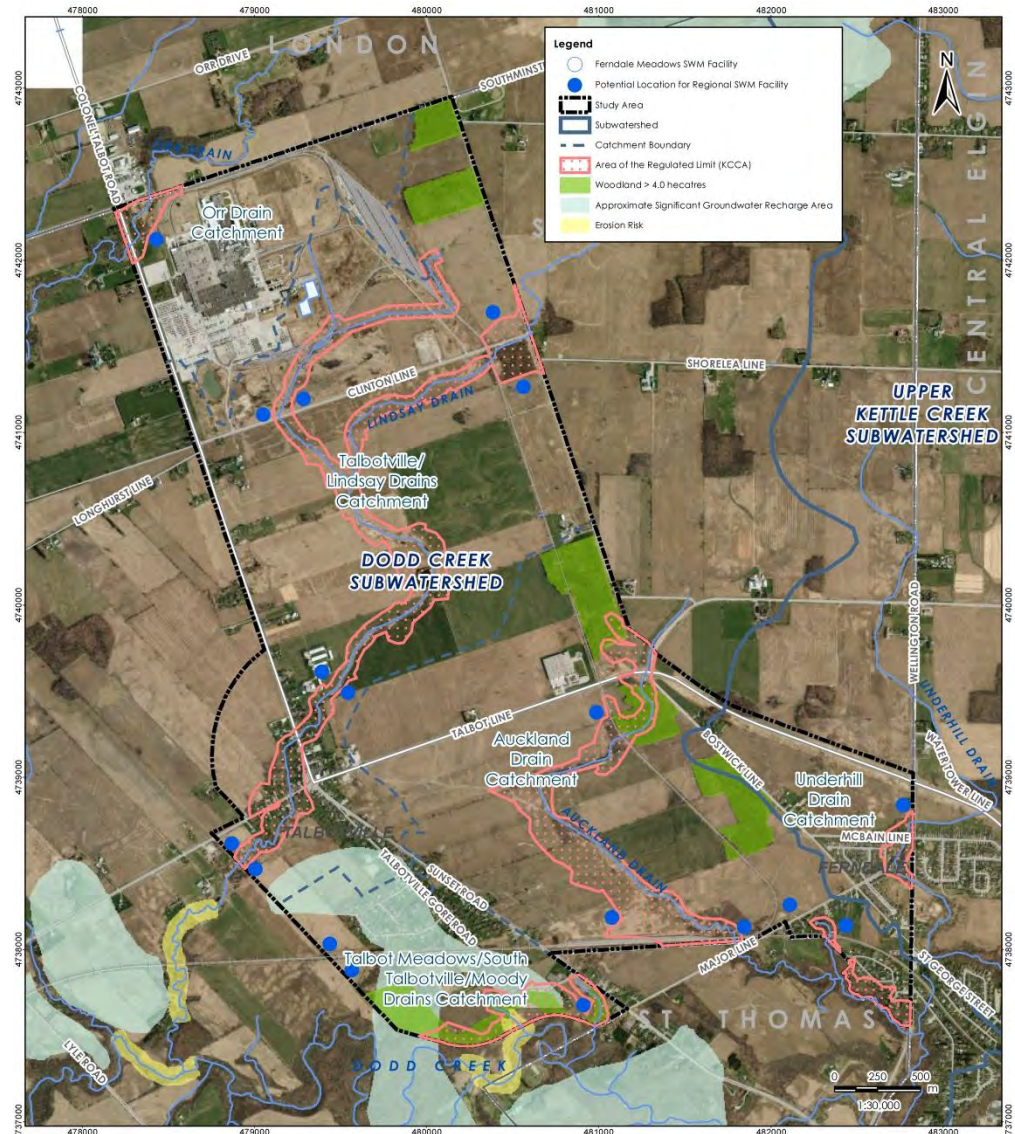
Proposed Conditions

- New land use: residential, light commercial, industrial
 - Extension of residential and commercial development
 - Conversion of much of the currently farmed land to large-scale industrial use
- Imperviousness: substantial increase
 - Native soils do not allow for a great deal of infiltration which will result in an increase in runoff and decrease in runoff quality
 - Stormwater management options are available to control and mitigate these effects



SWM Constraints & Opportunities

- Constraints
 - Located outside of Conservation Authority Regulated Area
 - Located outside of Significant Woodlots > 4 ha
 - Located outside of Existing Development
- Significant Recharge Area: Constraint or Opportunity
- Location of Regional SWM Facilities
- Tables 1 and 2 illustrate the results of the SWM vetting process where we analyzed the appropriateness of SWM options against watershed conditions and other factors including economic, environmental and social impact
 - Infiltration measures only considered in Talbotville area
 - Ability to meet SWM goals while creating environmental amenities for the community, all at reasonable cost
- Ultimately the best approach will utilize a number of these features in sequence – in a “treatment” train – and at all levels of control, lot level through end-of-pipe



General Screening of SWM Practices

Type of Control	Management Practice	Effectiveness ⁽²⁾				Potential ⁽³⁾ For Groundwater Contamination	Potential Contribution to Study Area SWM Goals ⁽⁴⁾					
		Water Quality Treatment	Volume Reduction	Runoff Attenuation	Groundwater Recharge		Reduce Sediment Loading	Reduce Nutrient Loading	Reduce Flooding/Flashy Runoff	Reduce Erosion	Increase Clean Recharge	Decrease Runoff Temperature
Lot Level	Reduced Lot Grades	–	×	–	○	–	–	–	●	○	○	–
	Roof Leader to Pervious Surface	○	×	×	–	–	–	○	●	–	–	●
	Roof Leader to Infiltration Pits	○	×	×	●	○	–	–	○	–	●	●
	Rooftop/On-site Storage	–	×	○	×	–	–	–	○	○	–	×
	Infiltration Trenches	○	○	–	●	●	○	○	–	○	●	●
	Oil/Grit Separator	●	×	×	×	–	●	○	×	×	×	×
Conveyance Controls	Pervious Infrastructure	○	○	–	●	●	○	○	–	○	●	○
	Rural Road Cross Sections	○	○	○	–	○	○	○	○	○	○	○
	Grassed Swale	○	○	○	–	–	○	○	○	○	○	●
End-of-Pipe Facilities	Wet Pond ⁽¹⁾	●	●	●	–	○	●	●	●	●	–	×
	Wetland ⁽¹⁾	●	●	●	–	○	●	●	●	●	–	×
	Dry Basin with Forebay ⁽¹⁾	○	●	●	–	○	○	○	●	●	–	×
	Infiltration Basin ⁽¹⁾	○	●	●	●	●	●	○	●	●	●	○
	Infiltration Trench	○	○	–	●	●	○	○	–	○	●	●
	Filter Strip	○	×	–	–	–	○	○	–	–	–	○
	Buffer Strip	○	×	–	–	–	○	○	–	–	–	○
	Filters	●	×	–	–	–	○	○	–	–	–	–

NOTES

- 1) Includes Extended Detention.
- 2) Ranking: ● Highly Effective ○ Moderately Effective – Nominally Effective × Not Effective
- 3) Ranking: ● High Potential ○ Moderate Potential – Low Potential. × No Potential
- 4) Ranking: ● Meets Goal ○ Contributes to Goal – Nominal Contribution to Goal × No Contribution

General Screening of SWM Practices

Type of Control	Management Practice	Talbotville Settlement Area						Industrial Lands						Ferndale Settlement					
		Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration	Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration	Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration
Lot Level	Reduced Lot Grades	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
	Roof Leader to Pervious Surface	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
	Roof Leader to Infiltration Pits	○	●	●	×	×	○	×	●	●	×	×	×	×	●	●	×	×	×
	Rooftop/On-site Storage	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
	Infiltration Trenches	○	○	○	×	×	○	×	○	○	×	×	×	×	○	○	×	×	×
	Oil/Grit Separator	●	●	○	×	×	●	●	●	○	×	×	●	●	●	○	×	×	●
Conveyance Controls	Pervious Infrastructure	○	○	○	×	×	○	×	○	○	×	×	×	×	○	○	×	×	×
	Rural Road Cross Sections	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●
	Grassed Swale	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
End-of-Pipe Facilities	Wet Pond ⁽¹⁾	●	●	○	●	○	●	●	●	○	●	○	●	●	●	○	●	○	●
	Wetland ⁽¹⁾	●	●	○	●	●	●	●	●	○	●	●	●	●	●	○	●	●	●
	Dry Basin with Forebay ⁽¹⁾	●	●	○	●	○	●	●	●	○	●	○	●	●	●	○	●	○	●
	Infiltration Basin ⁽¹⁾	○	○	○	●	○	○	×	○	○	●	○	×	×	○	○	●	○	×
	Infiltration Trench	○	○	○	×	×	○	×	○	○	×	×	×	×	○	○	×	×	×
	Filter Strip	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Buffer Strip	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Filters	●	●	●	×	×	●	●	●	●	×	×	●	●	●	●	×	×	●

NOTES

1) Includes Extended Detention.

Key ● = Yes; ○ = Limited/Moderate; × = No

Opinion of Probable Costs

- Total estimated construction costs (water):
 - Sunset Drive (north of Talbot Line, subject to development of industrial lands) is \$1.05M (-10% / +30%)
 - Sunset Drive (south of Talbot Line, subject to development of industrial lands) is \$950,000 (-10% / +30%)
 - Southminster Bourne/Wonderland Road extensions (subject to development of former Ford Plant and adjacent designated industrial lands) is \$1.4M (-10% / +30%)
- Total estimated construction costs (wastewater):
 - New WWTP in Talbotville (545 m³/day): \$5.75M (-10% / +30%)
 - New Pumping Station and Forcemain from Ferndale: \$1.38M (-10% / +30%)
 - New Sanitary Collection System in Talbotville: \$1.58M (-10% / +30%)

Funding Opportunities

- Various funding sources for identified projects include provincial and federal grants, development charges and user rates
- Through development opportunities within the Township, progress would be achieved towards sustainability through stabilization of the tax assessment base, recently lost as the result of the closure of the Ford Talbotville Plant
- The Township recently submitted a grant funding application for the New Building Canada Fund Small Communities Fund (SCF) Expression of Interest
- Ontario and Canada will each provide \$272 million to support critical projects in municipalities with populations less than 100,000 and is part of the federal government's ten-year Building Canada Fund
 - If successful, would result in provincial and federal funding for wastewater treatment and conveyance projects within the Township (2/3 funding)

Next Steps

- We would appreciate comments from this meeting to be received by October 3, 2014
- Consultation period with individual stakeholders and review of public and agency comments
- Finalize the Master Servicing Plan and presentation to Council
- Publish the Master Servicing Plan for 30-day review
- Undertake Schedule C Class EA for new Talbotville WWTP (tentative)

Donna Clermont
CAO/Deputy Treasurer
Township of Southwold
35663 Fingal Line
Fingal ON N0L 1K0
Tel: 519-769-2010
Fax: 519-769-2837
Email: cao@southwold.ca

Michele Oxlade, B.Sc., EPt, Env SP
Environmental Coordinator/Technologist
Stantec Consulting Ltd.
171 Queens Avenue, Suite 600
London ON N6A 5J7
Tel: 519-675-6652
Fax: 519-645-6575
Email: michele.oxlade@stantec.com

Please contact the above if you would like to be added to the mailing list

Questions & Answers

Questions & Answers
Questions & Answers
Answers

**CALDWELL FIRST NATION
CONSULTATION DOCUMENTATION**

From: [Gorrie, Cameron](#)
To: [Oxlade, Michele](#)
Subject: FW: Talbotville/Ferndale Master Servicing Plan
Date: Monday, September 15, 2014 2:55:03 PM

FYI

From: Donna Clermont [<mailto:cao@southwold.ca>]
Sent: Monday, September 15, 2014 2:52 PM
To: Oliveira, Nelson; Gorrie, Cameron
Subject: FW: Talbotville/Ferndale Master Servicing Plan

From: Louise Hillier [<mailto:cfnchief@live.com>]
Sent: Monday, September 15, 2014 2:42 PM
To: michelle.oxlade@stantec.com; cao@southwold.ca
Subject: Talbotville/Ferndale Master Servicing Plan

Good Afternoon Michele

Correspondence was received today via mail delivery of the above mentioned project. Unfortunately, myself and Council will be out of town on the 23rd and not able to attend this information meeting. Eight days notice of this type of meeting is not sufficient time to permit Council to schedule attendance.

There has been no consultation with Caldwell First Nation on this issue and as it will impact the environment and in all probability our inherent rights, I do believe an immediate meeting should take place with the Council of the Caldwell First Nation.

Please contact our office and speak with Carrie regarding the scheduling of a meeting. Realizing that your time is as important as ours, perhaps it would be possible to schedule the Dorchester Wastewater project for discussion at the same time.

Miigwetch

Chief Hillier
Caldwell First Nation

Call From: <i>Michele Oxlade</i>	Date: <i>Sept 18, 2014</i>
Organization: <i>Caldwell FN.</i>	Phone #: <i>1-800-206-7522</i>
Call To: <i>Chief Louise Hillier</i>	
Project: <i>Outstanding Consultation</i>	Subject:
File #:	Copies To: <i>Dorchester, Southwold, Sarnia WMP, Elderton, Bright's Grove - Files.</i>

Details:

Call to discuss consultation status for five ongoing EA's.

Dorchester WW-165630014 - Community will wait until Problem/Opportunity statement + project alternatives are developed. I will follow up once this is completed

Southwold MP - I will call Carrie for from the community to schedule a meeting in Leamington office

Sarnia Water Master Plan + Elderton WW EA - I will forward summaries by email for the Chief's review

Bright's Grove EA - Chief Hillier has not seen letter from August. I will resend by email along with PIC information and summary if available.

Chief Hillier will follow up with any questions

and



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

September 25, 2014
File: 165500796

**Chief Louise Hillier
Caldwell First Nation
P.O.Box 388
Leamington, ON N8H 3W3**

Dear Chief Hillier;

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold held the second and final of two public meetings last night to present the preferred alternatives for the Talbotville/Ferndale Master Servicing Plan. Please find enclosed a copy of the presentation that was delivered at this meeting.

Consultation is an important part of the Municipal Class EA process and we invite you to review the material and provide comment if your community wishes. Please contact me at your earliest convenience if you require any additional information beyond the enclosed material or if you have any comments or concerns.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk

From: Oxlade, Michele
To: bill.armstrong@ontario.ca
Cc: [Oliveira, Nelson](#); [Gorrie, Cameron](#)
Subject: Aboriginal Consultation
Date: Tuesday, October 14, 2014 2:10:00 PM

Dear Bill,

I wanted to let you know that on Thursday October 2, 2014 myself and Cameron Gorrie met with consultation staff from Chippewas of the Thames First Nation at their offices located in the Health Centre on the reserve. We then met with Chief Hillier of Caldwell First Nation at their offices in Leamington on October 3, 2014. These meetings were both in regards to the Southwold Class EA and the Ilderton WWTF Class EA. The following is a summary of the communities requests and notes that were discussed during the meetings.

Southwold Master Servicing Plan

-
Chippewas of the Thames First Nation

1. Requests to be included in all project consultation going forward including any additional EAs, project siting, design and construction relating to a new WWTP.
2. Requests to review and provide comment on all project documentation.
3. Requests an Aboriginal monitor from their community to be present for any Stage 2 + site investigations,
4. The historic trading area located along the Thames River to be investigated and included in documentation
5. The Community will be formally requesting a presentation to be delivered to the Senior Management Team and Band Council. The preferred date for this meeting is the last week of October or the first week of November. This presentation is to illustrate to the band the process and requirements needed to produce a Servicing Study. Southwold is a good comparison for the community to learn from.

Caldwell First Nation

1. Requests to be included in all project consultation going forward including any additional EAs, project siting, design and construction relating to a new WWTP.
2. Requests to review and provide comment on all project documentation.
3. Requests an Aboriginal monitor from their community to be present for any Stage 2 + site investigations,
4. Requests the Project File and future ESR to include specific information on the management of Common Reed (*Phragmites australis* subsp. *australis*) which is an intensive invasive species known to move into disturbed areas.

Ilderton WWTF Class EA

-
[Redacted]

[Redacted]

[Redacted]

[Redacted]

Best Regards,
Michele

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator/Technologist
Stantec Consulting Ltd.
600 - 171 Queens Avenue London ON N6A 5J7
Phone: (519) 675-6652
Cell: 519-852-9376
Fax: (519) 645-6575
michele.oxlade@stantec.com

Celebrating 60 years of community, creativity, and client relationships.

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 Please consider the environment before printing this email.

Oxlade, Michele

From: Louise Hillier <cfnchief@live.com>
Sent: Tuesday, January 06, 2015 12:15 PM
To: Oxlade, Michele
Cc: lonnie.dodge@sympatico.ca; Isabel Lewis; darryl.cfn@live.ca
Subject: RE: Project Comments

Michele, thanks for the clarification on the remediation work!

From: Michele.Oxlade@stantec.com
To: cfnchief@live.com
CC: lonnie.dodge@sympatico.ca; wmislewis@gmail.com; darryl.cfn@live.ca
Date: Tue, 6 Jan 2015 09:53:14 -0700
Subject: RE: Project Comments

Dear Chief Hillier,

Remediation/restoration plans are included in the construction documentation and is often reviewed by regulatory officials. The contract is not considered complete until the restoration works have been completed. There are also often provisions for follow up monitoring to ensure the restoration methods were successful. Because the construction design is often completed by a different consultant than the one that completed the environmental assessment it is important to include the comments and requests as part of future project commitments. We will also include the requirement to continue consultation with interested Aboriginal communities throughout the future project phases. This will give you the opportunity to provide input through the construction phase as well.

I hope this helps.
Michele

From: Louise Hillier [mailto:cfnchief@live.com]
Sent: Tuesday, January 06, 2015 10:33 AM
To: Oxlade, Michele
Cc: lonnie.dodge@sympatico.ca; Isabel Lewis; darryl.cfn@live.ca
Subject: RE: Project Comments

Good Morning Michele

I have one question after reading your reply and that is, generally remediation happens after the construction phase so is the remediation work still considered part of the construction phase or not? This is a point Council needs to have clarified by you as we need to be certain that our concerns will be addressed and our recommendations for remediation will be taken seriously regardless of whether or not it is a part of the construction phase.

Thanks again Michele!

Chief Hillier

From: Michele.Oxlade@stantec.com

To: cfnchief@live.com

CC: lonnie.dodge@sympatico.ca; wmislewis@gmail.com; darryl.cfn@live.ca

Date: Tue, 6 Jan 2015 07:40:33 -0700

Subject: RE: Project Comments

Chief Hillier,

Thank you so much for your prompt response. I will review your comments with each of the project managers. I do not believe these to be unreasonable requests. With their approval I will have them recorded in the final reports along with the specific remediation requests. Once the final Environmental Assessment documents have been accepted by the Ministry of the Environment and Climate Change, they become legally binding documents and must be followed through to the end of the construction phase.

Please do not hesitate to contact me if you have any additional questions or comments.

Best regards,
Michele

Michele Oxlade, B.Sc., EP, ENV SP

Environmental Coordinator

Stantec Consulting Ltd.

600 - 171 Queens Avenue London ON N6A 5J7

Phone: (519) 675-6652

Cell: 519-852-9376

Fax: (519) 645-6575

michele.oxlade@stantec.com



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From: Louise Hillier [<mailto:cfnchief@live.com>]

Sent: Monday, January 05, 2015 5:33 PM

To: Oxlade, Michele

Cc: lonnie.dodge@sympatico.ca; Isabel Lewis; darryl.cfn@live.ca

Subject: RE: Project Comments

Good Afternoon Michele

First I would like to wish you all the best for this new year. In regards to all three projects, Caldwell wants to be certain that remediation of the disturbed areas will be done with native wildflowers and grass mix to help provide the abundance of plant food sources for butterflies, bees and other pollinators. Also that the remediation of the disturbed areas will take place immediately so as to minimize the opportunity for phragmites to take root.

Additionally, we are looking for reassurances that the work on the project will not cause any harmful issues regarding health and/or detrimental effects to the environment, people or wildlife.

Thanks Michele

Chief Hillier

From: Michele.Oxlade@stantec.com

To: cfnchief@live.com

Date: Mon, 5 Jan 2015 15:20:58 -0700

Subject: Project Comments

Dear Chief Hillier,

I hope the new year finds you well.

I am writing in regards to three of our Municipal Class Environmental Assessments that are currently wrapping up. I wanted to ensure that you had the opportunity to submit comments if you wished. I have listed them below along with the date the most recent information was provided.

- Bright's Grove Sewage Treatment Facility – Public meeting information was emailed on September 19, 2014
- Ilderton Wastewater Treatment Facility – Executive Summary and PIC 2 information was emailed September 19, 2014
- Talbotville/Ferndale Servicing Master Plan – Meeting with Stantec Comments provided at the meeting with Stantec have been incorporated into the Natural Environment Report. Does Caldwell First Nation have any additional comments on this project.

Please let me know if you require additional information for any of these projects and/or if you would like to provide comments.

Thank you in advance for your time.

Best regards,
Michele

Michele Oxlade, B.Sc., EMX, EPT

Environmental Coordinator/Technologist

Stantec Consulting Ltd.

600 - 171 Queens Avenue London ON N6A 5J7

Phone: (519) 675-6652

Cell: 519-852-9376

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michele.oxlade@stantec.com



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**CHIPPEWAS OF THE THAMES FIRST NATION
CONSULTATION DOCUMENTATION**



CHIPPEWAS OF THE THAMES FIRST NATION

March 31, 2014

Michele Oxlade, B.Sc., EPt, Env SP
Stantec Consulting Ltd.
Environmental Coordinator
171 Queens Avenue, 6th Floor
London, ON N6A 5J7

Dear Michele,

Thank you for distributing your project information, upon screening of your Public Information Centre Notice, we seen certain required information was not included, such as the ***Talbotvill/Ferndale Master Servicing Plan Phase 1 & 2***. Until this information is received on behalf of Chippewa of the Thames First Nation, we cannot do a complete screening of your project. Please submit the necessary information to the Consultation Coordinator at the address below upon completion.

We look forward to continuing this open line of communication with you.

We encourage all project proponents to exercise due diligence in the area of respecting our Aboriginal and Treaty Rights, and any Consultation and Accommodation; we look forward to any future engagement on this topic.

Please do not hesitate to contact me if you need further clarification of this letter.

Sincerely,

Fallon Burch
Consultation Coordinator
Chippewa of the Thames First Nation
(519) 289-2662 Ext. 213
fburch@cottfn.com

From: Oxlade, Michele
To: ["Fallon Burch"](#)
Cc: [Oliveira, Nelson](#); [Gorrie, Cameron](#)
Subject: RE: TALBOTVILLE/FERNDALÉ SERVICING PLAN
Date: Tuesday, April 01, 2014 10:47:00 AM
Attachments: [Talbotville & Ferndale Master Servicing Plan PIC1 \(Handout\).pdf](#)

Dear Ms. Burch,

Thank you for your response to the Talbotville/Ferndale Master Servicing Plan public notice. Please find attached a copy of the presentation boards that were displayed at the public meeting held March 19, 2014. The information is intended to provide the public and interested parties with the Problem/Opportunity Statement, components of the Servicing Plan and the study area. A second PIC is tentatively set for June at which time the findings of the Master Servicing Plan will be presented. I will continue to send you project information as it becomes available and will ensure you are provided with a copy of the Master Servicing Plan once it has been completed.

Please do not hesitate to contact me if you have any additional questions or comments.

Regards,

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator/Technologist
Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor London ON N6A 5J7
Phone: (519) 675-6652
Cell: 519-852-9376
Fax: (519) 645-6575
michele.oxlade@stantec.com



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From: Fallon Burch [mailto:fburch@cottfn.com]
Sent: Monday, March 31, 2014 12:03 PM
To: Oxlade, Michele
Subject: TALBOTVILLE/FERNDALÉ SERVICING PLAN

Good afternoon Michele,

Attached you will find a response on behalf of Chippewa of the Thames First Nation regarding the **Talbotville/Ferndale Master Servicing Plan Phase 1 & 2**. At this time, we feel we cannot do a complete screening of your project until all studies are completed and we have had time to review them. We look forward to receiving a copy of your completed servicing plan. If you have any questions or concerns with the information presented to you, please do not hesitate to contact me at the information provided below.

Thanks,

Fallon Burch

Consultation Coordinator

Chippewa of the Thames First Nation

Lands & Environment Department

Tel. (519) 289-2662 Ext. 213

Fax. (519) 289-3117



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

September 25, 2014
File: 165500796

Ms. Fallon Burch
Acting Band Administrator
Chippewas of the Thames
320 Chippewa Road
Muncey, ON N0L 1Y1

Dear Ms. Burch;

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold held the second and final of two public meetings last night to present the preferred alternatives for the Talbotville/Ferndale Master Servicing Plan. Please find enclosed a copy of the presentation that was delivered at this meeting.

Consultation is an important part of the Municipal Class EA process and we invite you to review the material and provide comment if your community wishes. Please contact me at your earliest convenience if you require any additional information beyond the enclosed material or if you have any comments or concerns.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPt, ENV SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk

From: Oxlade, Michele
To: bill.armstrong@ontario.ca
Cc: [Oliveira, Nelson](#); [Gorrie, Cameron](#)
Subject: Aboriginal Consultation
Date: Tuesday, October 14, 2014 2:10:00 PM

Dear Bill,

I wanted to let you know that on Thursday October 2, 2014 myself and Cameron Gorrie met with consultation staff from Chippewas of the Thames First Nation at their offices located in the Health Centre on the reserve. We then met with Chief Hillier of Caldwell First Nation at their offices in Leamington on October 3, 2014. These meetings were both in regards to the Southwold Class EA and the Ilderton WWTF Class EA. The following is a summary of the communities requests and notes that were discussed during the meetings.

Southwold Master Servicing Plan

-
Chippewas of the Thames First Nation

1. Requests to be included in all project consultation going forward including any additional EAs, project siting, design and construction relating to a new WWTP.
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Caldwell First Nation

1. Requests to be included in all project consultation going forward including any additional EAs, project siting, design and construction relating to a new WWTP.
2. Requests to review and provide comment on all project documentation.
3. Requests an Aboriginal monitor from their community to be present for any Stage 2 + site investigations,
4. Requests the Project File and future ESR to include specific information on the management of Common Reed (*Phragmites australis* subsp. *australis*) which is an intensive invasive species known to move into disturbed areas.

Ilderton WWTF Class EA

-
[Redacted]

[Redacted]

[Redacted]

[Redacted]

Best Regards,
Michele

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator/Technologist
Stantec Consulting Ltd.
600 - 171 Queens Avenue London ON N6A 5J7
Phone: (519) 675-6652
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Fax: (519) 645-6575
michele.oxlade@stantec.com

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**MUNSEE DELAWARE NATION
CONSULTATION DOCUMENTATION**



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

September 25, 2014
File: 165500796

**Chief Greg Peters
Delaware Nation
14760 School House Line RR #3
Thamesville, ON NOP 2K0**

Dear Chief Peters;

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold held the second and final of two public meetings last night to present the preferred alternatives for the Talbotville/Ferndale Master Servicing Plan. Please find enclosed a copy of the presentation that was delivered at this meeting.

Consultation is an important part of the Municipal Class EA process and we invite you to review the material and provide comment if your community wishes. Please contact me at your earliest convenience if you require any additional information beyond the enclosed material or if you have any comments or concerns.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

September 25, 2014
File: 165500796

Mr. Justin Logan
Lands & Resources Consultation Assistant
Delaware Nation
14979 Schoolhouse Line
Thamesville, ON NOP 2K0

Dear Mr. Logan;

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold held the second and final of two public meetings last night to present the preferred alternatives for the Talbotville/Ferndale Master Servicing Plan. Please find enclosed a copy of the presentation that was delivered at this meeting.

Consultation is an important part of the Municipal Class EA process and we invite you to review the material and provide comment if your community wishes. Please contact me at your earliest convenience if you require any additional information beyond the enclosed material or if you have any comments or concerns.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk



Delaware Nation Housing, Lands and Resources Department

Wiikhutiin waak Ahkiing

"Take only what you need and leave the Land as you found it"

**Moravian of the Thames
Delaware Nation Council**

14760 School House Line, Thamesville, ON N0P 2K0
**Office located at 14979 School House Line, Moraviantown

**Tel: (519) 692-4290
Fax: (519) 692-3453**

RECEIVED
NOV 14 2014

STANTEC CONSULTING LTD.

Michele Oxlade,
Environmental Coordinator/Technologist
Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London, ON
N6A 5J7

October 21, 2014

Dear Ms. Oxlade,

I would like to thank you for notifying the Delaware Nation, Moravian of the Thames Band of the **Re: Talbotville Ferndale Master Servicing Plan** by the documentation this office received on September 30th, 2014. We appreciate getting this information to review for possible environmental impacts it may have on our community.

Our office has reviewed the documentation that you have provided and our consultation staff has thoroughly reviewed the information package and has decided the following:

**Re: Talbotville/Ferndale Master Servicing Plan
File: 165500796**

Our community does not require any additional consultation in regards to the above-mentioned project. The information package that was received in our office regarding the project was evaluated and it was recognized that this project will not require any further discussion with the Delaware Nation, Moravian of the Thames First Nation.

Thanks for your time and consideration in this matter.

Sincerely,

Justin Logan,
Lands and Resource Consultation Assistant
Delaware Nation – Moravian of the Thames Band

loganju@xplornet.ca
Tel: (519) 692-4290 Ext. 223
Fax: (519) 692-3453

**MUNSEE DELAWARE NATION
CONSULTATION DOCUMENTATION**



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

September 25, 2014
File: 165500796

Chief Roger Thomas
Munsee-Delaware Nation
RR#1
Muncey, ON N0L 1Y0

Dear Chief Thomas;

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold held the second and final of two public meetings last night to present the preferred alternatives for the Talbotville/Ferndale Master Servicing Plan. Please find enclosed a copy of the presentation that was delivered at this meeting.

Consultation is an important part of the Municipal Class EA process and we invite you to review the material and provide comment if your community wishes. Please contact me at your earliest convenience if you require any additional information beyond the enclosed material or if you have any comments or concerns.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk

Oxlade, Michele

From: Oxlade, Michele
Sent: Tuesday, March 31, 2015 3:43 PM
To: chief.thomas@munsee-delaware.org
Cc: Gorrie, Cameron
Subject: Southwold Master Servicing Plan
Attachments: Talbotville & Ferndale Master Servicing Plan PIC2 FINAL.pdf

Dear Chief Thomas;

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

The purpose of the Talbotville / Ferndale Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the municipality. Specifically, the Master Servicing Plan addresses the provision of water, wastewater, and stormwater management for existing and future growth areas for the Talbotville / Ferndale settlement area as defined in the Township's Official Plan. The Master Servicing Plan identifies which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.

We are writing to you today to request confirmation as to whether your community is interested in receiving additional information, reviewing the Project File that was prepared for this project and/or is interested in providing comments on this project. The project study area along with information distributed at the 2014 public meeting has been included for your review.

Could you please contact the undersigned at your earliest convenience and convey your interest in the project?

Regards,

Michele Oxlade, B.Sc., EP, ENV SP

Environmental Coordinator
Stantec Consulting Ltd.
600 - 171 Queens Avenue London ON N6A 5J7
Phone: (519) 675-6652
Cell: 519-852-9376
Fax: (519) 645-6575
michele.oxlade@stantec.com



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 Please consider the environment before printing this email.

Oxlade, Michele

From: Chief Roger Thomas <chief.thomas@munsee-delaware.org>
To: Oxlade, Michele
Sent: Wednesday, April 01, 2015 9:09 AM
Subject: Read: Southwold Master Servicing Plan

Your message was read on Wednesday, April 01, 2015 7:09:06 AM (GMT-07:00) Mountain Time (US & Canada).

**ONEIDA NATION OF THE THAMES
FIRST NATION
CONSULTATION DOCUMENTATION**



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

September 25, 2014
File: 165500796

**Chief Joel Abram
Oneida Nation of the Thames
2212 Elm Ave.
Southwold, ON N0L 2G0**

Dear Chief Abram;

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold held the second and final of two public meetings last night to present the preferred alternatives for the Talbotville/Ferndale Master Servicing Plan. Please find enclosed a copy of the presentation that was delivered at this meeting.

Consultation is an important part of the Municipal Class EA process and we invite you to review the material and provide comment if your community wishes. Please contact me at your earliest convenience if you require any additional information beyond the enclosed material or if you have any comments or concerns.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

September 25, 2014
File: 165500796

**Ms. Laura Phillips
Councillor
Oneida Nation of the Thames
2212 Elm Ave.
Southwold, ON N0L 2G0**

Dear Ms. Phillips;

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold held the second and final of two public meetings last night to present the preferred alternatives for the Talbotville/Ferndale Master Servicing Plan. Please find enclosed a copy of the presentation that was delivered at this meeting.

Consultation is an important part of the Municipal Class EA process and we invite you to review the material and provide comment if your community wishes. Please contact me at your earliest convenience if you require any additional information beyond the enclosed material or if you have any comments or concerns.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPT, ENV SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk



Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor
London ON N6A 5J7
Fax: (519) 645-6575

September 25, 2014
File: 165500796

**Ms. Holly Elijah
Council Assisstant
Oneida Nation of the Thames
2212 Elm Ave.
Southwold, ON N0L 2G0**

Dear Ms. Elijah;

Reference: Talbotville/Ferndale Master Servicing Plan

The Township of Southwold held the second and final of two public meetings last night to present the preferred alternatives for the Talbotville/Ferndale Master Servicing Plan. Please find enclosed a copy of the presentation that was delivered at this meeting.

Consultation is an important part of the Municipal Class EA process and we invite you to review the material and provide comment if your community wishes. Please contact me at your earliest convenience if you require any additional information beyond the enclosed material or if you have any comments or concerns.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink, appearing to read "M. Oxlade".

Michele Oxlade, B.Sc., EPt, ENV SP
Environmental Coordinator
Phone: (519) 675-6652
Michele.Oxlade@stantec.com

c. Donna Clermont, Township of Southwold, CAO/Clerk

Oxlade, Michele

From: Oxlade, Michele
Sent: Friday, February 06, 2015 2:47 PM
To: 'sheri.doxtator@oneida.on.ca'
Subject: City of London Southwest Area Sanitary Servicing Master Plan
Attachments: 165500763 PIC2 Nov 11 13.pdf; ExecSumFromSASS_FinalReport_February 24 2014.pdf

Dear Chief Doxtator;

In March 2013, the City of London retained Stantec Consulting Ltd. to conduct the Southwest Area Sanitary Servicing Master Plan to evaluate interim and ultimate sanitary servicing strategies for the Lambeth, North Lambeth, North Talbot and Bostwick West neighbourhoods, as well as adjacent external lands that may impact ultimate servicing.

The main recommendations as a result of this study were the decommissioning of the Southland Pollution Control Plant and replacing it with a pumping station. The information presented at the second Public Information Centre and the Executive Summary from the Environmental Study Report have been attached for your review.

We would like to ensure prior to the completion of this Study that Oneida Nation of the Thames has had the opportunity to consult and/or provide comment on this project.

I will follow up with a phone call early next week to see if you require any additional information and if you would like to provide comments. Please let me know if you would prefer me to send you paper copies of these documents.

Regards,
Michele

Michele Oxlade, B.Sc., EP, ENV SP

Environmental Coordinator
Stantec Consulting Ltd.
600 - 171 Queens Avenue London ON N6A 5J7
Phone: (519) 675-6652
Cell: 519-852-9376
Fax: (519) 645-6575
michele.oxlade@stantec.com



Celebrating 60 years of community, creativity, and client relationships.



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Please consider the environment before printing this email.

Oxlade, Michele

From: Sheri Doxtator <Sheri.Doxtator@oneida.on.ca>
Sent: Tuesday, March 31, 2015 5:08 PM
To: Oxlade, Michele
Subject: Read: Southdale Master Servicing Plan
Attachments: ATT00001

Your message

To: Sheri Doxtator
Subject: Southdale Master Servicing Plan
Sent: Tuesday, March 31, 2015 3:44:07 PM (UTC-05:00) Eastern Time (US & Canada)

was read on Tuesday, March 31, 2015 5:08:09 PM (UTC-05:00) Eastern Time (US & Canada).

This email has been scanned for email related threats and delivered safely by Mimecast.
For more information please visit <http://www.mimecast.com>

Oxlade, Michele

From: Joel Abram <Joel.Abram@oneida.on.ca>
Sent: Tuesday, March 31, 2015 9:22 PM
To: Oxlade, Michele
Subject: Read: Southdale Master Servicing Plan
Attachments: ATT00001

Your message

To: Joel Abram
Subject: Southdale Master Servicing Plan
Sent: Tuesday, March 31, 2015 3:44:07 PM (UTC-05:00) Eastern Time (US & Canada)

was read on Tuesday, March 31, 2015 9:22:45 PM (UTC-05:00) Eastern Time (US & Canada).

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Appendix 2.5

PIC (March 19, 2014)



To: Nelson Oliveira
London, ON

From: Michele Oxlade
London, ON

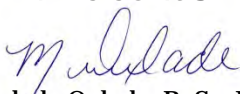
File: 165500796

Date: March 20, 2014

Reference: Talbotville/Ferndale Master Servicing Plan PIC 1

Public Information Centre: March 19, 2014
Location: Keystone Community Complex, Shedden

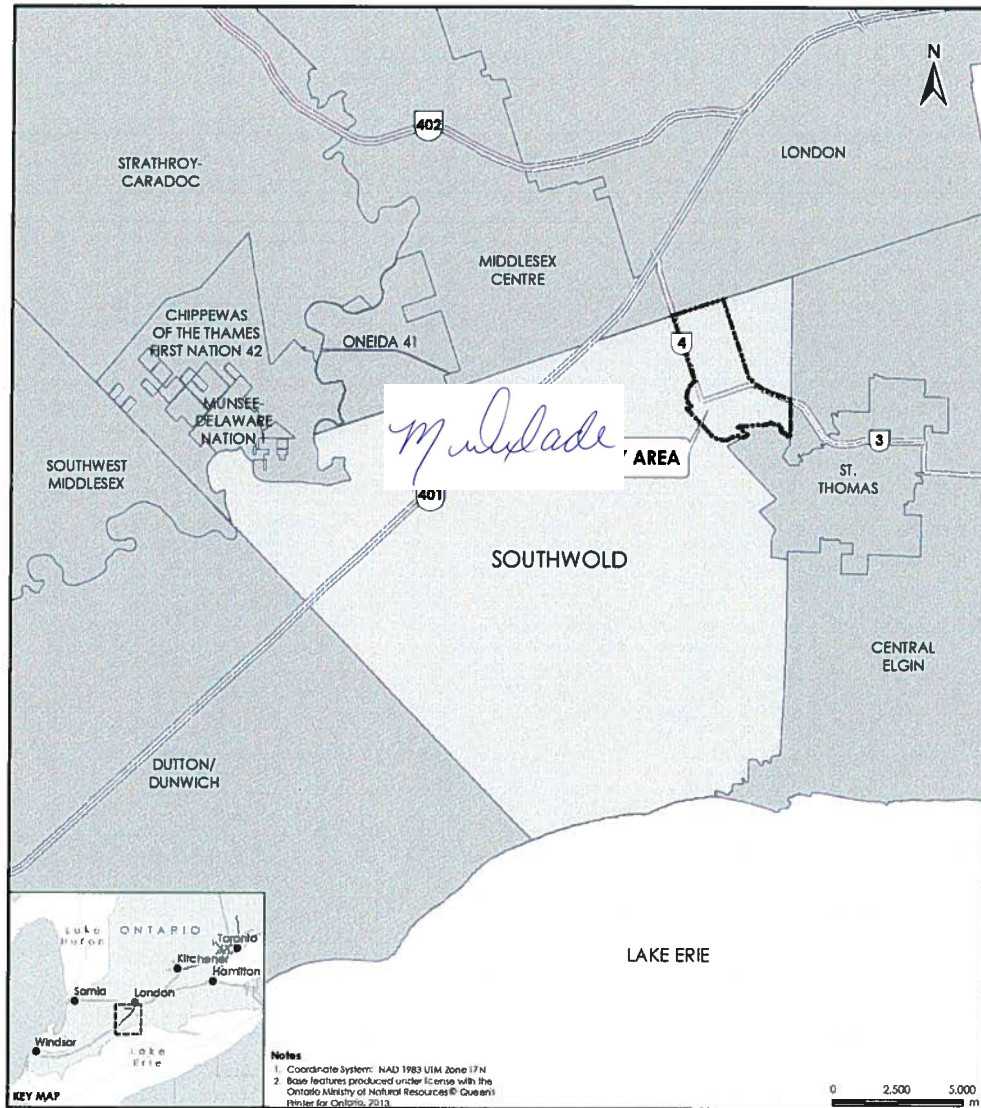
Project Team Members in Attendance	<i>Donna Clermont – Township of Southwold Nelson Oliveira - Stantec Cameron Gorrie - Stantec Lotfieh Albarazi - Stantec Michele Oxlade, Stantec</i>
Number of people who signed visitor register	25 people registered
Handouts Displays	Handouts available to all attendees—duplicate of display boards, comment forms available <ul style="list-style-type: none"> • Project study area • Description of the Master Servicing Plan • Problem/opportunity statement • Municipal Class EA Process • Planning considerations and existing infrastructure • Water supply, wastewater collection, stormwater management
Comment Sheet Deadline date for comments General Impressions of Public Comments/Concerns	Number completed and returned at PIC: 0 April 4, 2014 <ul style="list-style-type: none"> • People interested in what the project was about • Concerned on costs to residents
Comments Submitted to Date	<ul style="list-style-type: none"> • 0

STANTEC CONSULTING LTD.


Michele Oxlade, B. Sc, EPt, Env SP
Environmental Coordinator
Phone: (519) 675-6652
michele.oxlade@stantec.com

Attachment: PIC attendance sheets, PIC handout, PIC comment sheet

Talbotville/Ferndale Master Servicing Plan Municipal Class Environmental Assessment



Talbotville/Ferndale Master Servicing Plan
Municipal Class Environmental Assessment

Public Information Centre, Wednesday March 19, 2014

PLEASE SIGN VISITOR REGISTER

Name (please print)	Mailing Address (please print)	Interest in Project (i.e. property owner, business owner, agency)
JIM/DONNA ROBBINS	GREENPARK DR TALBOTVILLE	OWNER
OLIVE VINCENT	"	OWNER
HAROLD/BOBY TEBB	39824 SHADY LANE CR.	OWNER
STEVE KEANE	39846 SHADY LANE CR	SKEANE1003@ROGERS* OWNER .com
DON TOMCHICK	10284 Greenpark	OWNER
M. WHITE	39749 SHADY LANE	OWNER
DUANE GOODE	41471 MAJOR LINE	OWNER
Kathy Goode	41439 MAJOR LINE	OWNER
DENNIS BRUOME	166 SUNSET DR	FARMER/EN OWNER
AD. TEIXEIRA	44000 2 SHADY LANE CR	OWNER
IAN CHARD		COUNCILLOR.
GRANT JONES		DEPUTY MAYOR
WILLIAM B BROWN	10049 FLORENCE ST.	W. Brown



Talbotville/Ferndale Master Servicing Plan

Municipal Class Environmental Assessment

Public Information Centre, Wednesday March 19, 2014

PLEASE SIGN VISITOR REGISTER

Name (please print)	Mailing Address (please print)	Interest in Project (i.e. property owner, business owner, agency)
ROBERT JULIE MURPHY	41319 MAJORLINE	PROPERTY OWNER
Janie McBain	45889 John Wise Ln	Property owner
HANS JAN VOORN	10055 FLORENCE ST NSP 427	PROSPECTIVE MAYOR
COLIN MCBAIN	CAISCEJENNIAL RD NSP 358	PROPERTY OWNER



Talbotville/Ferndale Master Servicing Plan
Municipal Class Environmental Assessment

Public Information Centre, Wednesday March 19, 2014

PLEASE SIGN VISITOR REGISTER

Name (please print)	Mailing Address (please print)	Interest in Project (i.e. property owner, business owner, agency)
Clayton Watters	450 Sunset Drive Central Flynn	
DONNA LIZMORE	10637 Sunset Rd Talbotville	owner
DAVE SPARENBERG		TALBOTVILLE GOLF
Steve Evans	County of Efferni	
Tom Aubrecht	HSRA - 1006 Waterloo St.	Pittco Lands
Rick Dykstra	RICOR ENGINEERING	



Talbotville & Ferndale Master Servicing Plan



Public Information Centre #1
March 19, 2014



TOWNSHIP OF
Southwold



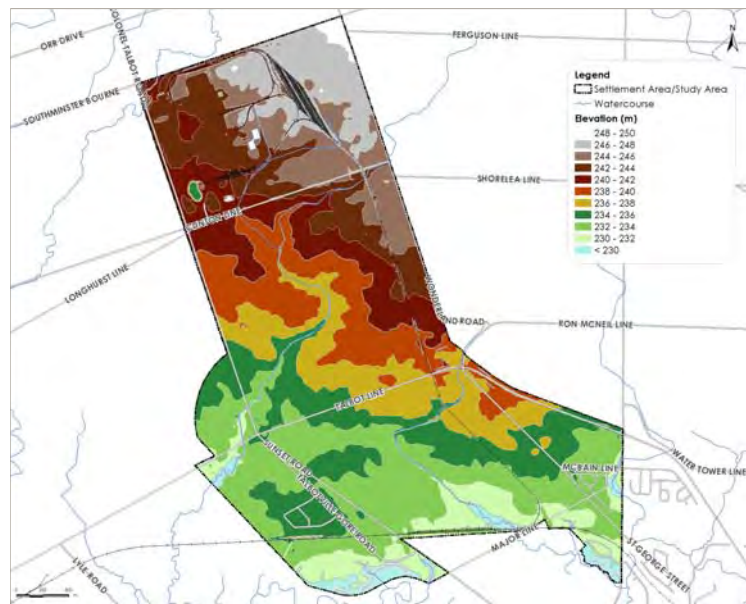
Introduction

- The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas
- The Township is seeking to improve development opportunities within the Talbotville & Ferndale settlement areas with the completion of a Master Servicing Plan to provide full municipal servicing



Master Servicing Plan

- Currently the Township is serviced with water and limited wastewater infrastructure
- The Master Servicing Plan should be reflective of the development and growth goals of the Township, in accordance with the Adopted Official Plan. To ensure this, a set of guiding principles or priorities will be developed with consideration for:
 - Preference for long term servicing solutions over interim solutions
 - All services to be fully funded through adequate planning, budgeting and identified revenue streams, development charges, etc.
 - Servicing solutions should be developed which minimize risk to the Township, users, and others



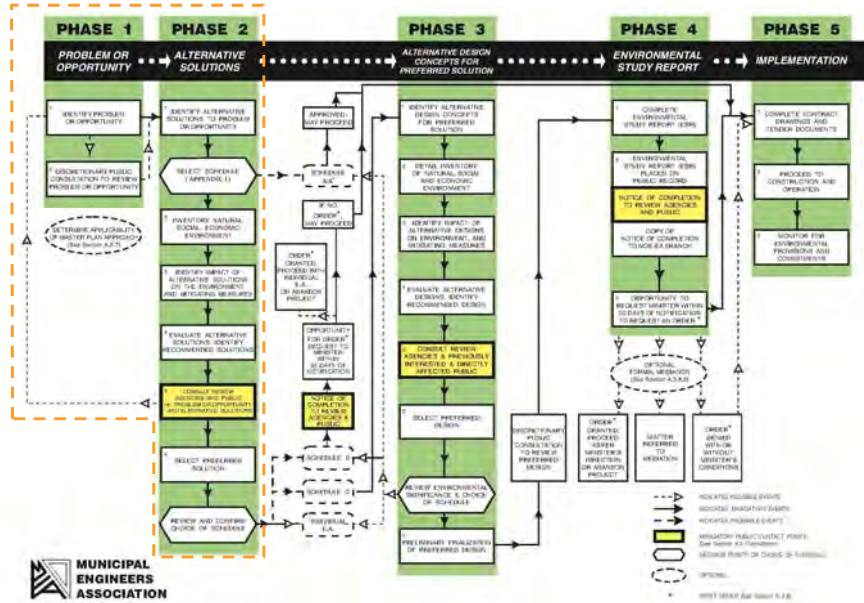
Problem/Opportunity Statement

- The following problem statement has been developed for the Talbotville & Ferndale Master Servicing Plan:
 - The purpose of the Talbotville & Ferndale Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the municipality. Specifically, the Master Servicing Plan is to address the provision of water, wastewater, and stormwater management for existing and future growth areas for the Talbotville / Ferndale settlement area as defined in the Township's Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.
- This study is being conducted as a Master Plan (Phases 1 and 2) under the Municipal Class Environmental Assessment process (Municipal Engineer's Association, as amended in June 2007 and 2011). Under this process, agency and public input is invited for incorporation into the planning and design for this study.

Municipal Class Environmental Assessment (EA)

- Municipal Class EA (MCEA October 2000, as amended in 2007 & 2011)
 - This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class EA, which is an approved process under the EA Act
- Environmental Assessment (EA) is a decision making process to promote good environmental assessment planning, with key features being:
 - Early consultation
 - Consideration of reasonable range of alternatives
 - Assessment of environmental effects
 - Systematic evaluation of alternatives
 - Clear documentation and traceable decision making
- Public Involvement
 - The role of those members of the public with an interest in the study are to provide background information to advise the proponent (Township) of their support and concerns, and to review and provide comments and input about the study findings (as the project progresses)
 - Members of the public with an interest in the study can ask to be placed on the mailing list to receive notification of the consultation opportunities for this project

Municipal Class Environmental Assessment (EA)



Planning Considerations

- The study area includes the entire Talbotville/Ferndale settlement areas including the lands designated for industrial use as defined in the Township's Official Plan



Existing Infrastructure

- Talbotville
 - Water: fully serviced
 - Wastewater: no services (on-site septic systems)
- Ferndale
 - Water: fully serviced
 - Wastewater: partially serviced (existing development is fully serviced, growth area is not serviced)
- Industrial Lands*
 - Water: partially serviced
 - Wastewater: partially serviced

** Former Ford property is on municipal water and has a private sewage treatment facility on site*
- There is limited stormwater management infrastructure within the Township



Guiding Principles

- The following guiding principles are proposed for this Master Servicing Plan (MSP):
 - The MSP is developed in a logical, consistent and fair manner that reflects the values of the Township of Southwold (Council, Staff, Community)
 - The MSP should align with and build upon the goals and objectives for the Township with respect to servicing of existing and growth areas as noted in the Adopted Official Plan per the Provincial Policy Statement and Small Settlement Study
 - The MSP should align with the Municipal Servicing Objectives defined in the Adopted Official Plan including ensuring that servicing is provided in a sustainable and financially viable manner and that planned growth is accommodated through the efficient use of existing municipal infrastructure
 - The MSP developed meets the requirements of current regulations and establishes a proactive plan to achieve compliance with regulations to be phased in by the federal and provincial government
 - The MSP addresses the state and condition of current infrastructure as well as future infrastructure needs in order to provide the Township with an overall blueprint for infrastructure management
 - Technical analysis based on data collection and modeling is undertaken to provide a full understanding of key systems under the expected range of conditions over the study period to the level required for decisions to be made
 - Key problems and opportunities facing the Township with regard to municipal water, wastewater, and stormwater infrastructure are properly identified, including opportunities to time work with other capital projects
 - Past work, current knowledge and future trends and technology are adequately analyzed and identified to the Township
 - Cost effective, sustainable and timely solutions are developed
 - For the Township to have an interdepartmental consensus as to the Master Plan strategy based on Stantec's work

Water Supply & Distribution

- Potential water servicing options to be evaluated include, but may not be limited to:
 - “Do Nothing”
 - Extension of the current supply from the St. Thomas Area Secondary Water Supply System
 - Connection to adjacent municipalities (City of St. Thomas via the St. Thomas Distribution System)
 - Municipal wells, communal wells, private wells
- There is sufficient reserve capacity from the St. Thomas Area Secondary Water Supply System to service future development within both Talbotville and Ferndale
- Moreover, the previous capacity allocated to the Ford Motor Company can be reallocated to the planned future development
- An assessment of existing infrastructure is required to confirm whether adequate pressures can be maintained as well as to ensure that servicing extensions consider other issues, such as water quality and risk management



Wastewater Collection & Treatment

- The Township of Southwold does not currently have a wastewater collection/treatment system
- Existing development is serviced by either private on-site systems or sent to the St. Thomas Wastewater Treatment Plant via the St. George Street Sewage Pumping Station
- Potential wastewater servicing options to be evaluated include, but may not be limited to:
 - “Do Nothing”
 - St. Thomas Wastewater Treatment Plant via St. George Street Collection System
 - St. Thomas Wastewater Treatment Plant via Alternate/New Transmission Mains
 - Optimization of Existing Wastewater Collection System & Utilize St. Thomas WWTP
 - New Municipal Wastewater Treatment Plant near Talbotville
 - Utilize Existing Ford Motor Company Wastewater Treatment Plant
- Based upon the findings and recommendations of the Master Servicing Plan, a Schedule C (Phases 3 and 4) EA may be required, which would include an Assimilate Capacity Study of the receiving body



Stormwater Management

- Provide a strategic level assessment of the options for providing stormwater management for new development
- Required when a rural area is urbanized and its intent is to mitigate impacts of run off quantity and quality
- Stormwater management options will:
 - Identify area stormwater treatment objectives and goals based on outlets
 - Identify appropriate application of municipal drains and storm sewers
 - Identify appropriate options for providing stormwater management for new developments, including lot level controls, conveyance controls, and centralized “regional” end of collection treatment and system controls



Next Steps

- We would appreciate comments from this meeting to be received by April 4, 2014
- Consultation period with individual stakeholders and review of public and agency comments
- Continued development of 20-year demand forecasts, existing infrastructure review, identification of community and municipal level issues and opportunities, for water, wastewater and stormwater
- Develop planning level alternative solutions and determine the recommended alternative solutions for water, wastewater and stormwater management
- Complete a review of the Natural-Social-Economic Environment
- Public Information Centre 2 (tentatively set for June 2014) to present the findings of the Master Servicing Plan
- Finalize the Master Servicing Plan and presentation to Council

Donna Clermont
CAO/Deputy Treasurer
Township of Southwold
35663 Fingal Line
Fingal ON N0L 1K0
Tel: 519-769-2010
Fax: 519-769-2837
Email: cao@southwold.ca

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator/Technologist
Stantec Consulting Ltd.
171 Queens Avenue, Suite 600
London ON N6A 5J7
Tel: 519-675-6652
Fax: 519-645-6575
Email: michele.oxlade@stantec.com

Please contact the above if you would like to be added to the mailing list



Appendix 2.6

PIC 2 (September 23, 2014)



To: Nelson Oliveira
London, ON

From: Michele Oxlade
London, ON

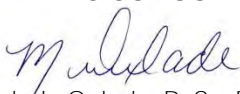
File: 165500796

Date: September 23, 2014

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2

Public Information Centre: September 23, 2014
Location: Keystone Community Complex, Shedden

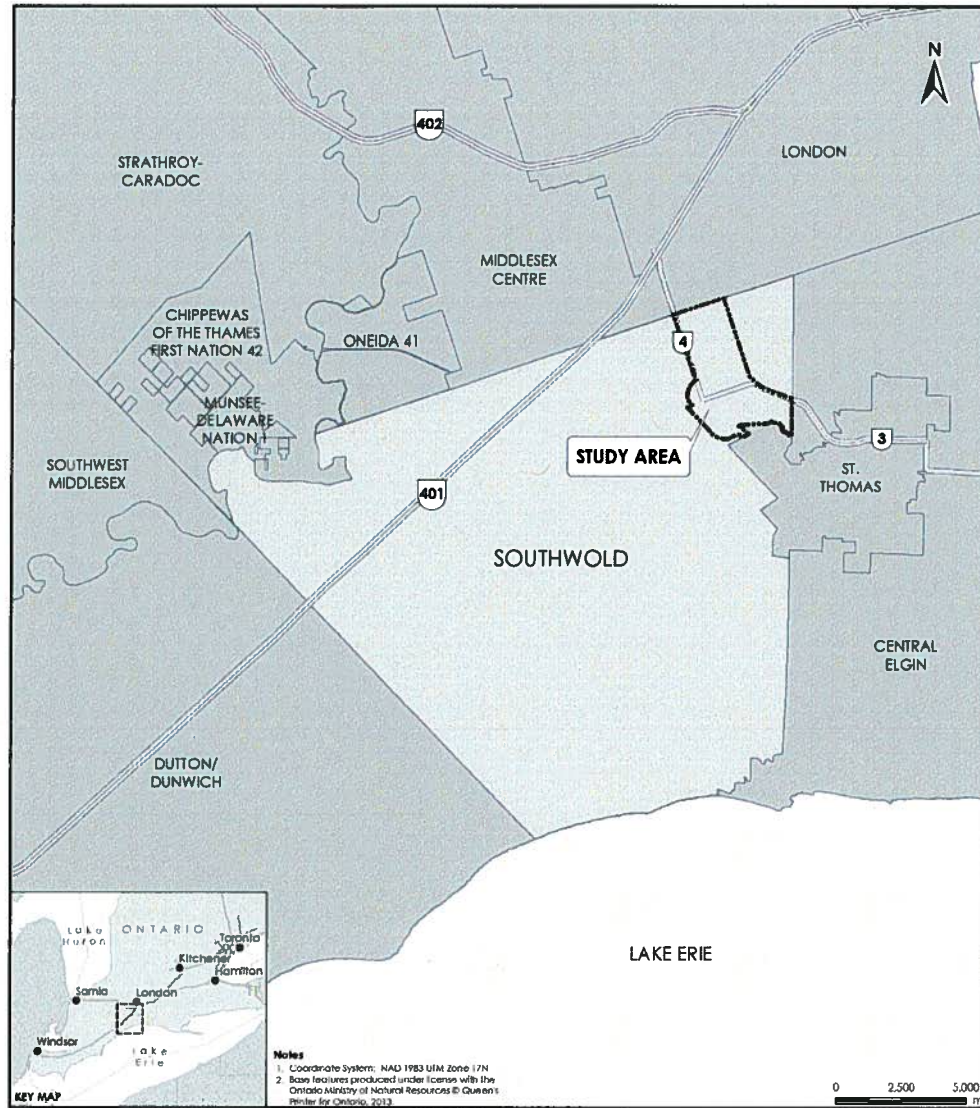
Project Team Members in Attendance	Donna Clermont – Township of Southwold Kim Grogan – Township of Southwold Nelson Oliveira – Stantec Cameron Gorrie – Stantec Michele Oxlade – Stantec
Number of people who signed visitor register	43 people registered
Handouts Presentation	Handouts available to all attendees—duplicate of presentation, comment forms available <ul style="list-style-type: none"> • Review of previous PIC • Guiding principles • Environment review • Aboriginal consultation • Water supply servicing options • Wastewater servicing options • Stormwater management strategy
Comment Sheet Deadline date for comments General Impressions of Public Comments/Concerns	Number completed and returned at PIC: 1 October 3, 2014 <ul style="list-style-type: none"> • People interested in what the project was about • Concerned on costs to residents • When will the WWTP be shovel ready • What determines whether sanitary servicing is provided along existing streets
Comments Submitted to Date	<ul style="list-style-type: none"> • 1

STANTEC CONSULTING LTD.


Michele Oxlade, B. Sc, EPt, Env SP
Environmental Coordinator
Phone: (519) 675-6652
michele.oxlade@stantec.com

Attachment: PIC attendance sheets, PIC handout, PIC comment sheet

Talbotville/Ferndale Master Servicing Plan Municipal Class Environmental Assessment



Talbotville/Ferndale Master Servicing Plan
Municipal Class Environmental Assessment

Public Information Centre, Tuesday September 23, 2014

PLEASE SIGN VISITOR REGISTER

Name (please print)	Mailing Address (please print)	Interest in Project (i.e. property owner, business owner, agency)
CD Waters	450 Sunset Drive Central	Agency
Harold + Coby Tebo	39824 Shady Lane Cr R.R. 7 NSP 3T2	
PAT KOZAK	35 VINEDEN DR.	
MALCOLM MCKELLAR	12 HIGHVIEW DR.	
Alyce Hoy	122-200 - Chestnut	
PATTI & CRAIG TELKER	16 Compton Pl. London	
HEATHER BRADY	41990 MCBAIN LN	
ROB ROBBINS	46 MAPLE ST ST THOMAS	
Steve Evans	County of Elgin	
Rick Dykstra	RIKOR ENGINEERING	
Joe McKinnon	3711 TALBOT LINE	P/O
Catherine Prete	ESTPH	
Jim REFFLE	ELGIN ST. THOMAS PUBLIC HEALTH	AGENCY

Talbotville/Ferndale Master Servicing Plan
Municipal Class Environmental Assessment

Public Information Centre, Tuesday September 23, 2014

PLEASE SIGN VISITOR REGISTER

Name (please print)	Mailing Address (please print)	Interest in Project (i.e. property owner, business owner, agency)
BMAUSPECT.	1006 WATERLOO PT.	Pittao Cards
LINA PITTAO	1 LDERTON ONT. 14387 LDERTON RD.	
Bob McCAIG	39956 BUSH LINE ST. THOMAS	Property OWNER
Ray Leatherdale	57 EDWARDS ST. THOMAS	Property Owner
Fran Leatherdale	"	"
Jim/DOONA ROBBINS	10395 GREENPARK, ST. THOMAS	Prof. Owner
Dennis Brown	166 SUNSET DR. ST. THOMAS	Person for PROPERTY OWNER/Agency
Ahwan Bogard	35469 THIRD LINE	SUGI INSTEAD
Tim Hamilton	39819 SHADY LANE	Property owner
Don + Lorie Weaver	39950 Shady Lane NSP 3TD	" " "
IAN CHARIS	7957 ARGYLE ST FINGAR ON NOLIKO	ianrcharis@sympatico COUNCILOR.CA
Camila Fajardo	Fanshawe C.	
Michelle Cormier	Fanshawe College	

Talbotville/Ferndale Master Servicing Plan Municipal Class Environmental Assessment

M. Baird

Public Information Centre, Tuesday September 23, 2014

PLEASE SIGN VISITOR REGISTER

Name (please print)	Mailing Address (please print)	Interest in Project (i.e. property owner, business owner, agency)
DAVE SPARENBERG	13 KANTOR CRT ST THOMAS NSR OAI	PROPERTY OWNER
NICK DOELMAN	41640 Ron McNeil Line RR 6 St. Thomas On.	public
COLIN MCBAIN	6415 CENTENNIAL ROAD ST THOMAS NSP 358	PROPERTY OWNER
Keith + Susan LOCKE	39958 Shady Lane RR #7 St Thomas Cr	NPS 372 prop. owner
JOHN MCBAIN	55 QUEEN ST ST THOMAS	
Jamie McBain	45889 John West Line St. Thomas NSP 359	Property owner
Don McCaig	40252 Bushline	Block of land South East of Talbot
Joko Stush	39467 Bush Line	McBain



Talbotville & Ferndale Master Servicing Plan



Public Information Centre #2
September 23, 2014

Outline

- Introduction
- Municipal Class Environmental Assessment
- Planning Considerations
- Guiding Principles
- Natural Environment & Cultural Review
- Aboriginal Consultation
- Small Settlement Study, Provincial Policy Statement & Population Projections
- Water Supply & Distribution
- Wastewater Collection & Treatment
- Stormwater Management
- Opinion of Probable Costs
- Funding Opportunities
- Next Steps
- Questions



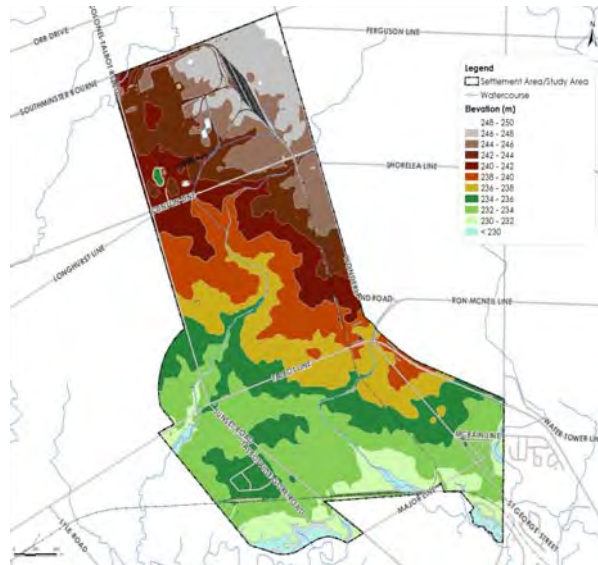
Introduction

- The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas
- The Township is seeking to improve development opportunities within the Talbotville & Ferndale settlement areas with the completion of a Master Servicing Plan to provide full municipal servicing



Master Servicing Plan

- Currently the Township is serviced with water and limited wastewater infrastructure
- The Master Servicing Plan should be reflective of the development and growth goals of the Township, in accordance with the Adopted Official Plan. To ensure this, a set of guiding principles or priorities will be developed with consideration for:
 - Preference for long term servicing solutions over interim solutions
 - All services to be fully funded through adequate planning, budgeting and identified revenue streams, development charges, etc.
 - Servicing solutions should be developed which minimize risk to the Township, users, and others



Municipal Class Environmental Assessment (EA)

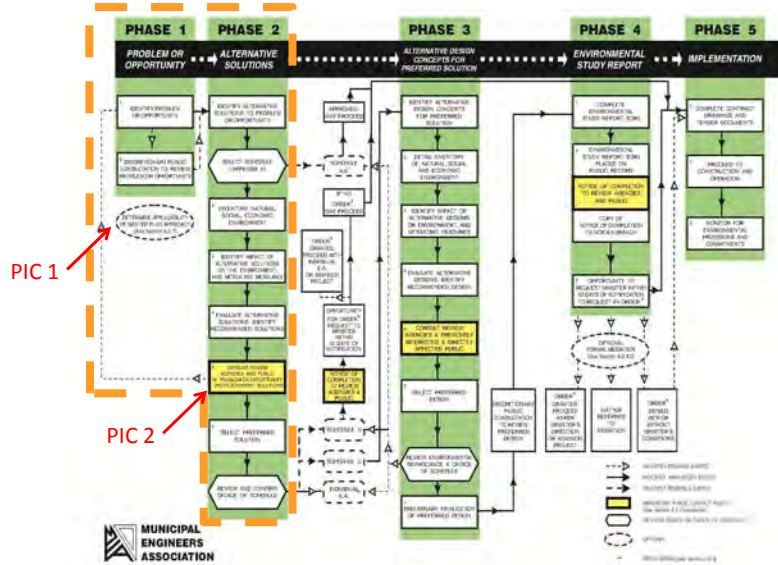
- Municipal Class EA (MCEA October 2000, as amended in 2007 & 2011)
 - This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class EA, which is an approved process under the EA Act
- Environmental Assessment (EA) is a decision making process to promote good environmental assessment planning, with key features being:
 - Early consultation
 - Consideration of reasonable range of alternatives
 - Assessment of environmental effects
 - Systematic evaluation of alternatives
 - Clear documentation and traceable decision making
- Public Involvement
 - The role of those members of the public with an interest in the study are to provide background information to advise the proponent (Township) of their support and concerns, and to review and provide comments and input about the study findings (as the project progresses)
 - Members of the public with an interest in the study can ask to be placed on the mailing list to receive notification of the consultation opportunities for this project

Problem/Opportunity Statement

- The following problem statement was developed for the Talbotville & Ferndale Master Servicing Plan:
 - The purpose of the Talbotville & Ferndale Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the township. Specifically, the Master Servicing Plan is to address the provision of water, wastewater, and stormwater management for existing and future growth areas for the Talbotville / Ferndale settlement area as defined in the Township's Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.



Municipal Class Environmental Assessment (EA)



Guiding Principles

- The following guiding principles were developed for this Master Servicing Plan (MSP):
 - The MSP is developed in a logical, consistent and fair manner that reflects the values of the Township of Southwold (Council, Staff, Community)
 - The MSP should align with and build upon the goals and objectives for the Township with respect to servicing of existing and growth areas as noted in the Adopted Official Plan per the Provincial Policy Statement and Small Settlement Study
 - The MSP should align with the Municipal Servicing Objectives defined in the Adopted Official Plan including ensuring that servicing is provided in a sustainable and financially viable manner and that planned growth is accommodated through the efficient use of existing municipal infrastructure
 - The MSP developed meets the requirements of current regulations and establishes a proactive plan to achieve compliance with regulations to be phased in by the federal and provincial government
 - The MSP addresses the state and condition of current infrastructure as well as future infrastructure needs in order to provide the Township with an overall blueprint for infrastructure management
 - Technical analysis based on data collection and modeling is undertaken to provide a full understanding of key systems under the expected range of conditions over the study period to the level required for decisions to be made
 - Key problems and opportunities facing the Township with regard to municipal water, wastewater, and stormwater infrastructure are properly identified, including opportunities to time work with other capital projects
 - Past work, current knowledge and future trends and technology are adequately analyzed and identified to the Township
 - Cost effective, sustainable and timely solutions are developed
 - For the Township to have an interdepartmental consensus as to the Master Plan strategy based on Stantec's work

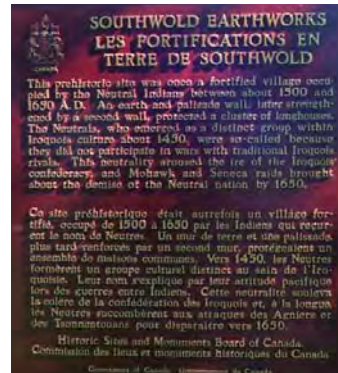
Natural Environment Review

- The study area is in the jurisdiction of the Kettle Creek Conservation Authority (KCCA)
 - Dodd Creek subwatershed
 - Upper Kettle Creek subwatershed
- Portions of the study area are in the KCCA Area of the Regulated Limit
 - Any development, construction or site alteration proposed within the regulated area may require prior written approval from the conservation authority
- KCCA 2012 Watershed Report Card indicates water quality has improved from 2008
- Ministry of Natural Resources (MNR) does not indicate any wetlands within the study area, however several significant woodlands (greater than 4 ha) are present
- Potential for at-risk wildlife species (field survey may be required to determine presence/absence prior to initiating any future work)
 - Monarch Butterfly
 - Acadian Flycatcher
 - Bobolink
 - Eastern Meadowlark
 - American Badger
- Department of Fisheries and Oceans (DFO) mapping does not identify at-risk fish or mussel species in the study area



Cultural Environment Review

- Consultation with Ministry of Tourism, Culture and Sport
 - Identify Archaeological potential within the study area
 - Identify Cultural/Heritage resource potential within the study area
- Consultation with Aboriginal Communities may identify local areas of cultural interest (ongoing)
- Consultation with municipal heritage planners, if required
- A Stage 1 and 2 Archaeological Assessment may be required



Aboriginal Consultation

- The study area for the Master Plan falls within the Treaty territory of several First Nations communities
- Notices and project information is provided to Aboriginal Communities throughout the EA process
- Project team is committed to meaningful consultation and maintaining open lines of communication with interested communities, including providing opportunities to meet with the project team and discuss alternatives
- The following First Nations communities have been included as part of the Aboriginal Consultation for the Master Plan:
 - Bkejwanong Territory (Walpole)
 - Caldwell First Nation
 - Chippewas of the Thames First Nation
 - Moravian of the Thames
 - Munsee-Delaware Nation
 - Oneida Nation of the Thames

Small Settlement Servicing Study (2013)

- The Small Settlement Servicing Study was intended to determine alternatives for providing services to settlement areas
- Required by the Ministry of Municipal Affairs and Housing and the MOE to demonstrate consistency with the servicing policies of the Provincial Policy Statement 2005
- Settlement areas are the primary growth centres where full municipal or communal services are required to achieve forecasted growth
 - Development is generally constrained in both Settlements and Hamlets by the absence of wastewater treatment facilities



Provincial Policy Statement

- Relevant excerpts for the Small Settlement Area Servicing Study from the Provincial Policy Statement include
 - Requirement for infrastructure and public services facilities, be available or planned, suitable for proposed development over the long term and protect public health and safety
 - Wastewater treatment facilities must be available or planned
 - Servicing be coordinated, efficient, and cost effective and integrated with planning for growth to accommodate projected needs, use of existing services should be optimized
 - Growth must be planned to efficiently use existing municipal services as the first priority and to efficiently use existing private communal services as the second priority where municipal services are unavailable
 - Sufficient reserve capacity prior to any new lot creation (if new development is on private services, reserve capacity allotted in case of private system failure)
 - Hierarchy of servicing systems: municipal sewage and water services are the preferred method of servicing, partial servicing only permitted to address failed individual on-site services or to allow infilling and rounding out of development in settlement areas

Population Projections

- Population projections for Talbotville and Ferndale were based upon the *Addendum to Allocation of Equivalent Residential Units Tables and Responses to OMAFRA and MMAH Land Supply Review and Small Settlement Servicing Study* for the next 20 years (2012)
- Talbotville
 - Existing population is approximately 462 people (165 dwellings)
 - Estimated equivalent residential units available (ERU) for future development is approximately 600 units
- Ferndale/Lynhurst
 - Existing population is approximately 588 people (210 dwellings)
 - Estimated equivalent residential units (ERU) for future development is approximately 270 units

	Existing	Future	Total
Talbotville	462	1,800	2,262
Ferndale/Lynhurst	588	810	1,398

Population based on 3 people/ERU or existing development

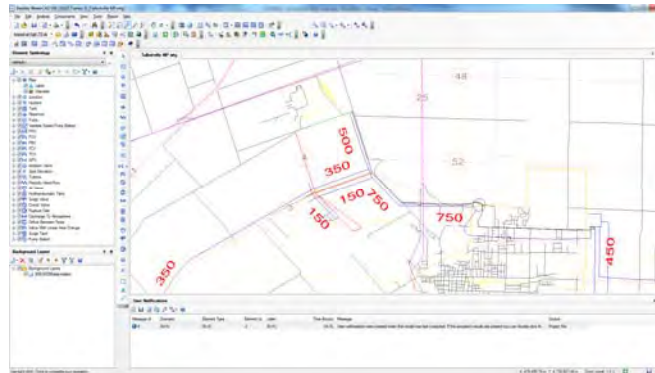
Water Supply & Distribution

- Currently serviced off the St. Thomas Area Secondary Water Supply System (STASWSS)
- Supply to the STASWSS via the Elgin Area Primary Water Supply System (EAPWSS)
- Rated capacity of system is 54,605 m³/day
- Currently operating at about 23% of rated capacity at maximum daily flows
- STASWSS and EAPWSS do not allocate supply to any individual municipality, supply is available on an aggregate basis
- Closure of Ford Motor Company (over 270 m³/day) provides additional capacity for future growth



Southwold Water Distribution System

- Southwold Water Distribution System is a licensed system
 - Consists of watermains, hydrants, valves, blow-offs
 - Existing system is relatively well looped, however some dead ends are present
 - Supplies water to the Dutton-Dunwich Water Distribution System through interconnect at Iona Road
 - Supplies St. Thomas Water Distribution System through interconnect on Fingal Line at the municipal boundary
 - Currently, several areas are flushed regularly to maintain adequate chlorine residual



Servicing Options

- Do Nothing
 - No impact on natural or social environment
 - Not consistent with the Adopted Official Plan (not considered further)
- Private Water Servicing
 - Moderate impact to the natural and social environment
 - Not consistent with the Provincial Policy Statement (PPS) and Adopted Official Plan (not considered further)
- Extend Servicing Of EAPWSS
 - Highest impact to natural environment (involves long pipeline connection)
 - Construction disruption anticipated (worst of all options)
 - Provides additional servicing connection/security
 - Highest capital and operating cost option as supply line would be required in addition to local watermains
 - Would likely require storage, booster pumping and rechlorination facilities
- **Extend Existing Municipal Servicing System (preferred alternative)**
 - Work would be situated within existing or proposed road allowances and majority of complex crossings have been completed (minor natural environment impacts)
 - Construction disruption anticipated
 - Consistent with the PPS
 - Lowest cost option for municipal servicing
 - Utilizes existing capacity and infrastructure
 - Consideration to be given to system security and redundancy

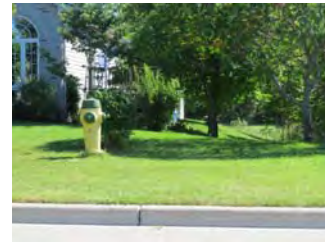
Key Issues & Constraints

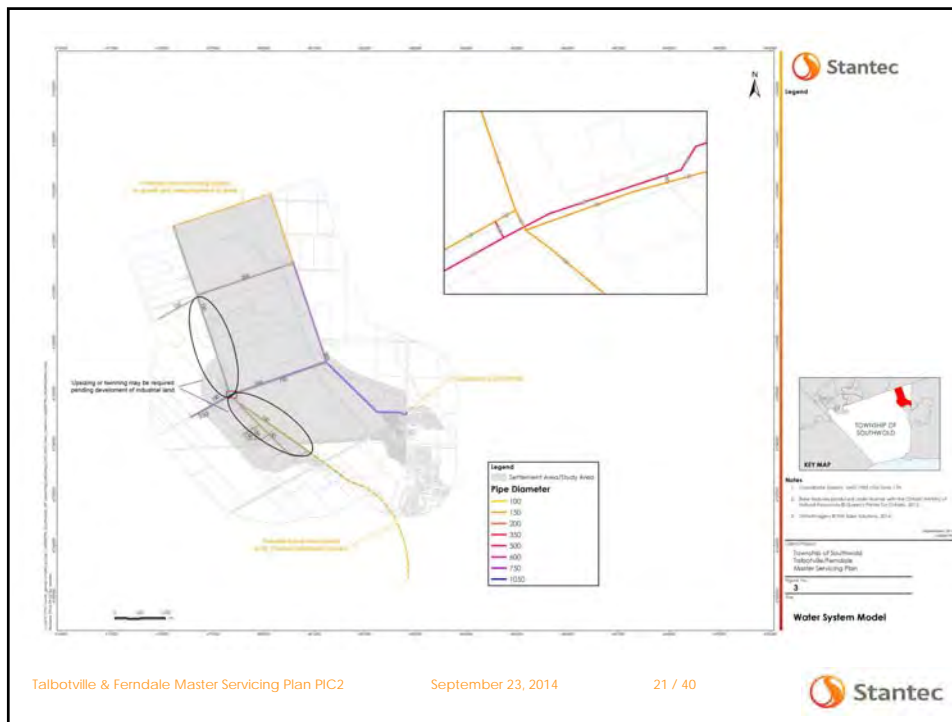
- Preliminary modeling suggests that existing system should be capable of servicing future growth initiatives
 - Pressures above 50 psi in existing service areas
 - Water turnover in sections of larger diameter trunks is low, suggesting capacity is available
- In general, new municipal watermains would be constructed at the same time as new sanitary sewers to minimize overall costs
- Local mains will need to be extended to connect to existing trunk mains
- Some existing watermains may need to be twinned or oversized to accommodate development depending on provision of fire flow (pumper truck versus direct feed) and potential and type of industrial development
 - Primarily along Sunset Drive (150 mm at present)
- Looping needs to be considered to minimize potential for stagnant water and to improve fire flow supply
 - May impact staging requirements for new developments



Key Issues & Constraints

- Currently only one major supply line into the settlement areas
 - No storage in place
 - Major emergency event (i.e., watermain break) would result in disruption to potable water supply
- St. Thomas is currently undertaking a study to review extension of servicing to Sunset Drive/Major Line
 - Outcome of study may involve a further interconnection, with potential pressure zone separation
 - May help alleviate dead end condition in this area
 - May provide additional emergency connection in the event of interruption to Talbot Line supply
- Sizing of watermains to address
 - Potential for stagnant water impacts
 - Maintain MOE recommended minimum servicing pressures under average day, maximum day, and peak hour flows
 - Provide adequate fire flow provision (flow rate at minimum pressure)
- Future works will be generally classified as Schedule A+ projects per Class EA (obligations met by this Master Plan)





Wastewater Servicing

- The Township of Southwold does not currently have a wastewater collection/treatment system
- Existing development is serviced either by private on-site systems or sent to the St. Thomas WWTP via the St. George Street Pumping Station
- According to the Official Plan, all new development, redevelopment, intensification and infill will require municipal sanitary sewage services
 - The Township will make no commitment or approve any development that would cause the capacity of the St. Thomas sewage treatment plant to be exceeded. In certain cases, improvements to the sanitary sewer system may be required before development may proceed. Such improvements may include the provision of a new pumping station and/or sewer line extensions.
- St. Thomas has confirmed that there is sufficient treatment capacity to accommodate the proposed growth within Ferndale
- Sewer capacity issues exist upstream of the St. George Pumping Station which limit the amount of flow which can be conveyed from Ferndale to St. Thomas
- The Township acknowledges that full municipal water and sanitary sewage services are the preferred method of servicing new development within the Settlement Area
- Partial municipal services for new development will be discouraged where viable alternatives can be feasibly undertaken
- Until full municipal services or an adequate alternative to partial services are provided, development will be restricted to infilling and rounding out existing development

Wastewater Servicing Alternatives

- Do Nothing
 - This option would result in no wastewater treatment capacity in Talbotville and would significantly limit community growth
- Utilize St. Thomas WWTP
 - Continue to send existing sanitary flows to St. Thomas WWTP from Ferndale
 - If development is unable to send additional flows to St. Thomas, construct pumping station and forcemain to Talbotville
- Utilize Existing WWTP at Former Ford Motor Company Property
 - Existing plant is oversized for projected sanitary flows, future intentions for site unknown
 - Majority of flows would need to be pumped, based on topography
- **New Municipal WWTP (preferred alternative)**
 - Construct a new municipal wastewater treatment plant within Talbotville to service existing and future development within Talbotville
 - Conveyance of sanitary flows achieved by gravity sewers rather than through pump stations and forcemains
 - Determine location for WWTP which would allow for future conveyance of flows from Ferndale to Talbotville WWTP



Talbotville Sewershed

- Topography tends to fall towards Dodd's Creek to the south, however, Lindsay Drain creates fall to the northwest as well
- High point near the Talbotville Meadows subdivision
- Preference for gravity sewers versus pumping station and forcemain where possible
- Sewershed has been divided into 13 segments based upon existing and future development parcels



Potential WWTP Locations

- Regulated limits and floodplain restrict potential WWTP locations
- The MOE recommends minimum separation distances between new residential developments and other sensitive land uses and existing sewage treatment facilities (Guideline D-2 Compatibility between Sewage Treatment & Sensitive Land Use)
 - Capacity greater than 500 m³/day but less than 25,000 m³/day → 100 m (minimum) / 150 m (recommended)
 - Minimum separation distance may be difficult if WWTP is located within the developed area of Talbotville
- Three locations were evaluated (Lindsay Drain and Dodd's Creek – two locations) and based on the preferred sewershed routing, Dodd's Creek was selected
- As municipally owned land is not available, Township would likely have to purchase land for plant



Collection System Construction Phasing

- Phase 1
 - Construction of sanitary sewers in the vicinity of the southern extent of Talbotville-Gore Road and Sunset Road (south of CN tracks)
- Phase 2
 - Construction of sanitary sewers along Talbotville-Gore Road to northern extent of Talbotville-Gore Road and Shady Lane Crescent (north of CN tracks)
- Phase 3
 - Construction of sanitary sewers along Talbotville-Gore Road north of Phase 2
- Approximate flows associated with each phase are presented below:

	Population	Flow (m ³ /day)	Total Flow (m ³ /day)
Phase 1A	200	75	75
Phase 1B	375	140	215
Phase 2	900	330	545
Phase 3A (all Talbotville)	1,925	700	1,245
Phase 3B (including all Ferndale)	1,400	510	1,755

Flows from Ferndale, although depicted in Phase 3B may be sent to the WWTP prior based on development needs

Industrial Contributions

- In accordance with the Adopted Official Plan, there is approximately 412 ha of land designated industrial within the Talbotville Settlement Area
- The former Ford Motor Company property houses its own WWTP sized for 3,200 m³/day
- Development of industrial lands to the south of the former Ford property could result in a wide range of sanitary flows dependent on both type and size of industry
- In order to size a new plant efficiently for current and projected residential flows, it is assumed that the municipal plant will undergo a separate expansion or industrial lands may be serviced through on-site treatment plants (similar to Ford) to accommodate much larger industrial flows and variable effluent quality
- Future industrial lands could generate wastewater flows upwards of 9,000 m³/day upon full build-out based upon Township design standards



New Wastewater Treatment Plant

- Potential treatment technologies may include SBR, EA and MBR
- Each technology could be constructed in phases, can also handle low flows (50 - 100 m³/day)
- Initial development (i.e., less than 50 m³/day) would likely not contribute enough flow to run a new plant, may result in storage and trucking
- Plant would likely be sized initially for 545 m³/day with capability to handle smaller flows
- Next phase would be for 1,245 m³/day
- Further determination of treatment types, ultimate flows and WWTP siting would be reviewed through a Schedule C Class EA which would include an Assimilate Capacity Study of the receiving body



Stormwater Management

- Provide a strategic level assessment of the options for providing stormwater management for new development
- Required when a rural area is urbanized and its intent is to mitigate impacts of run off quantity and quality
- Stormwater management options will:
 - Identify area stormwater treatment objectives and goals based on outlets
 - Identify appropriate application of municipal drains and storm sewers
 - Identify appropriate options for providing stormwater management for new developments, including lot level controls, conveyance controls, and centralized “regional” end of collection treatment and system controls



Stormwater Management

- The purpose of stormwater management is to maintain the hydraulic and hydrologic function of a watershed when land use changes
 - Minimize impacts on downstream natural environments
- Impacts of land development on water resources
 - Increase in runoff quantity and rates can cause significant erosion issues and negatively impact downstream flora and fauna
 - Negative water quality impacts as runoff contacts developed surfaces and entrains new pollutants
- Stormwater management features such as constructed wetlands or infiltration galleries are implemented in land development projects to control the quality of runoff to slow it down and release it at rates which our natural environment can manage



Stormwater Management Strategy

- Amount of water - its peak flow rate, total volume – flowing off the study area remains manageable and does not pose a threat to the downstream environment or increase risks for erosion
- The amount of runoff leaving the study area is of appreciable quality so as to not have a negative impact on downstream flora and fauna
- Interaction between surface water and groundwater is maintained
- Catchment flow patterns are maintained between existing and post development conditions
- Overall, the goal of the SWM strategy is to have post-development runoff conditions mimic existing conditions where possible



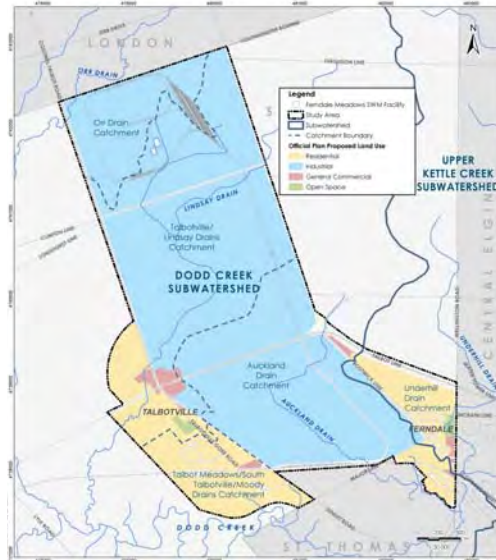
Existing Conditions

- Land use: intense agriculture (70-80%)
- Soils: impermeable and erodible
 - Soil type dominated by clays (moderately impermeable and prone to erosion)
 - Hydraulic system is mainly surface driven
- Drainage: Dodd Creek (94%) and Kettle Creek (6%)
 - Study area drains to two watercourses
 - Distinction between Upper and Lower Dodd Creek is important because the quality of the watercourse degrades consistently from top to bottom
- Watercourse quality: poor
 - Generally all receiving reaches are low quality, warm water watercourses under active erosion and sedimentation
- Water quality: poor
 - Water, nutrient and bacteria rich (consistent with other agriculturally-based watersheds)
 - Impacted by low baseflow



Proposed Conditions

- New land use: residential, light commercial, industrial
 - Extension of residential and commercial development
 - Conversion of much of the currently farmed land to large-scale industrial use
- Imperviousness: substantial increase
 - Native soils do not allow for a great deal of infiltration which will result in an increase in runoff and decrease in runoff quality
 - Stormwater management options are available to control and mitigate these effects



SWM Constraints & Opportunities

- Constraints
 - Located outside of Conservation Authority Regulated Area
 - Located outside of Significant Woodlots > 4 ha
 - Located outside of Existing Development
- Significant Recharge Area: Constraint or Opportunity
- Location of Regional SWM Facilities
- Tables 1 and 2 illustrate the results of the SWM vetting process where we analyzed the appropriateness of SWM options against watershed conditions and other factors including economic, environmental and social impact
 - Infiltration measures only considered in Talbotville area
 - Ability to meet SWM goals while creating environmental amenities for the community, all at reasonable cost
- Ultimately the best approach will utilize a number of these features in sequence – in a “treatment” train – and at all levels of control, lot level through end-of-pipe



General Screening of SWM Practices

Type of Control	Management Practice	Effectiveness ⁽²⁾				Potential ⁽³⁾ For	Potential Contribution to Study Area SWM Goals ⁽⁴⁾					
		Water Quality Treatment	Volume Reduction	Runoff Attenuation	Groundwater Recharge		Groundwater Contamination	Reduce Sediment Loading	Reduce Nutrient Loading	Reduce Flooding/Flashy Runoff	Reduce Erosion	Increase Clean Recharge
Lot Level	Reduced Lot Grades	-	x	-	○	-	-	-	●	○	○	-
	Roof Leader to Pervious Surface	○	x	x	-	-	-	○	●	-	-	●
	Roof Leader to Infiltration Pits	○	x	x	●	○	-	-	○	-	●	●
	Rooftop/On-site Storage	-	x	○	x	-	-	-	○	○	-	x
	Infiltration Trenches	○	○	-	●	●	○	○	-	○	●	●
	Oil/Grit Separator	●	x	x	x	-	●	○	x	x	x	x
	Pervious Infrastructure	○	○	-	●	●	○	○	-	○	●	○
Conveyance Controls	Rural Road Cross Sections	○	○	○	-	○	○	○	○	○	○	○
	Grassed Swale	○	○	○	-	-	○	○	○	○	○	●
	Wet Pond ⁽¹⁾	●	●	●	-	○	●	●	●	-	-	x
End-of-Pipe Facilities	Wetland ⁽¹⁾	●	●	●	-	○	●	●	●	-	-	x
	Dry Basin with Forebay ⁽¹⁾	○	●	●	-	○	○	○	●	●	-	x
	Infiltration Basin ⁽¹⁾	○	●	●	●	●	●	○	●	●	●	○
	Infiltration Trench	○	○	-	●	●	○	○	-	○	●	●
	Filter Strip	○	x	-	-	-	○	○	-	-	-	○
	Buffer Strip	○	x	-	-	-	○	○	-	-	-	○
	Filters	●	x	-	-	-	○	○	-	-	-	-

NOTES
 1) Includes Extended Detention.
 2) Ranking: ● Highly Effective ○ Moderately Effective - Nominally Effective x Not Effective
 3) Ranking: ● High Potential ○ Moderate Potential - Low Potential x No Potential
 4) Ranking: ● Meets Goal ○ Contributes to Goal - Nominal Contribution to Goal x No Contribution

General Screening of SWM Practices

Type of Control	Management Practice	Talbotville Settlement Area						Industrial Lands						Ferndale Settlement					
		Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration	Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration	Physically Feasible	Contributes to Area SWM Goals	Economically Feasible	Creates Environmental Amenity	Positive Social Impact	Recommended for Consideration
Lot Level	Reduced Lot Grades	●	●	●	x	x	●	●	●	●	x	x	●	●	●	●	x	x	●
	Roof Leader to Pervious Surface	●	●	●	x	x	●	●	●	x	x	●	●	●	●	●	x	x	●
	Roof Leader to Infiltration Pits	○	●	●	x	x	○	x	●	x	x	x	○	○	○	x	x	x	○
	Rooftop/On-site Storage	●	●	●	x	x	●	●	●	x	x	●	●	●	●	x	x	●	●
	Infiltration Trenches	○	○	○	x	x	○	x	○	x	x	x	x	○	○	x	x	x	○
	Oil/Grit Separator	●	○	x	x	x	●	○	○	x	x	●	○	○	x	x	○	x	○
	Pervious Infrastructure	○	○	x	x	x	○	x	○	x	x	x	○	○	x	x	○	x	x
Conveyance Controls	Rural Road Cross Sections	●	●	●	x	x	●	●	●	x	x	●	●	●	●	x	x	●	
	Grassed Swale	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Wet Pond ⁽¹⁾	●	●	○	●	○	●	●	○	○	●	●	●	●	○	○	○	○	
End-of-Pipe Facilities	Wetland ⁽¹⁾	●	●	○	●	●	●	●	○	○	●	●	●	●	○	○	○	○	
	Dry Basin with Forebay ⁽¹⁾	●	●	●	○	○	●	●	○	○	●	○	●	●	○	○	○	○	
	Infiltration Basin ⁽¹⁾	○	○	○	●	○	○	x	○	○	x	x	○	○	○	○	○	x	
	Infiltration Trench	○	○	○	x	x	○	x	○	x	x	x	○	○	○	x	x	x	
	Filter Strip	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Buffer Strip	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Filters	●	●	●	x	x	●	●	●	x	x	●	●	●	●	x	x	●	

NOTES
 1) Includes Extended Detention.
 Key ● = Yes; ○ = Limited/Moderate; x = No

Opinion of Probable Costs

- Total estimated construction costs (water):
 - Sunset Drive (north of Talbot Line, subject to development of industrial lands) is \$1.05M (-10% / +30%)
 - Sunset Drive (south of Talbot Line, subject to development of industrial lands) is \$950,000 (-10% / +30%)
 - Southminster Bourne/Wonderland Road extensions (subject to development of former Ford Plant and adjacent designated industrial lands) is \$1.4M (-10% / +30%)
- Total estimated construction costs (wastewater):
 - New WWTP in Talbotville (545 m³/day): \$5.75M (-10% / +30%)
 - New Pumping Station and Forcemain from Ferndale: \$1.38M (-10% / +30%)
 - New Sanitary Collection System in Talbotville: \$1.58M (-10% / +30%)

Funding Opportunities

- Various funding sources for identified projects include provincial and federal grants, development charges and user rates
- Through development opportunities within the Township, progress would be achieved towards sustainability through stabilization of the tax assessment base, recently lost as the result of the closure of the Ford Talbotville Plant
- The Township recently submitted a grant funding application for the New Building Canada Fund Small Communities Fund (SCF) Expression of Interest
- Ontario and Canada will each provide \$272 million to support critical projects in municipalities with populations less than 100,000 and is part of the federal government's ten-year Building Canada Fund
 - If successful, would result in provincial and federal funding for wastewater treatment and conveyance projects within the Township (2/3 funding)

Next Steps

- We would appreciate comments from this meeting to be received by October 3, 2014
- Consultation period with individual stakeholders and review of public and agency comments
- Finalize the Master Servicing Plan and presentation to Council
- Publish the Master Servicing Plan for 30-day review
- Undertake Schedule C Class EA for new Talbotville WWTP (tentative)

Donna Clermont
CAO/Deputy Treasurer
Township of Southwold
35663 Fingal Line
Fingal ON NOL 1K0
Tel: 519-769-2010
Fax: 519-769-2837
Email: cao@southwold.ca

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator/Technologist
Stantec Consulting Ltd.
171 Queens Avenue, Suite 600
London ON N6A 5J7
Tel: 519-675-6652
Fax: 519-645-6575
Email: michele.oxlade@stantec.com

Please contact the above if you would like to be added to the mailing list

Questions
& Answers
Questions & Answers
Questions & Answers
Answers



Appendix 2.7

PIC 2 Comments and Responses





Stantec Consulting Ltd.
600 - 171 Queens Avenue, London ON N6A 5J7

February 11, 2015
File: 165500796

Attention: Heather Brady
41990 McBain Line
St. Thomas ON N5P 3T1

Dear Ms. Brady,

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Thank you for your interest in this study and your attendance at the Public Information Centre. Township of Southwold staff and Stantec have reviewed your comments and questions and have provided the following response.

The Public Information Centre (PIC) was advertised on the Township website as well as in the Weekly News. The Weekly News was chosen by the Township as it is a free newspaper and provides the widest circulation within Elgin County. Inclusion of the PIC 2 notice within tax or water bill mail-outs was not feasible due to the timelines associated with the circulation of these bills.

Larger format presentation handouts or a digital copy can be provided to residents upon request following the PIC. Presentation material was also made available on the Township's website.

As requested, we will ensure that you receive any future project notifications.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink that reads "Cameron Gorrie".

Cameron Gorrie, P.Eng.
Project Engineer, Water
Phone: (519) 675-6650
Fax: (519) 645-6575
cameron.gorrie@stantec.com

Attachment: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Form (Heather Brady)

c. Donna Clermont, CAO/Clerk, Township of Southwold

Talbotville/Ferndale Master Servicing Plan
Municipal Class Environmental Assessment

COMMENT FORM

PUBLIC INFORMATION CENTRE, TUESDAY SEPTEMBER 23, 2014

RECEIVED
OCT 1 2014

Return to: Ms. Michele Oxlade, Stantec
Address: 600 - 171 Queens Avenue, London, ON N6A 5J7
Tel: (519) 675-6652
Fax: (519) 645-6575
Email: michele.oxlade@stantec.com

STANTEC CONSULTING LTD.

Comments:

1st - where was meeting advertised?
The only ad I saw was in the "Weekly News", which I never receive - I saw it accidentally at a friends home. Why was it not included in the bill or personal notification as I am a property owner of a large property adjacent to Ferndale subdivision?

2nd - The handouts at the meeting are extremely difficult to read with the fine, fine faded print. With the price that consultants are paid could they not at least provide material that is legible.

3rd - Speaker - most of the time it was impossible to hear him reading a screen that you could barely see. Could he not have had a microphone??

at this time I have no comment on the proposals, but I wish to be kept informed.

Please check one: Response Required Response Not Required

All information/comments received will be subject to the disclosure requirements of the Freedom of Information and Protection of Privacy Act. Information received will be maintained on file for use during the project and may be included in study documentation. With the exception of personal information, all comments received will become part of the public record.

Personal Information (optional): Please fill in if you wish to be added to the mailing list for this project and to receive subsequent project notices.

Name: HEATHER BRADY
Address & Postal Code: 41990 MCBAIN LN, ST. THOMAS N5P 3T1
Phone: 519-631-5967
Fax: _____
E-Mail: _____

Please fill out and submit the comment form by October 3, 2014





Stantec Consulting Ltd.
600 - 171 Queens Avenue, London ON N6A 5J7

February 11, 2015
File: 165500796

Attention: Dennis Broome
Dennis & Christine Broome
Royal LePage Triland Realty Brokerage
166 Sunset Drive
St. Thomas ON N5R 3B9

Dear Mr. Broome,

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Thank you for your interest in this study and your attendance at the Public Information Centre. Township of Southwold staff and Stantec have reviewed your comments and questions and have provided the following response.

As part of the sanitary servicing component of the Master Servicing Plan, the construction of a new municipally owned wastewater treatment plant was evaluated, however it is not the only servicing option available. Both treatment capacity and conveyance of flows were reviewed for Talbotville and Ferndale. As mentioned at the PIC, only a brief summary of each servicing component (water, wastewater and stormwater) was reviewed but a full analysis of each would be provided within the Master Servicing Plan document (Project File). The Project File will be posted for a 30-day review period for the public, agencies and other stakeholders prior to being finalized. Within the Project File, further breakdown of costs will be provided for each sanitary servicing option. The allocation of any future project costs incurred to residents would be determined by the Township and Council. Following the PIC, we have further evaluated options for Ferndale such as phasing, sanitary sewer routing, capacity constraints in neighbouring municipal systems, additional funding opportunities, etc. Each option would have a different cost and timeline associated with it, depending on funding, project complexity, etc.

The Township of Southwold Small Settlement Servicing Study (Zelinka Priamo Ltd., Triton Engineering Services Ltd.) states that based on previous servicing reviews the sewer system from Wellington Road to the existing St. George Street Pumping Station is at or near capacity. The McBain Property Proposed Development Sanitary Capacity Review Draft Report (CJDL Consulting Engineers) did not utilize values derived from the Central Elgin design standards and therefore projected flows were minimized. Both studies were reviewed by Stantec during the course of the formulation of the Master Servicing Plan.

Although existing infrastructure exists in the vicinity of Ferndale, it is important to evaluate the capacity available for future works. Constraints and opportunities (i.e., upgrading partial lengths of sewers, redirecting pumping station flows, etc.) have been reviewed as part of the Master



February 11, 2015
Dennis Broome
Page 2 of 3

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Servicing Plan and in conjunction with input from neighbouring municipalities. Preliminary costs were provided to Council in December 2014 and will also be included in the Project File.

Previous servicing reviews undertaken by Central Elgin concluded that the St. George Street sewer system is at or near capacity and could not accommodate development in Ferndale in its current form. Potential options to alleviate constraints on the St. George Street sewer include: upgrade of partial lengths of the St. George Street gravity sewer, twinning of the St. George Street gravity sewer, redirection of flows from either the Woodland Road Pumping Station or the Crescent Avenue Pumping Station, or the construction of a new pumping station and forcemain. All servicing options involving modifications to the St. George Street sewershed (collection system and pumping stations) would be dependent on approval from Central Elgin. The preferred option would be to continue to send existing sanitary flows to St. Thomas WWTP from Ferndale, contingent on remaining capacity within the St. George Street sewer system. As stated previously, there are no apparent issues with the treatment capacity at the St. Thomas WWTP. It was initially believed that approximately 55 lots could be developed within Ferndale without modifications to the sewer system, however following further review with Central Elgin, this allocation would exceed their capacity limits.

Given what is noted above, there would be costs associated with potential upgrades required to the St. George Street sewer to allow for future servicing in Ferndale. The statement that "*this option would virtually cost Southwold no monies for the development of Ferndale*" is incorrect as it has assumed there is adequate capacity within the collection system.

It is the intent of the Master Servicing Plan to fairly evaluate options for both Talbotville and Ferndale. Priority was not allocated to either Ferndale or Talbotville.

We will ensure that you receive any future project notifications.

Regards,

STANTEC CONSULTING LTD.

A handwritten signature in black ink that reads "Cam Gorrie".

Cameron Gorrie, P.Eng.
Project Engineer, Water
Phone: (519) 675-6650
Fax: (519) 645-6575
cameron.gorrie@stantec.com



February 11, 2015
Dennis Broome
Page 3 of 3

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Attachment: Talbotville/Ferndale Master Servicing Plan PIC 2 Email (Dennis Broome)

c. Donna Clermont, CAO/Clerk, Township of Southwold

DENNIS & CHRISTINE BROOME

Broker & Sales Representatives
ROYAL LEPAGE TRILAND III
REALTY BROKERAGE

166 Sunset Drive
St. Thomas, ON N5R 3B9
Direct: 519-637-0133
Fax: 519-637-3347
Email: broome@wwdc.com
Web: www.broomecd.com

October 1st, 2014

Donna Clemont
CAO/ Deputy Treasurer
Township of Southwold

Michelle Oxlade
Environmental Coordinator/ Technologist
Stantec Consulting

This letter will serve as my response to the public meeting held by Stantec regarding the sewage treatment options available to Southwold Township.

I am a Real Estate Broker with Royal LePage Triland Realty, Brokerage and have been representing the interests of the McBain Family in the sale of their property in Ferndale as well as Walter Ostojic and Sons the potential Buyer of said lands.

There is a history on this development parcel that is pertinent to the issues.

Southwold was first approached regarding the development of the second portion of the McBain parcel approximately 7 years ago. The township was excited as there was a potential of 163 new homes generating over \$450,000 of tax income to the Township. The only issue at that time was Southwold would have to have their new Official Plan approved by the Province. It has taken over 7 years to accomplish this task mostly do to the inept approach taken by the Township. Southwold Township was asked to join Central Elgin and the City of St. Thomas on a joint submission. Southwold delined this approach. Central Elgin and the City of St. Thomas had their plans approved long ago and Central Elgin is building houses on the East side of Wellington Road directly adjacent to the McBain lands building their tax base today.

The Township of Southwold could have been doing the same under a joint servicing agreement that is already in place with Central Elgin and St. Thomas under Township of Yarmouth By-Law No. 3515.

In the report tabled by Stantec it was stated that the preferred option for development in Southwold would be to create a sewage treatment plant within the Hamlet of Talbotville and have the sewage from the Ferndale area forced pumped to the plant. This is clearly totally opposite to the Provincial Policy that states:

" use of existing services should be optimized" and that growth must be planned to efficiently use existing municipal services as the first priority.

"Specializing in You since 1982"

Independantly Owned and Operated Brokerage

There have been studies completed by Zelinka Prima/Triton Engineering in 2013 and by Cyril J. Demeyere Limited in February of 2012 on the St. George Street pumping station in St. Thomas. These studies both indicate that there is adequate capacity in the station to accommodate the growth in Ferndale.

The Stantec report did not even acknowledge these studies. The cost associated with the Stantec option would be over \$3,000,000 and places the Ferndale lands at the bottom of the development chain. This would take at least 5 to 10 years to complete in the event Southwold adopted the Stantec plan as presented.

The Township of Southwold has the option of taking the sewage waste from Ferndale and redirecting it to the St. George Street pumping station the preferred option by everyone except for Stantec.

In the event that the Township of Southwold does adopt the preferred option given by Stantec it would cost the tax payers of Southwold millions of dollars. This is derived from the cost of the force main, which includes the building of an additional pumping station, the force main and five to ten years of potential taxes from the Ferndale lands.

In the event the Township of Southwold adopts the St. George Street option it would virtually cost Southwold no monies for the development of Ferndale and they could continue the plan for Talbotville. They could have extra tax dollars flowing as soon as one year from now.

We need answers as well as an explanation to Tax Payers in Southwold Township, why are you considering the most expensive and time consuming option possible for sewage treatment in your settlement area.

We would also request the opportunity to voice these concerns prior to any adoption of the final servicing plan.

Please note that this letter will be sent to all current Councilors and those that are on the 2014 ballot.



Dennis Broome
Broker
Royal Lepage Triland Realty, Brokerage



Stantec Consulting Ltd.
600 - 171 Queens Avenue, London ON N6A 5J7

February 11, 2015
File: 165500796

Attention: Colin McBain
6415 Centennial Road
St. Thomas ON N5P 3S8

Dear Mr. McBain,

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Thank you for your interest in this study and your attendance at the Public Information Centre. Township of Southwold staff and Stantec have reviewed your comments and questions and have provided the following response.

Stantec considered the 2014 Provincial Policy Statement (PPS) during the review of potential sanitary servicing options. The "use of existing services should be optimized" statement can be influenced by various factors, such as available capacity, whether the option results in a feasible solution, and if it supports long-term planning. The use of existing services was not ignored, as stated at the PIC and outlined below. Priority was not allocated to either Talbotville or Ferndale, as outlined in the PIC presentation "flows from Ferndale, although depicted in Phase 3B may be sent to the WWTP prior based on development needs". As part of the Class EA process, various servicing options are reviewed and the construction of a pumping station and forcemain may be a feasible option and should be examined.

With respect to consultation with stakeholders in the Ferndale area, Stantec undertook initial consultation with the Ostoijcs. Following this, further comments were not provided.

With regards to the statement that all studies have been completed (archaeological, etc.) within your response, the Township, County and other regulatory agencies would have jurisdiction over this and Stantec cannot provide a response to this.

As part of the sanitary servicing component of the Master Servicing Plan, the construction of a new municipally owned wastewater treatment plant was evaluated, however it is not the only servicing option available. Both treatment capacity and conveyance of flows were reviewed for Talbotville and Ferndale. As mentioned at the PIC, only a brief summary of each servicing component (water, wastewater and stormwater) was reviewed but a full analysis of each would be provided within the Master Servicing Plan document (Project File). The Project File will be posted for a 30-day review period for the public, agencies and other stakeholders prior to being finalized. Within the Project File, further breakdown of costs will be provided for each sanitary servicing option. The allocation of any future project costs incurred to residents would be determined by the Township and Council. Following the PIC, we have further evaluated options for Ferndale such as phasing, sanitary sewer routing, capacity constraints in neighbouring

Design with community in mind



February 11, 2015
Colin McBain
Page 2 of 3

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

municipal systems, additional funding opportunities, etc. Each option would have a different cost and timeline associated with it, depending on funding, project complexity, etc. Costs were provided to Council following the PIC outlining potential servicing solutions within Ferndale.

The *Township of Southwold Small Settlement Servicing Study (Zelinka Priamo Ltd., Triton Engineering Services Ltd.)* states that based on previous servicing reviews the sewer system from Wellington Road to the existing St. George Street Pumping Station is at or near capacity. The *McBain Property Proposed Development Sanitary Capacity Review Draft Report (CJDL Consulting Engineers)* did not utilize values derived from the Central Elgin design standards and therefore projected flows were minimized. While the conclusions of the draft report correctly stated that there is enough remaining capacity to allow sewage to be treated at the St. Thomas WWTP, it identified that there is enough remaining peak flow capacity to support development of the McBain property (based on Central Elgin design standards this is not the case). Both studies were reviewed by Stantec during the course of the formulation of the Master Servicing Plan. The *Small Settlement Servicing Study* states that "selecting the best sanitary servicing strategy for this settlement area will require additional investigations in the form of a Class EA undertaken by the Municipality". Through the Class EA process, Stantec has reviewed options presented within this study, however not all were fully discussed at the PIC but will be covered within the Project File.

The statement that Stantec "did not want to have any agreements with other municipalities for wastewater services" is incorrect. If the Township was to implement their own servicing solutions it could provide them with operational flexibility in the future. Agreements do exist currently between municipalities and may exist going forward and we have not indicated the termination of such. However, agreements may change over the course of time and this should be considered when evaluation servicing options.

Although existing infrastructure exists in the vicinity of Ferndale, it is important to evaluate the capacity available for future works. Constraints and opportunities (i.e., upgrading partial lengths of sewers, redirecting pumping station flows, etc.) have been reviewed as part of the Master Servicing Plan and in conjunction with input from neighbouring municipalities. Preliminary costs were provided to Council in December 2014 and will also be included in the Project File.

Previous servicing reviews undertaken by Central Elgin concluded that the St. George Street sewer system is at or near capacity and could not accommodate development in Ferndale in its current form. Potential options to alleviate constraints on the St. George Street sewer include: upgrade of partial lengths of the St. George Street gravity sewer, twinning of the St. George Street gravity sewer, redirection of flows from either the Woodland Road Pumping Station or the Crescent Avenue Pumping Station, or the construction of a new pumping station and forcemain. All servicing options involving modifications to the St. George Street sewershed (collection system and pumping stations) would be dependent on approval from Central Elgin. The preferred option would be to continue to send existing sanitary flows to St. Thomas WWTP from Ferndale, contingent on remaining capacity within the St. George Street sewer system. As stated previously, there are

Design with community in mind



February 11, 2015
Colin McBain
Page 3 of 3

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

no apparent issues with the treatment capacity at the St. Thomas WWTP. It was initially believed that approximately 55 lots could be developed within Ferndale without modifications to the sewer system, however following further review with Central Elgin, this allocation would exceed their capacity limits. Given what is noted above, there would be costs associated with potential upgrades required to the St. George Street sewer to allow for future servicing in Ferndale.

It is the intent of the Master Servicing Plan to fairly evaluate options for both Talbotville and Ferndale. Priority was not allocated to either Ferndale or Talbotville. There is no intent within the Master Servicing Plan to "stagnate growth in Southwold for likely another 10 years". Servicing solutions will be developed with can support growth, not prevent it. To date, no comments have been received from Talbotville residents against the servicing options presented. It will be the responsibility of Township staff and Council to determine cost sharing for any new infrastructure projects that may occur.

We will ensure that you receive any future project notifications.

Regards,

STANTEC CONSULTING LTD.

Cameron Gorrie, P.Eng.
Project Engineer, Water
Phone: (519) 675-6650
Fax: (519) 645-6575
cameron.gorrie@stantec.com

Attachment: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Form/Email (C. McBain)

c. Donna Clermont, CAO/Clerk, Township of Southwold

**Talbotville/Ferndale Master Servicing Plan
Municipal Class Environmental Assessment**

COMMENT FORM

PUBLIC INFORMATION CENTRE, TUESDAY SEPTEMBER 23, 2014

Return to: Ms. Michele Oxlade, Stantec
Address: 600 - 171 Queens Avenue, London, ON N6A 5J7
Tel: (519) 675-6652
Fax: (519) 645-6575
Email: michele.oxlade@stantec.com

Comments:

YOUR PREVIOUS SEWAGE TREATMENT PLANT IN TALBOTVILLE IS INAPPROPRIATE FOR THE FERNDALE DEVELOPMENT (WHICH ALREADY HAS A SEWER SYSTEM) THIS PLANT IS STAGNATING GROWTH IN FERNDALE. THIS PROCESS HAS NOW TAKEN 12 YRS OF STAGNATION, WHILE CENTRAL ECHOI HAS CONTINUOUS GROWTH AND USED UP AVAILABLE CAPACITY.

THIS ALTERNATIVE OF PUSHING SEWAGE UP HILL TO TALBOTVILLE IS NOT THE RIGHT ALTERNATIVE FOR FERNDALE

WHY ARE YOU NOT FOLLOWING THE RECOMMENDATIONS IN THE 2013 SEWAGE STUDY (THAT OUR TAXPAYERS ALREADY PAID FOR) DONE BY COLLEEN PRINA

Please check one: Response Required Response Not Required

All information/comments received will be subject to the disclosure requirements of the *Freedom of Information and Protection of Privacy Act*. Information received will be maintained on file for use during the project and may be included in study documentation. With the exception of personal information, all comments received will become part of the public record.

Personal Information (optional): Please fill in if you wish to be added to the mailing list for this project and to receive subsequent project notices.

Name: Colin McBain
Address & Postal Code: 6415 CENTENNIAL ROAD ST. THOMAS ON N5P 3S8
Phone: 519-670-8974
Fax: _____
E-Mail: Ahopop@yahoo.com

Please fill out and submit the comment form by October 3, 2014



October 1, 2014

To:

Michele Oxlade
Environmental Coordinator/ Technologist
Stantec Consulting

I am writing to address concerns that I have with the Talbotville and Ferndale Master Servicing Plan as presented by Stantec Consulting Engineers on September 23rd 2014 at the Public Information Center in Shedden.

The Provincial Policy Statement as Quoted in Stantec's Plan clearly states that

“use of existing services should be optimized” and that Growth must be planned to efficiently use existing municipal services as the first priority”

Stantec has included nothing in this plan to suggest that they even considered this.

I am unsure of Stantec's motivation in ignoring the use of existing services that are already in place. I do not understand what their reasoning is to place the only readily developable area in Ferndale to the lowest priority (3B) on the list as shown on their construction collection phasing. They have chosen to recommend as their **“preferred option”**, proceeding with the most expensive, time consuming and engineering intense option

Waiting to have any further development in the Ferndale area until a Waste Water treatment Plant (WWTP) is built in Talbotville is not responsible planning. The idea of having sewage pumped from Ferndale over a distance in excess of 2km is not feasible and would be the most costly option for this area.

(refer to extract from Zelinka Priamo/ Triton Engineering study done in 2013)

Option B: Treatment Plant to Service All Settlement Areas

Description: A central wastewater treatment plant (WWTP) would be established to accommodate all future settlement areas. A collection system would be constructed to service the various settlement areas and deliver sewage to the WWTP. A conveyance system would also be required to convey effluent from the WWTP to the receiver for disposal/discharge.

Advantages:

- Could be designed to service all the hamlets and future growth areas.

Disadvantages:

- Municipally owned land would be required to accommodate the facility. It is unclear where such a facility could be accommodated and if there would be community support at this location.
- Establishing a viable effluent discharge receiver may be difficult given the limited watercourses within the Township that actually have a constant base flow.
- Would require forcemains /sewers throughout the municipality to transmit sewage from settlement areas to the WWTP. Establishing this infrastructure would be disruptive to traffic, residences, existing servicing and natural heritage features.
- Cost would be prohibitive. Although detailed estimates have not been completed, the costs associated with not only the WWTP, but also the extensive network of sewer and forcemains required to collect the sewage from the various settlement areas and convey it to the WWTP, would be considerable. It is unlikely that either the municipality or the developer could afford to undertake a project of this scale with the limited development proposed.
- Although the WWTP could be phased to some extent, this would increase overall costs of the facility. With respect to the forcemains, many of these would be extremely long and designed to accommodate the ultimate development. If the development does not occur, the flows/volumes in these forcemains will not be sufficient enough to ensure cleansing velocities and prevent septicity of sewage.

Neither of these options are considered feasible, therefore, an independent sanitary servicing strategy for each future settlement area was considered. The following sections provide an outline of the various water and wastewater servicing options available to each settlement area.

Stantec has had no consultation with stakeholders in the Ferndale area. They have virtually ignored the only area in Southwold that has all services presently available on site with 2 sewage receivers at the lot line on Mc Bain Line.

All studies have already been done, (archeological, etc) for the Ferndale area in 1997 when the first phase was built.

The Ferndale subdivision was approved in Principal by Southwold council. We have been waiting for 12 years for the official plan to be updated, the sewer studies then a class Environmental Assessment, to proceed with development.

Stalling the development of land in the Ferndale area will have a negative economic impact. Taxes have been raised significantly in Southwold due to the loss of the Ford revenues. This development could be started now, with no further Environmental Studies or further sewage studies. The new lots would generate tax revenue now. Taxes could be collected right away with immediate development. ***(instead of waiting for 6 to 10 years for a WWTP in Talbotville.)***

An independent sanitary sewer review for the McBain property proposed development of approximately 170 lots done by Cyril J. Demeyere Limited under direction of John D. Wiebe, P. Eng. In 2012 should also be considered. (*Extract of Conclusions below*)

5.0 Conclusions

The completion of this report has led to the following conclusions;

- Township of Yarmouth By-Law No. 3515 has enough remaining capacity to allow sewage from the development of the McBain property to be treated at the St. Thomas Sewage Treatment Plant; and
- The St. George Street Sanitary sewer leading to the Athletic Park pumping station has enough remaining peak flow capacity to support low-density development of the McBain property.

London water consumption has dropped 28% due to conservation and more efficient fixtures. With the drop in consumption also comes the drop in sewage flow as a result. There is likely more capacity than has been shown in the Dillon (1996) and Cyril Demeyere studies and a reduction in Design Criteria should be applied for new development. (*City of London 2014 water budget and forecast*)

For Southwold to take advantage of the full allotment of 280 lots that can be serviced by the St Thomas sewage treatment plant, Southwold should partner with Central Elgin to upgrade the St George street sewer which would benefit future growth for both townships in the Ferndale/ Lynhurst area. Funding for this upgrade may be available from The New Canada Building Fund Small Communities Fund (SCF) and could be applied for jointly by both townships.

Stantec has provided no estimate or any analysis for upgrading the St George Street Sewer. They are not providing the required information to council to make an educated decision.

It is unconscionable for Stantec to present this servicing plan with no consideration to the options and recommendations as outlined in the Sewer study done by Zelinko Priama/ Triton Engineering in 2013. Stantec seems to have ignored any of their recommendations for the Ferndale area. (*Refer to ZP study for recommendations*). ***They have chosen to do the exact opposite of what was recommended.***

The consultant's statement at the meeting that they do not want to have any agreements with other municipalities for wastewater services is unfounded.

There are already agreements in place for Ferndale since the mid 1990's and for Lynhurst Park Drive since the 1960's with the City of St Thomas. Why would this be a concern now?

Stantec's preferred option will stagnate growth in Southwold for likely another 10 years.

St Thomas has confirmed that there is sufficient treatment capacity for growth within Ferndale area. *(by law 3515 extract from Demeyere report)*

2.0 By-Law No. 3515 – Sewage Treatment Capacity

The Corporation of the Township of Yarmouth By-Law No. 3515 (1997) was developed to identify details of an arrangement between Yarmouth (Central Elgin) and Southwold Townships with The City of St. Thomas regarding sewage treatment.

The 1997 By-Law was drafted with the intent of developing the McBain property, as it was included in capacity calculations under 'Southwold Sewage Area No. 2' (Appendix 'A' – Figure 2). The estimated average daily flow generated from the proposed McBain property development will represent less than a 10% increase in the current measured daily flows in the system.

The Talbotville WWTP is a long term solution for Talbotville which has no servicing. This area should not be linked to the Ferndale area in any way as it is cost prohibitive. *(refer to Zelinko Priama/ Triton Engineering).*

There is a possibility that this option will be met with high resistance from present residents in the Talbotville area who currently have private septic systems and will not want to pay for new sewers in the area that are primarily for new development. There is no guarantee that the 2/3 funding will come from the “The New Canada Building Fund Small Communities Fund (SCF)” or any plan on how the other 1/3 will be funded. I am sure that the taxes collected from new development done now in Ferndale could help fund this over the long term.

Since the general public was given 10 days to make comments on the presentation, I expect a detailed response within the same time frame.

Colin Mc Bain
6415 Centennial Road
St Thomas, Ontario
N5P 3S8
519-670-8974

Copy:

Donna Clermont, CAO/Deputy Treasurer, Township of Southwold
Bruce Curtis, Manager of Community Planning and Development, MAH
Tammie Ryall, Planner, MAH
Steve Evans, Manager of Planning, County of Elgin
Patrick Keenan, Director of Planning, City of St Thomas
Jim McCoomb, Planner, Central Elgin Planning Office
Jeff Yurek, MPP Elgin-Middlesex-London
Dave Emery, Stantec, Vice President, Regional Leader, CA Ontario Southwest



Stantec Consulting Ltd.
600 - 171 Queens Avenue, London ON N6A 5J7

February 11, 2015
File: 165500796

Attention: Jamie McBain
45889 John Wise Line
St. Thomas ON N5P 3S9

Dear Mr. McBain,

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Thank you for your interest in this study and your attendance at the Public Information Centre. Township of Southwold staff and Stantec have reviewed your comments and questions and have provided the following response.

The current agreement between Southwold, Central Elgin and St. Thomas relates to treatment capacity and not conveyance. With respect to growth in Talbotville, Stantec has reviewed servicing requirements for the settlement area as a whole and has not favoured one particular developer (there are multiple development interests within the study area).

Our response to "Common Sense reasons Ferndale Phase 2 should proceed without any more delays" is summarized below:

- Over \$1M in development charges can be collected – this would assume full build-out immediately, rather than a phased development over a longer period of time
- Tax revenue projections also assume immediate full build-out of the proposed subdivision
- The agreement between St. Thomas to extend services to lands north of McBain Line has mentioned but not provided for review
- No additional costs will be incurred by Southwold – will all servicing costs such as sanitary sewers, collection system upgrades, etc. be paid for by the developer?

It was also stated that Stantec has ignored all guiding principles outlined in the Master Servicing Plan, ignored the Southwold Official Plan, ignored all requirements from the Provincial Policy Statement and recommendations do not support the Southwold Mission and Vision Statement. Beyond highlighting of text within your letter, no supporting information has been provided as to how Stantec has ignored the above. We hope that information outlined below will assist to clarify these comments.

Stantec considered the 2014 Provincial Policy Statement (PPS) during the review of potential sanitary servicing options. The "use of existing services should be optimized" statement can be

Design with community in mind



February 11, 2015
Jamie McBain
Page 2 of 3

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

influenced by various factors, such as available capacity, whether the option results in a feasible solution, and if it supports long-term planning. The use of existing services was not ignored, as stated at the PIC and outlined below.

As part of the sanitary servicing component of the Master Servicing Plan, the construction of a new municipally owned wastewater treatment plant was evaluated, however it is not the only servicing option available. Both treatment capacity and conveyance of flows were reviewed for Talbotville and Ferndale. As mentioned at the PIC, only a brief summary of each servicing component (water, wastewater and stormwater) was reviewed but a full analysis of each would be provided within the Master Servicing Plan document (Project File). The Project File will be posted for a 30-day review period for the public, agencies and other stakeholders prior to being finalized. Within the Project File, further breakdown of costs will be provided for each sanitary servicing option. The allocation of any future project costs incurred to residents would be determined by the Township and Council. Following the PIC, we have further evaluated options for Ferndale such as phasing, sanitary sewer routing, capacity constraints in neighbouring municipal systems, additional funding opportunities, etc. Each option would have a different cost and timeline associated with it, depending on funding, project complexity, etc. Costs were provided to Council following the PIC outlining potential servicing solutions and are based upon recent design and construction works.

The *Township of Southwold Small Settlement Servicing Study (Zelinka Priamo Ltd., Triton Engineering Services Ltd.)* states that based on previous servicing reviews the sewer system from Wellington Road to the existing St. George Street Pumping Station is at or near capacity. The *McBain Property Proposed Development Sanitary Capacity Review Draft Report (CJDL Consulting Engineers)* did not utilize values derived from the Central Elgin design standards and therefore projected flows were minimized. While the conclusions of the draft report correctly stated that there is enough remaining capacity to allow sewage to be treated at the St. Thomas WWTP, it identified that there is enough remaining peak flow capacity to support development of the McBain property (based on Central Elgin design standards this is not the case). Both studies were reviewed by Stantec during the course of the formulation of the Master Servicing Plan.

Although existing infrastructure exists in the vicinity of Ferndale, it is important to evaluate the capacity available for future works. Constraints and opportunities (i.e., upgrading partial lengths of sewers, redirecting pumping station flows, etc.) have been reviewed as part of the Master Servicing Plan and in conjunction with input from neighbouring municipalities. Preliminary costs were provided to Council in December 2014 and will also be included in the Project File.

Previous servicing reviews undertaken by Central Elgin concluded that the St. George Street sewer system is at or near capacity and could not accommodate development in Ferndale in its current form. Potential options to alleviate constraints on the St. George Street sewer include: upgrade of partial lengths of the St. George Street gravity sewer, twinning of the St. George Street gravity sewer, redirection of flows from either the Woodland Road Pumping Station or the Crescent



February 11, 2015
Jamie McBain
Page 3 of 3

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Avenue Pumping Station, or the construction of a new pumping station and forcemain. All servicing options involving modifications to the St. George Street sewer shed (collection system and pumping stations) would be dependent on approval from Central Elgin. The preferred option would be to continue to send existing sanitary flows to St. Thomas WWTP from Ferndale, contingent on remaining capacity within the St. George Street sewer system. As stated previously, there are no apparent issues with the treatment capacity at the St. Thomas WWTP. It was initially believed that approximately 55 lots could be developed within Ferndale without modifications to the sewer system, however following further review with Central Elgin, this allocation would exceed their capacity limits. Given what is noted above, there would be costs associated with potential upgrades required to the St. George Street sewer to allow for future servicing in Ferndale.

It is the intent of the Master Servicing Plan to fairly evaluate options for both Talbotville and Ferndale. Priority was not allocated to either Ferndale or Talbotville. There is no intent within the Master Servicing Plan to "put Ferndale on hold for another 10 years, resulting in the loss of millions of dollars in tax and development fees". Servicing solutions will be developed which can support growth, not prevent it.

We will ensure that you receive any future project notifications.

Regards,

STANTEC CONSULTING LTD.

Cameron Gorrie, P.Eng.
Project Engineer, Water
Phone: (519) 675-6650
Fax: (519) 645-6575
cameron.gorrie@stantec.com

Attachment: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Letter (J. McBain)

c. Donna Clermont, CAO/Clerk, Township of Southwold

Talbotville / Ferndale Master Servicing Plan Resonse:

September 30, 2014

To:
Donna Clermont
CAO/Deputy Treasurer
Township of Southwold

Michele Oxlade
Environmental Coordinator/ Technologist
Stantec Consulting

I am writing to voice my opposition to the recommended option presented by Stantec Consulting on Sept. 23rd.

The recommendation presented is wrong on many levels, It ignores the fact that there is an existing agreement between Southwold, Central Elgin, and St.Thomas (Bylaw 3515) passed June 23rd. 1997, that extends sewer services to the "Southwold Secondary Sewage Area" a map from the City Of St.Thomas clearly shows both Ferndale Phase 1 south of McBain Line and Ferndale Phase 2 north of McBain Line are included in that agreement.

Stantec have clearly brought forth a plan that favours only one developer in the Talbotville area.

They have not taken into consideration the tax and development fees, that will be lost (millions of dollars) if Ferndale is put on hold for another 10 years.

The plan brought forth has clearly not been thought through, It is poor planning, with estimates that are not based in reality as to the cost of the WWTP and Pumping Station.

All other studies recommend a gravity feed sewage system wherever possible, not force mains and expensive pumping stations.

Going by past experience the estimated completion time in 2017 will more likely be 2020 and double the estimated cost.

Response Required



Jamie McBain,
45889, John Wise Line St.Thomas, N5P 3S9
519 775-2230 jamie@mcbainsigns.ca

Common Sense reasons Ferndale Phase 2 should proceed without any more delays.

- 1** Southwold will be able to collect development charges and taxes that can be used to provide the 1/3 funding needed for the Small Communities Fund Program waste water treatment project. Development charges can match St. Thomas at \$6,500 per lot, for a total of \$1,137,500.
- 2** Southwold will benefit from new tax revenue from approx. 175 new homes at a total revenue of over \$450,000 per year (not including the 40% tax hike) or a projected \$2,250,000 in the anticipated six years it will take to have Talbotville treatment plant up and running.
- 3** Southwold will benefit from the creation of jobs for Construction, Local Companies will benefit, Excavating, Lumber Supplies, Electricians Plumbing and Heating Contractors, Cement Work, Painting Contractors Landscaping, Kitchen Cabinet Companies and the list goes on.
- 4** Ferndale Phase 1 is already serviced under an existing agreement between St. Thomas, Central Elgin and Southwold. St. Thomas has already agreed to extend services to the lands north of McBain line, Phase 2. There are already two existing sewer connections at the edge of the property. And existing Municipal water available on site.
- 5** The existing drain down St. George Street still has more than enough capacity for the 175 homes in Phase 2.
- 6** Ferndale is the only property in Southwold that has full municipal services available now, and no additional costs will be incurred by Southwold.
- 7** There are already provisions in place for another stormwater management pond for Phase 2 north of McBain line
- 8** Wellington Road has already been upgraded with better turning lanes for access.
- 9** Future connection can still be made to the proposed Talbotville WWTP once it is constructed and development proceeds down Major Line.

Jamie McBain,
45889, John Wise Line
St. Thomas N5P 3S9

The Draft Official Plan proposes an extension of the existing Ferndale and Lynhurst settlement area. This area is 36 ha in size and has CLI Class 2 soils. The proximity of this area to the built up areas of Ferndale and Lynhurst and the City of St. Thomas is a major constraint on agricultural activity. There are no natural hazards or natural heritage constraints in this area.

The Township is seeking to improve development opportunities within the Talbotville & Ferndale settlement areas with the completion of a Master Servicing Plan to provide full municipal servicing

Guiding Principles

*The following guiding principles were developed for this Master Servicing Plan (MSP):

*The MSP is developed in a logical, consistent and fair manner that reflects the values of the Township of Southwold (Council, Staff, Community)

*The MSP should align with and build upon the goals and objectives for the Township with respect to servicing of existing and growth areas as noted in the Adopted Official Plan per the Provincial Policy Statement and Small Settlement Study

*The MSP should align with the Municipal Servicing Objectives defined in the Adopted Official Plan including ensuring that servicing is provided in a sustainable and financially viable manner and that planned growth is accommodated through the efficient use of existing municipal infrastructure

*The MSP developed meets the requirements of current regulations and establishes a proactive plan to achieve compliance with regulations to be phased in by the federal and provincial government

*The MSP addresses the state and condition of current infrastructure as well as future infrastructure needs in order to provide the Township with an overall blueprint for infrastructure management

*Technical analysis based on data collection and modeling is undertaken to provide a full understanding of key systems under the expected range of conditions over the study period to the level required for decisions to be made

*Key problems and opportunities facing the Township with regard to municipal water, wastewater, and stormwater infrastructure are properly identified, including opportunities to time work with other capital projects

*Past work, current knowledge and future trends and technology are adequately analysed and identified to the Township

*Cost effective, sustainable and timely solutions are developed

*For the Township to have an interdepartmental consensus as to the Master Plan strategy based on Stantec's work

Stantec has Ignored all the guiding principles for the Master Servicing Plan as well as the Southwold Official Plan, as approved by The Community Planning and Development Municipal Services Office

Provincial Policy Statement September 23, 2014

Talbotville & Ferndale Master Servicing Plan PIC2

Relevant excerpts for the Small Settlement Area Servicing Study from the Provincial Policy Statement include

- *Requirement for infrastructure and public services facilities, **be available or planned, suitable for proposed development over the long term and protect public health and safety**
- ***Wastewater treatment facilities must be available or planned**
- ***Servicing be coordinated, efficient, and cost effective and integrated with planning for growth to accommodate projected needs, use of existing services should be optimized**
- ***Growth must be planned to efficiently use existing municipal services as the first priority** and to efficiently use existing private communal services as the second priority where municipal services are unavailable
- *Sufficient reserve capacity prior to any new lot creation (if new development is on private services, reserve capacity allotted in case of private system failure)
- ***Hierarchy of servicing systems: municipal sewage and water services are the preferred method of servicing**, partial servicing only permitted to address failed individual on-site services or to allow infilling and rounding out of development in settlement areas

Stantec has Ignored all the requirements from the Provincial Policy Statement in the Southwold Official Plan, as approved by The Municipality of Southwold and The Community Planning and Development Municipal Services Office

Mission & Vision Statement

Mission Statement

The Township of Southwold is committed to providing a healthy, safe community to all residents, **businesses and visitors by providing services in a cost effective manner to further growth and prosperity.**

Vision Statement

We envision the Township of Southwold as a thriving, community-oriented municipality that continues to grow and prosper by enabling and pursuing **residential, agricultural and commercial growth opportunities through expansion and delivery of key municipal services.**

The sense of community will be strengthened by promoting a wide variety of consumer-friendly services, such as health, culture, connectivity, parks and recreation.

Council and staff will serve the residents of the community with a caring attitude focused on customer service.

Stantec recommendations do not support the Southwold Mission & Vision Statement



Stantec Consulting Ltd.
600 - 171 Queens Avenue, London ON N6A 5J7

February 11, 2015
File: 165500796

Attention: Jason Small
Via Email: jasonsmall@dougтарыhomes.com

Dear Mr. Small,

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Thank you for your interest in this study and your attendance at the Public Information Centre. Township of Southwold staff and Stantec have reviewed your comments and questions and have provided the following response.

As part of the sanitary servicing component of the Master Servicing Plan, the construction of a new municipally owned wastewater treatment plant was evaluated, however it is not the only servicing option available. Both treatment capacity and conveyance of flows were reviewed for Talbotville and Ferndale. As mentioned at the PIC, only a brief summary of each servicing component (water, wastewater and stormwater) was reviewed but a full analysis of each would be provided within the Master Servicing Plan document (Project File). The Project File will be posted for a 30-day review period for the public, agencies and other stakeholders prior to being finalized. Within the Project File, further breakdown of costs will be provided for each sanitary servicing option. The allocation of any future project costs incurred to residents would be determined by the Township and Council. Following the PIC, we have further evaluated options for Ferndale such as phasing, sanitary sewer routing, capacity constraints in neighbouring municipal systems, additional funding opportunities, etc.

Population projections were based upon the *Addendum to Allocation of Equivalent Residential Units Tables and Responses to OMAFRA and MMAH Land Supply Review (Zelinka Priamo Ltd.)* and *Small Settlement Servicing Study (Zelinka Priamo Ltd., Triton Engineering Services Ltd.)*, both documents having received Council endorsement.

Although existing infrastructure exists in the vicinity of Ferndale, it is important to evaluate the capacity available for future works. Constraints and opportunities (i.e., upgrading partial lengths of sewers, redirecting pumping station flows, etc.) have been reviewed as part of the Master Servicing Plan and in conjunction with input from neighbouring municipalities. Preliminary costs were provided to Council in December 2014 and will also be included in the Project File.

Previous servicing reviews undertaken by Central Elgin concluded that the St. George Street sewer system is at or near capacity and could not accommodate development in Ferndale in its current form. Potential options to alleviate constraints on the St. George Street sewer include: upgrade of partial lengths of the St. George Street gravity sewer, twinning of the St. George Street gravity sewer, redirection of flows from either the Woodland Road Pumping Station or the Crescent

Design with community in mind



February 11, 2015
Jason Small
Page 2 of 2

Reference: Talbotville/Ferndale Master Servicing Plan PIC 2 Comment Response

Avenue Pumping Station, or the construction of a new pumping station and forcemain. All servicing option involving modifications to the St. George Street sewershed (collection system and pumping stations) would be dependent on approval from Central Elgin. The preferred option would be to continue to send existing sanitary flows to St. Thomas WWTP from Ferndale, contingent on remaining capacity within the St. George Street sewer system. As stated previously, there are no apparent issues with the treatment capacity at the St. Thomas WWTP. It was initially believed that approximately 55 lots could be developed within Ferndale without modifications to the sewer system, however following further review with Central Elgin, this allocation would exceed their capacity limits.

It is the intent of the Master Servicing Plan to fairly evaluate options for both Talbotville and Ferndale.

We will ensure that you receive any future project notifications.

Regards,

STANTEC CONSULTING LTD.

Cameron Gorrie, P.Eng.
Project Engineer, Water
Phone: (519) 675-6650
Fax: (519) 645-6575
cameron.gorrie@stantec.com

Attachment: Talbotville/Ferndale Master Servicing Plan PIC 2 Email (Jason Small)

c. Donna Clermont, CAO/Clerk, Township of Southwold

Oxlade, Michele

From: jason.dtl@gmail.com on behalf of Jason Small <jasonsmall@dougтарыhomes.com>
Sent: Saturday, October 04, 2014 7:48 AM
To: Oxlade, Michele
Subject: Talbotvill and Ferndale Master Servicing Plan

Dear Michele,

As a stakeholder in the McBain property enlisted in your study I would like to emphasize my disappointment in the accuracy of the proposed report. Upon reading the report my immediate realization was that it was a very jeopardized point of view. It misleads people at the very least in believing that a WWTP is something needed immediately before development can proceed in Southwold. This is completely misleading and untrue. As a municipality that is trying to recover Tax revenue, after ignoring the realization of lost taxes from Ford Motor Corp. for years, a solution such as Ferndale would be a Saving Grace. At the least cost to tax payers the municipality would recover property tax dollars helping to recover those lost. The provincial guidelines (and requested procedures) are mentioned in the report but are then either contradicted or ignored. It is in the best interest of ratepayers of the municipality to support the Ferndale development at minimal investment by them to start recovering revenue for their deficit immediately. The WWTP is something that will be needed for future development in Talbotville not Ferndale. The residents of the Talbotville are not aware of the costs they will incur to help fund this project. Similar issues with misleading information arose on Centennial Ave in Central Elgin in the past few years and were met with a pure disapproval. Ferndale is a solution to Southwold's tax loss. I think this is the positive way to look at this opportunity for the rate paying public. I hope you will look at this report with a broader view than Talbotville. The population gain for Talbotville in the report is a far fetch at best. Development along Wellington Road already exists in Lynhurst Village and Ferndale 1. it would only make sense to continue expansion down Wellington Road towards London. The infrastructure already exists to do so and would most likely be a more cost effective route for Sanitary expansion in the future. This option has not been addressed in the study at all.

In closing I would just like to say that there are more viable options than those emphasized in the study.

Sincerely,
Jason Small
Stakeholder



Appendix 2.8

Presentation to Council
(December 15, 2014)



Talbotville & Ferndale Master Servicing Plan

Presentation to Council

December 15, 2014



TOWNSHIP OF
Southwold



Outline

- Introduction
- Municipal Class Environmental Assessment
- Planning Considerations
- Guiding Principles
- Natural Environment & Cultural Review
- Aboriginal Consultation
- Small Settlement Study, Provincial Policy Statement & Population Projections
- Water Supply & Distribution
- Wastewater Collection & Treatment
- Stormwater Management
- Opinion of Probable Costs
- Funding Opportunities
- Next Steps
- Questions



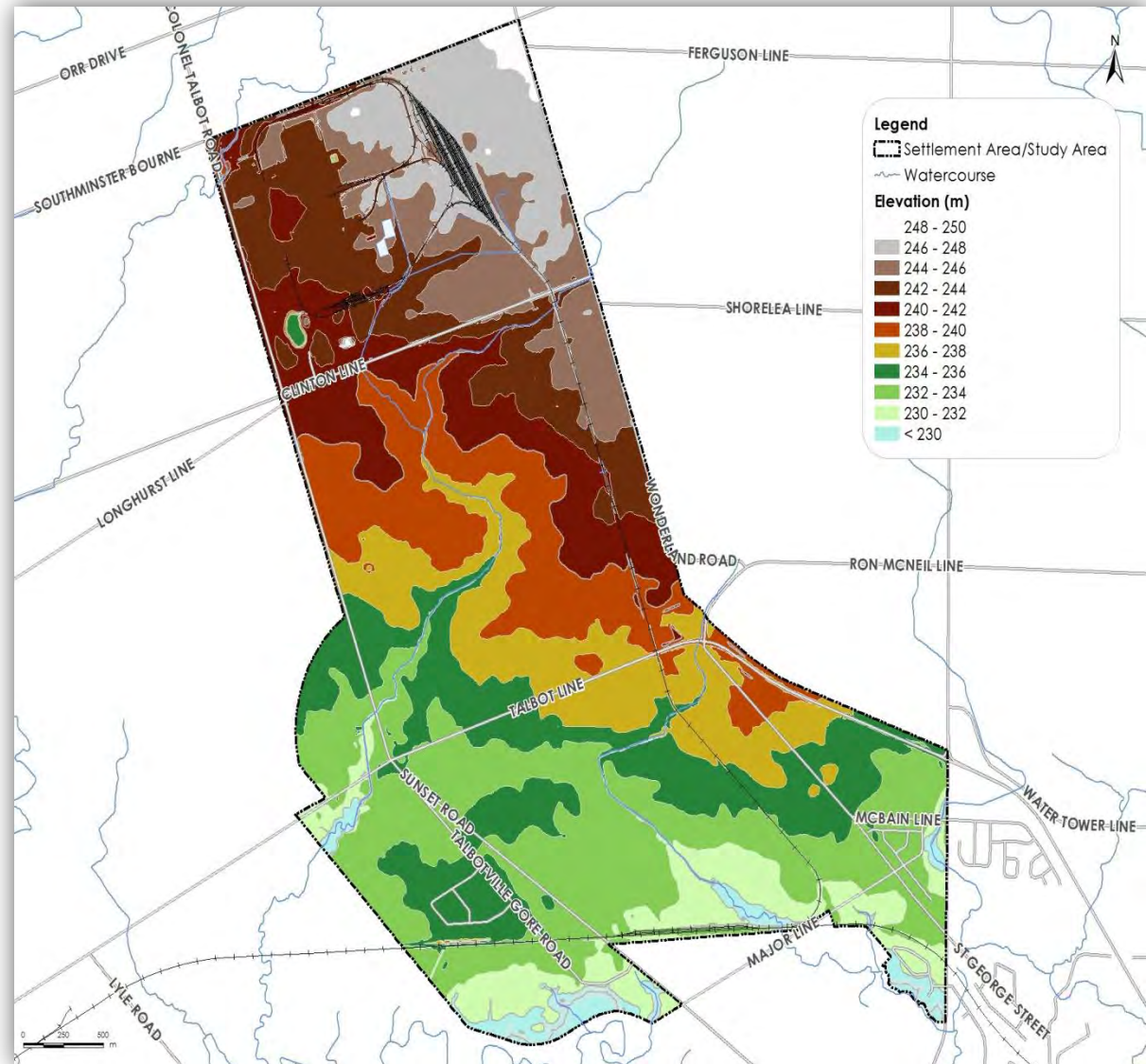
Introduction

- The Township is seeking to improve development opportunities within the Talbotville & Ferndale settlement areas with the completion of a Master Servicing Plan to provide full municipal servicing



Master Servicing Plan

- Currently the Township is serviced with water and limited wastewater infrastructure
- The Master Servicing Plan should be reflective of the development and growth goals of the Township, in accordance with the Adopted Official Plan. To ensure this, a set of guiding principles or priorities will be developed with consideration for:
 - Preference for long term servicing solutions over interim solutions
 - All services to be fully funded through adequate planning, budgeting and identified revenue streams, development charges, etc.
 - Servicing solutions should be developed which minimize risk to the Township, users, and others



Problem/Opportunity Statement

- The following problem statement was developed for the Talbotville & Ferndale Master Servicing Plan:
 - The purpose of the Talbotville & Ferndale Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the township. Specifically, the Master Servicing Plan is to address the provision of water, wastewater, and stormwater management for existing and future growth areas for the Talbotville / Ferndale settlement area as defined in the Township's Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.



Existing Infrastructure

- Talbotville
 - Water: fully serviced
 - Wastewater: no services (on-site septic systems)
- Ferndale
 - Water: fully serviced
 - Wastewater: partially serviced (existing development is fully serviced, growth area is not serviced)
- Industrial Lands*
 - Water: partially serviced
 - Wastewater: partially serviced
 - * Former Ford property is on municipal water and has a private sewage treatment facility on site
- There is limited stormwater management infrastructure within the Township

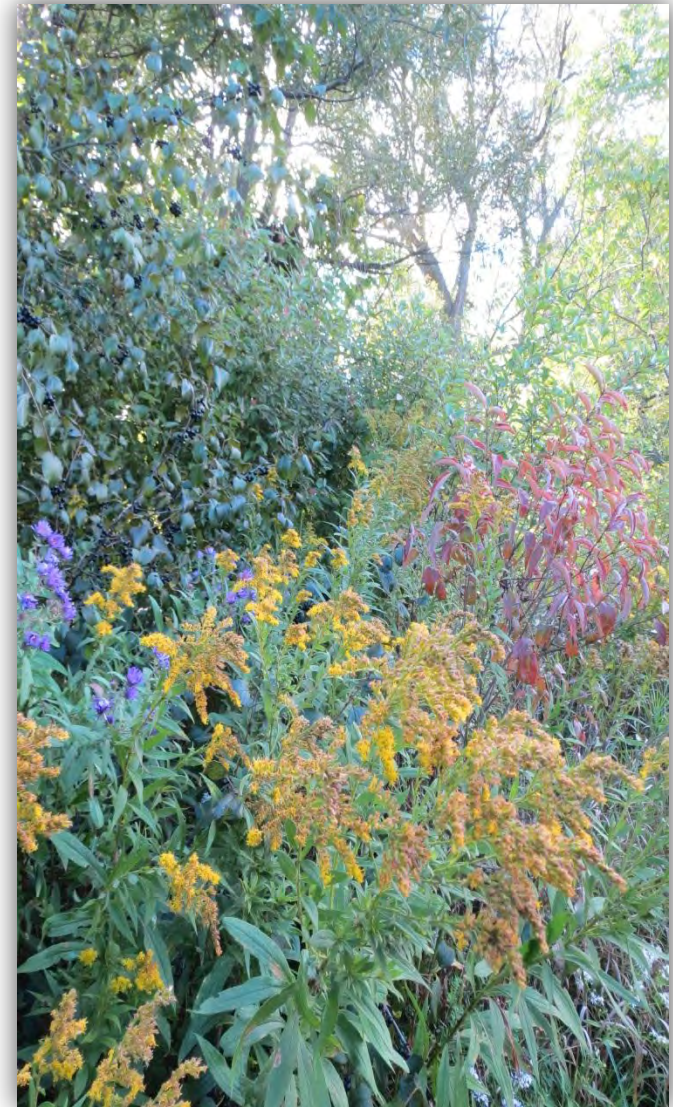


Guiding Principles

- The following guiding principles were developed for this Master Servicing Plan (MSP):
 - The MSP is developed in a logical, consistent and fair manner that reflects the values of the Township of Southwold (Council, Staff, Community)
 - The MSP should align with and build upon the goals and objectives for the Township with respect to servicing of existing and growth areas as noted in the **Adopted Official Plan** per the **Provincial Policy Statement** and **Small Settlement Study**
 - The MSP should align with the Municipal Servicing Objectives defined in the Adopted Official Plan including ensuring that **servicing is provided in a sustainable and financially viable manner** and that planned growth is accommodated through the **efficient use of existing municipal infrastructure**
 - The MSP developed meets the requirements of current regulations and establishes a proactive plan to achieve **compliance with regulations** to be phased in by the federal and provincial government
 - The MSP addresses the state and condition of **current infrastructure as well as future infrastructure** needs in order to provide the Township with an overall blueprint for infrastructure management
 - **Technical analysis** based on data collection and modeling is undertaken to provide a full understanding of key systems under the expected range of conditions over the study period to the level required for decisions to be made
 - Key problems and opportunities facing the Township with regard to **municipal water, wastewater, and stormwater infrastructure** are properly identified, including opportunities to time work with other capital projects
 - Past work, current knowledge and future trends and technology are adequately analyzed and identified to the Township
 - Cost effective, sustainable and timely solutions are developed
 - For the Township to have an interdepartmental consensus as to the Master Plan strategy based on Stantec's work

Natural Environment Review

- The study area is in the jurisdiction of the Kettle Creek Conservation Authority (KCCA)
 - Dodd Creek subwatershed
 - Upper Kettle Creek subwatershed
- Portions of the study area are in the KCCA Area of the Regulated Limit
 - Any development, construction or site alteration proposed within the regulated area may require prior written approval from the conservation authority
- Ministry of Natural Resources (MNR) does not indicate any wetlands within the study area, however several significant woodlands (greater than 4 ha) are present
- Potential for at-risk wildlife species (field survey may be required to determine presence/absence prior to initiating any future work)
- Department of Fisheries and Oceans (DFO) mapping does not identify at-risk fish or mussel species in the study area

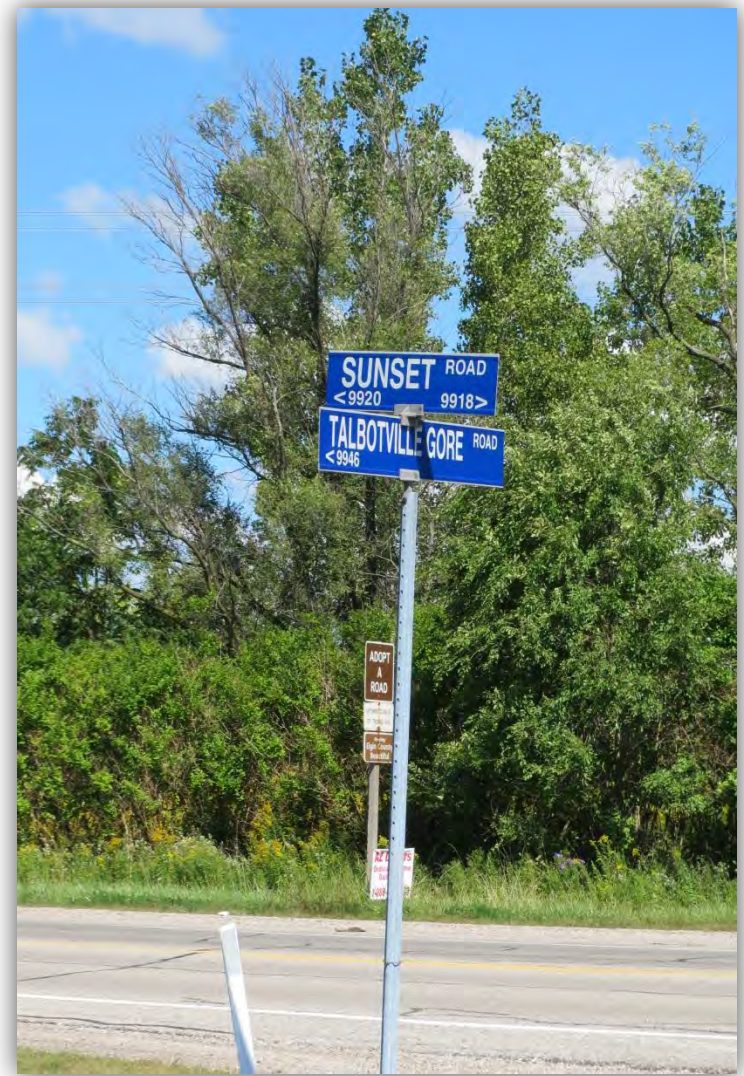


Aboriginal Consultation

- The study area for the Master Plan falls within the Treaty territory of several First Nations communities
- Notices and project information is provided to Aboriginal Communities throughout the EA process
- Project team is committed to meaningful consultation and maintaining open lines of communication with interested communities, including providing opportunities to meet with the project team and discuss alternatives
- The following First Nations communities have been included as part of the Aboriginal Consultation for the Master Plan:
 - Bkejwanong Territory (Walpole)
 - Caldwell First Nation (Meeting held on October 3, 2014)
 - Chippewas of the Thames First Nation (Meeting held on October 2, 2014)
 - Moravian of the Thames
 - Munsee-Delaware Nation
 - Oneida Nation of the Thames

Small Settlement Servicing Study (2013)

- The Small Settlement Servicing Study was intended to determine alternatives for providing services to settlement areas
- Required by the Ministry of Municipal Affairs and Housing and the MOE to demonstrate consistency with the servicing policies of the Provincial Policy Statement 2005
- Settlement areas are the primary growth centres where full municipal or communal services are required to achieve forecasted growth
 - Development is generally constrained in both Settlements and Hamlets by the absence of wastewater treatment facilities
- Provided basis for identifying servicing options



Provincial Policy Statement

- Relevant excerpts for the Small Settlement Area Servicing Study from the Provincial Policy Statement include:
 - Requirement for infrastructure and public services facilities, be available or planned, suitable for proposed development over the ***long term and protect public health and safety***
 - Servicing be ***coordinated, efficient, and cost effective*** and integrated with planning for growth to accommodate projected needs, use of ***existing services should be optimized***
 - Growth must be planned to ***efficiently use existing municipal services*** as the first priority and to efficiently use existing private communal services as the second priority where municipal services are unavailable
 - ***Sufficient reserve capacity*** prior to any new lot creation (if new development is on private services, reserve capacity allotted in case of private system failure)
 - Hierarchy of servicing systems: ***municipal sewage and water services are the preferred method of servicing***, partial servicing only permitted to address failed individual on-site services or to allow infilling and rounding out of development in settlement areas

Population Projections

- Population projections for Talbotville and Ferndale were based upon the *Addendum to Allocation of Equivalent Residential Units Tables and Responses to OMAFRA and MMAH Land Supply Review and Small Settlement Servicing Study* for the next 20 years (2012)
- Talbotville
 - Existing population is approximately 462 people (165 dwellings)
 - Estimated equivalent residential units available (ERU) for future development is approximately 600 units
- Ferndale/Lynhurst
 - Existing population is approximately 588 people (210 dwellings)
 - Estimated equivalent residential units (ERU) for future development is approximately 270 units

	Existing	Future	Total
Talbotville	462	1,800	2,262
Ferndale/Lynhurst	588	810	1,398

Population based on 3 people/ERU for existing development

Water Supply & Distribution

- Currently serviced off the St. Thomas Area Secondary Water Supply System (STASWSS)
- Supply to the STASWSS via the Elgin Area Primary Water Supply System (EAPWSS)
- Rated capacity of system is 54,605 m³/day
- Currently operating at about 23% of rated capacity at maximum daily flows
- STASWSS and EAPWSS do not allocate supply to any individual municipality, supply is available on an aggregate basis
- Closure of Ford Motor Company (over 270 m³/day) provides additional capacity for future growth



Water Servicing Options

- Do Nothing
 - No impact on natural or social environment
 - Not consistent with the Adopted Official Plan (not considered further)
- Private Water Servicing
 - Moderate impact to the natural and social environment
 - Not consistent with the Provincial Policy Statement (PPS) and Adopted Official Plan (not considered further)
- Extend Servicing Of EAPWSS
 - Highest impact to natural environment (involves long pipeline connection)
 - Construction disruption anticipated (worst of all options)
 - Provides additional servicing connection/security
 - Highest capital and operating cost option as supply line would be required in addition to local watermains
 - Would likely require storage, booster pumping and rechlorination facilities
- **Extend Existing Municipal Servicing System (preferred alternative)**
 - Work would be situated within existing or proposed road allowances and majority of complex crossings have been completed (minor natural environment impacts)
 - Construction disruption anticipated
 - Consistent with the PPS
 - Lowest cost option for municipal servicing
 - Utilizes existing capacity and infrastructure
 - Consideration to be given to system security and redundancy

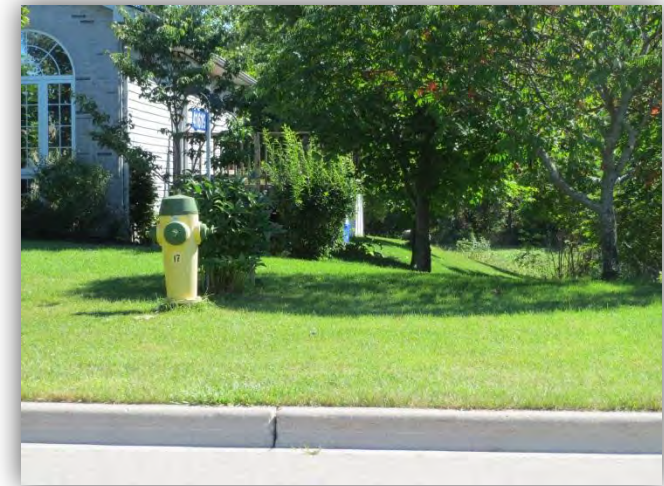
Key Issues & Constraints

- Preliminary modeling suggests that existing system should be capable of servicing future growth initiatives
 - Pressures above 50 psi in existing service areas
 - Water turnover in sections of larger diameter trunks is low, suggesting capacity is available
- In general, new municipal watermains would be constructed at the same time as new sanitary sewers to minimize overall costs
- Local mains will need to be extended to connect to existing trunk mains
- Some existing watermains may need to be twinned or oversized to accommodate development depending on provision of fire flow (pumper truck versus direct feed) and potential and type of industrial development
 - Primarily along Sunset Drive (150 mm at present)
- Looping needs to be considered to minimize potential for stagnant water and to improve fire flow supply
 - May impact staging requirements for new developments



Key Issues & Constraints

- Currently only one major supply line into the settlement areas
 - No storage in place
 - Major emergency event (i.e., watermain break) would result in disruption to potable water supply
- St. Thomas is currently undertaking a study to review extension of servicing to Sunset Drive/Major Line
 - Outcome of study may involve a further interconnection, with potential pressure zone separation
 - May help alleviate dead end condition in this area
 - May provide additional emergency connection in the event of interruption to Talbot Line supply
- Sizing of watermains to address
 - Potential for stagnant water impacts
 - Maintain MOE recommended minimum servicing pressures under average day, maximum day, and peak hour flows
 - Provide adequate fire flow provision (flow rate at minimum pressure)
- Future works will be generally classified as Schedule A+ projects per Class EA (obligations met by this Master Plan)



Wastewater Servicing

- The Township of Southwold does not currently have a wastewater treatment system
- Existing development is serviced either by private on-site systems (Talbotville) or sent to the St. Thomas WWTP via the St. George Street Pumping Station (Ferndale)
- According to the Official Plan, all new development, redevelopment, intensification and infill will require municipal sanitary sewage services
 - The Township will make no commitment or approve any development that would cause the capacity of the St. Thomas sewage treatment plant to be exceeded. In certain cases, improvements to the sanitary sewer system may be required before development may proceed. Such improvements may include the provision of a new pumping station and/or sewer line extensions.
- The Township acknowledges that full municipal water and sanitary sewage services are the preferred method of servicing new development within the Settlement Area
- Partial municipal services for new development will be discouraged where viable alternatives can be feasibly undertaken
- St. Thomas has confirmed that there is **sufficient treatment capacity** to accommodate the proposed growth within Ferndale
- Sewer capacity issues exist upstream of the St. George Pumping Station which **limit** the amount of flow which can be conveyed from Ferndale to St. Thomas
- Until full municipal services or an adequate alternative to partial services are provided, development will be restricted to infilling and rounding out existing development

Wastewater Servicing Alternatives

- Do Nothing / Limit Growth
 - Would result in no wastewater treatment capacity in Talbotville and significantly limit community growth in both Ferndale and Talbotville
- Talbotville
 - St. Thomas WWTP via St. George Street Sewer
 - St. Thomas WWTP via Alternate/New Transmission Mains
 - Talbotville New Wastewater Package Plant
 - Utilize Existing WWTP at Former Ford Motor Company Property
- Ferndale
 - St. Thomas WWTP via St. George Street Collection System
 - St. Thomas WWTP via Alternate/New Transmission Mains
 - Optimization of Existing Wastewater Collection System and Utilize St. Thomas WWTP
 - New Self-Contained Sewage Package Plant near Talbotville
 - Utilize Existing Ford Motor Company Wastewater Treatment Plant



Wastewater Servicing Alternatives (Talbotville)

- Preferred alternative would be to **construct a new municipal wastewater treatment plant within Talbotville** to service existing and future development within Talbotville
- Conveyance of sanitary flows achieved by gravity sewers rather than through pump stations and forcemains
- Determine location for WWTP which would allow for potential **future conveyance** of flows from Ferndale to Talbotville WWTP
- An Assimilative Capacity Study (ACS) commenced in November 2014 and will be completed in Summer 2015
 - Will determine whether potential outfall location is suitable as well as required effluent parameters
 - Benthic sampling and water quality analysis program was approved by MOE

Wastewater Servicing Alternatives (Ferndale)

- Previous servicing reviews undertaken by Central Elgin concluded that the St. George Street sewer system is **at or near capacity** and could not accommodate development in Ferndale in its current form
- Potential options to **alleviate constraints** on the St. George Street sewer include:
 - Upgrade partial lengths of St. George Street gravity sewer (300 m)
 - Twin St. George Street gravity sewer (1,500 m)
 - Redirect flows from Woodland Road PS (Parkins Street/St. George Street) utilizing an easement held by Central Elgin
 - Forcemain length: 300 to 600 m
 - Pumping station upgrades
 - Redirect flows from Crescent Avenue PS along St. George Street or CN ROW
 - Forcemain length: 1,600 m
 - Pumping station upgrades
 - Construction of new pumping station and forcemain from Ferndale to new Talbotville WWTP
 - Forcemain length: 2,700 m
- All servicing options involving modifications to the St. George Street sewershed (collection system and pumping stations) would be dependent on approval from Central Elgin

Wastewater Servicing Alternatives (Ferndale)

- Preferred option would be to ***continue to send existing sanitary flows to St. Thomas WWTP*** from Ferndale, contingent on remaining capacity within the St. George Street sewer system
 - No issues with WWTP treatment capacity
 - Without modifications to the sewer system, approximately 55 lots could be developed within Ferndale
- Southwold must then evaluate whether to ***undertake upgrades to the St. George Street sewershed*** (pending approval by Central Elgin) or to ***convey flows to Talbotville*** (pending construction of a WWTP)

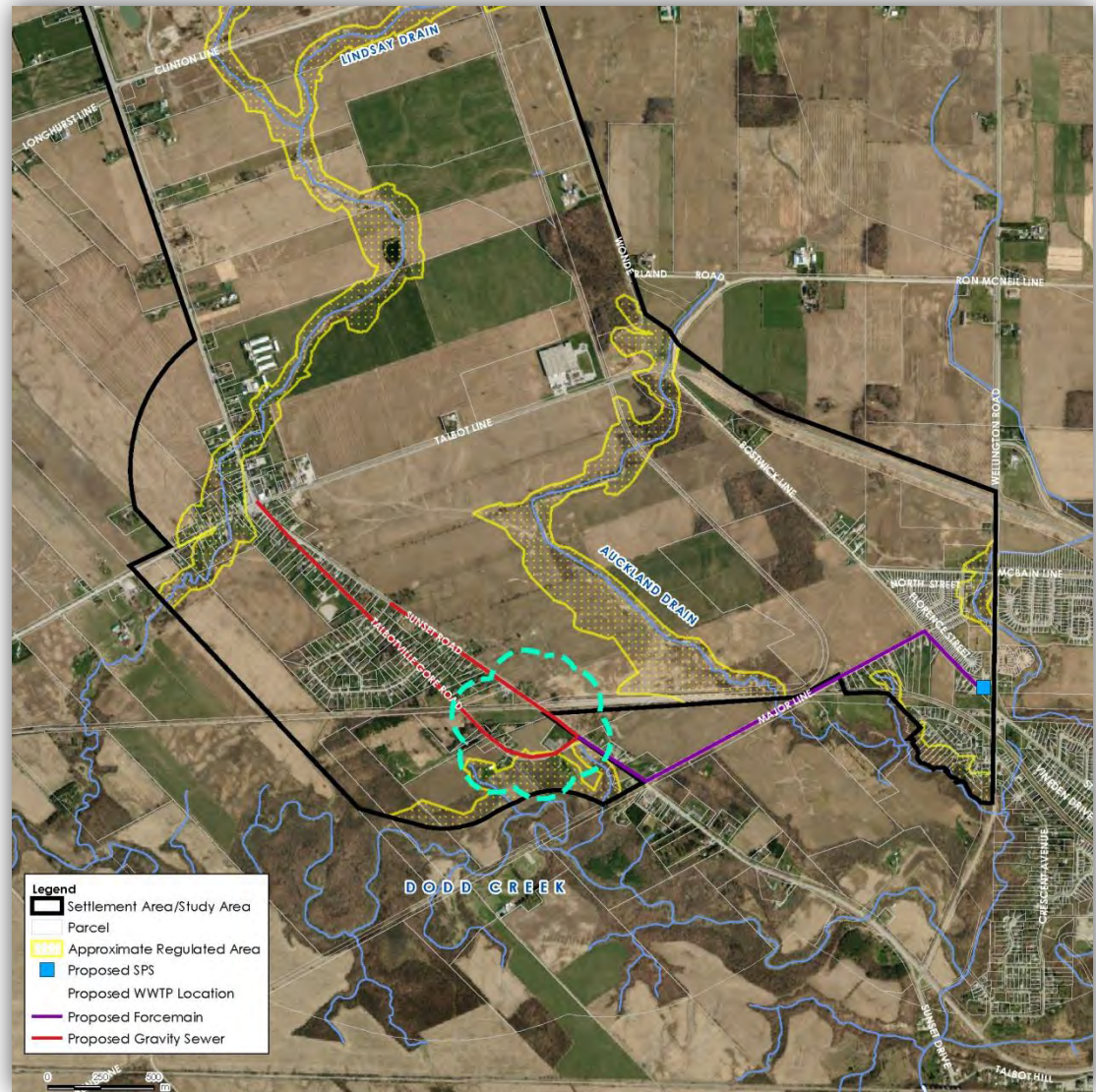
Talbotville Sewershed

- Topography tends to fall towards Dodd's Creek to the south, however, Lindsay Drain creates fall to the northwest as well
- High point near the Talbotville Meadows subdivision
- Preference for gravity sewers versus pumping station and forcemain where possible
- Sewershed has been divided into 13 segments based upon existing and future development parcels



Potential WWTP Locations

- Regulated limits and floodplain restrict potential WWTP locations
- The MOE recommends minimum separation distances between new residential developments and other sensitive land uses and existing sewage treatment facilities (Guideline D-2 Compatibility between Sewage Treatment & Sensitive Land Use)
 - Capacity greater than 500 m³/day but less than 25,000 m³/day → 100 m (minimum) / 150 m (recommended)
 - Minimum separation distance may be difficult if WWTP is located within the developed area of Talbotville
- Three locations were evaluated (Lindsay Drain and Dodd's Creek – two locations) and based on the preferred sewershed routing, Dodd's Creek was selected
- As municipally owned land is not available, Township would likely have to purchase land for plant



Collection System Construction Phasing

- Phase 1
 - Construction of sanitary sewers in the vicinity of the southern extent of Talbotville-Gore Road and Sunset Road (south of CN tracks)
- Phase 2
 - Construction of sanitary sewers along Talbotville-Gore Road to northern extent of Talbotville-Gore Road and Shady Lane Crescent (north of CN tracks)
- Phase 3
 - Construction of sanitary sewers along Talbotville-Gore Road north of Phase 2
- Approximate flows associated with each phase are presented below:

	Population	Flow (m ³ /day)	Total Flow (m ³ /day)
Phase 1A	200	75	75
Phase 1B	375	140	215
Phase 2	900	330	545
Phase 3A (all Talbotville)	1,925	700	1,245
Phase 3B (including all Ferndale)	1,400	510	1,755

*Flows from Ferndale, although depicted in Phase 3B may be sent to the WWTP **prior** based on development needs*

Industrial Contributions

- In accordance with the Adopted Official Plan, there is approximately 412 ha of land designated industrial within the Talbotville Settlement Area
- The former Ford Motor Company property houses its own WWTP sized for 3,200 m³/day
- Development of industrial lands to the south of the former Ford property could result in a wide range of sanitary flows dependent on both type and size of industry
- In order to size a new plant efficiently for current and projected residential flows, it is assumed that the municipal plant will undergo a separate expansion or industrial lands may be serviced through on-site treatment plants (similar to Ford) to accommodate much larger industrial flows and variable effluent quality
- Future industrial lands could generate wastewater flows upwards of 9,000 m³/day upon full build-out based upon Township design standards



New Wastewater Treatment Plant

- Potential treatment technologies may include SBR, EA and MBR
- Each technology could be constructed in phases, can also handle low flows (50 - 100 m³/day)
- Initial development (i.e., less than 50 m³/day) would likely not contribute enough flow to run a new plant, may result in storage and trucking
- Plant would likely be sized initially for 545 m³/day with capability to handle smaller flows
- Next phase would be for 1,245 m³/day
- Further determination of treatment types, ultimate flows and WWTP siting would be reviewed through a Schedule C Class EA which would include an Assimilate Capacity Study of the receiving body



Stormwater Management

- Provide a strategic level assessment of the options for providing stormwater management for new development
- Required when a rural area is urbanized and its intent is to mitigate impacts of run off quantity and quality
- Stormwater management options will:
 - Identify area stormwater treatment objectives and goals based on outlets
 - Identify appropriate application of municipal drains and storm sewers
 - Identify appropriate options for providing stormwater management for new developments, including lot level controls, conveyance controls, and centralized “regional” end of collection treatment and system controls



Stormwater Management

- The purpose of stormwater management is to maintain the hydraulic and hydrologic function of a watershed when land use changes
 - Minimize impacts on downstream natural environments
- Impacts of land development on water resources
 - Increase in runoff quantity and rates can cause significant erosion issues and negatively impact downstream flora and fauna
 - Negative water quality impacts as runoff contacts developed surfaces and entrains new pollutants
- Stormwater management features such as constructed wetlands or infiltration galleries are implemented in land development projects to control the quality of runoff to slow it down and release it at rates which our natural environment can manage



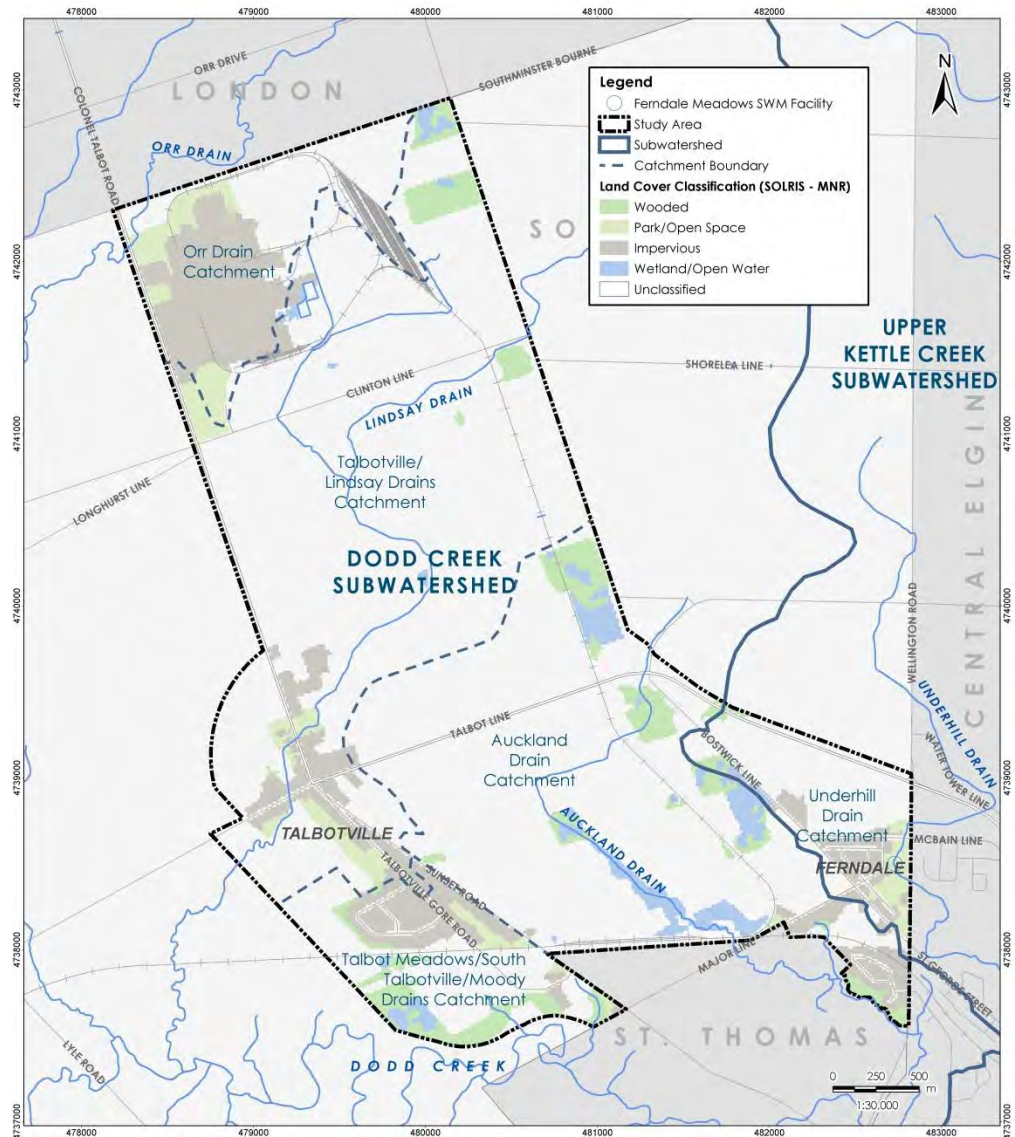
Stormwater Management Strategy

- Amount of water - its peak flow rate, total volume – flowing off the study area remains manageable and does not pose a threat to the downstream environment or increase risks for erosion
- The amount of runoff leaving the study area is of appreciable quality so as to not have a negative impact on downstream flora and fauna
- Interaction between surface water and groundwater is maintained
- Catchment flow patterns are maintained between existing and post development conditions
- Overall, the goal of the SWM strategy is to have post-development runoff conditions mimic existing conditions where possible



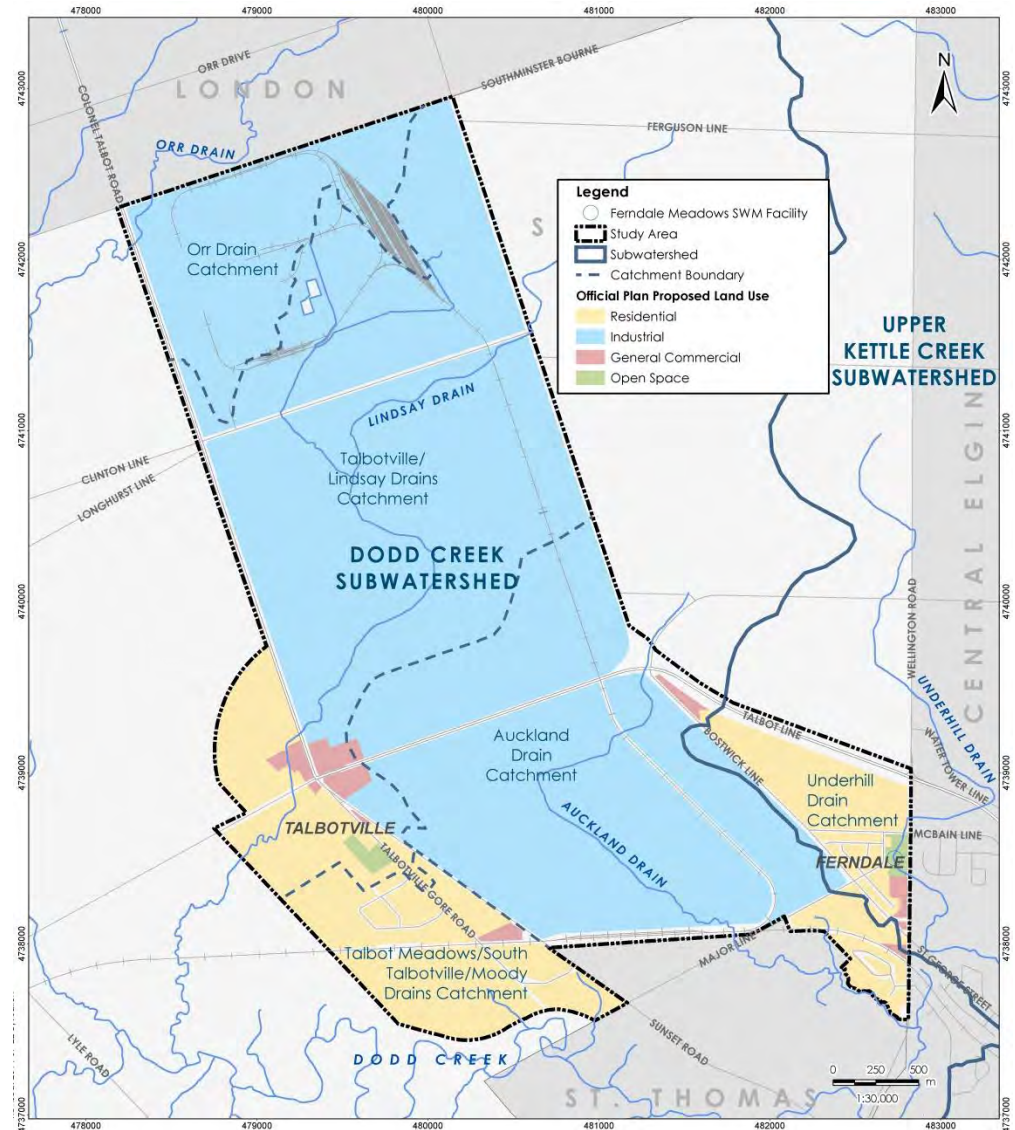
Existing Conditions

- Land use: intense agriculture (70-80%)
- Soils: impermeable and erodible
 - Soil type dominated by clays (moderately impermeable and prone to erosion)
 - Hydraulic system is mainly surface driven
- Drainage: Dodd Creek (94%) and Kettle Creek (6%)
 - Study area drains to two watercourses
 - Distinction between Upper and Lower Dodd Creek is important because the quality of the watercourse degrades consistently from top to bottom
- Watercourse quality: poor
 - Generally all receiving reaches are low quality, warm water watercourses under active erosion and sedimentation
- Water quality: poor
 - Water, nutrient and bacteria rich (consistent with other agriculturally-based watersheds)
 - Impacted by low baseflow



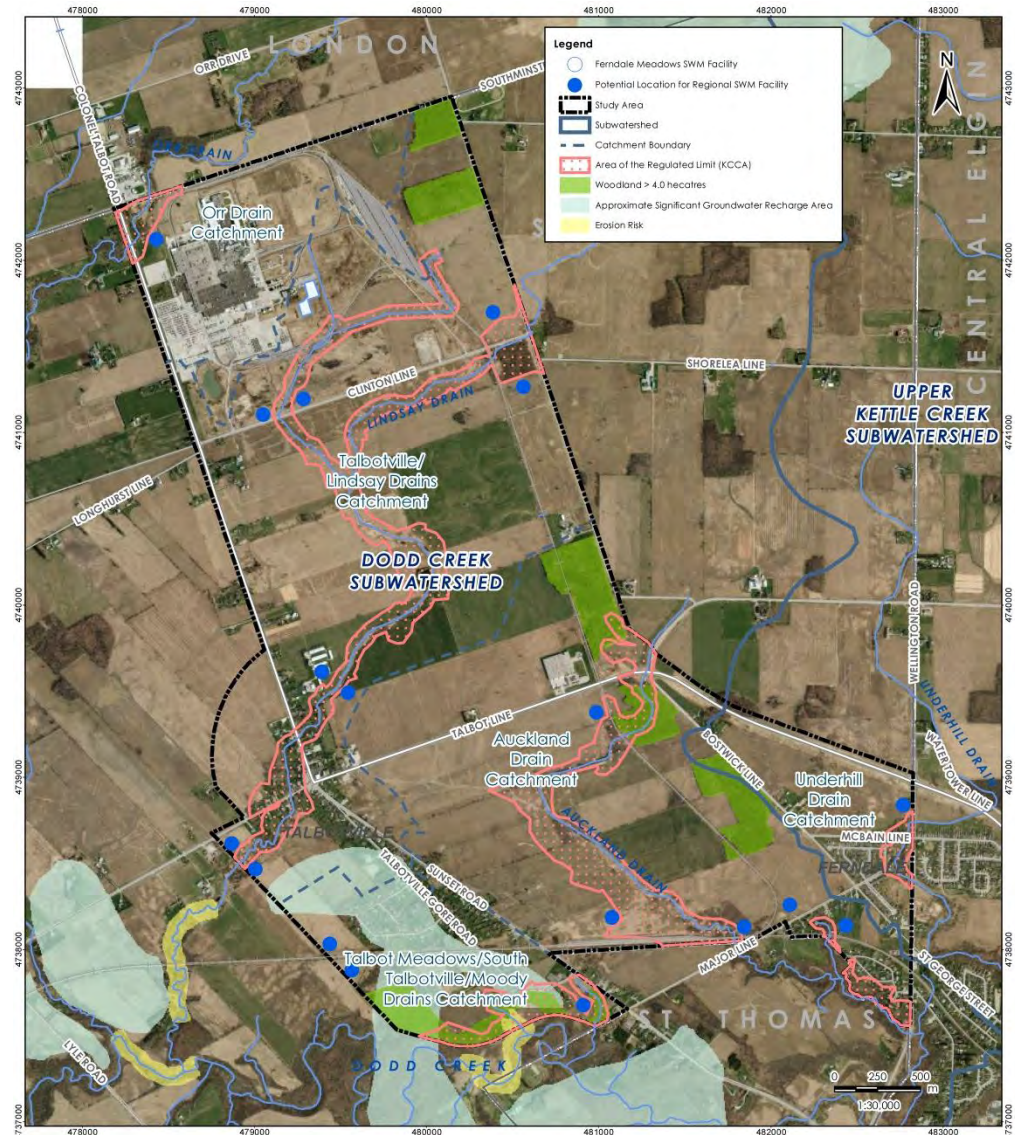
Proposed Conditions

- New land use: residential, light commercial, industrial
 - Extension of residential and commercial development
 - Conversion of much of the currently farmed land to large-scale industrial use
- Imperviousness: substantial increase
 - Native soils do not allow for a great deal of infiltration which will result in an increase in runoff and decrease in runoff quality
 - Stormwater management options are available to control and mitigate these effects



SWM Constraints & Opportunities

- Constraints
 - Located outside of Conservation Authority Regulated Area
 - Located outside of Significant Woodlots > 4 ha
 - Located outside of Existing Development
- Significant Recharge Area: Constraint or Opportunity
- Location of Regional SWM Facilities
- Tables 1 and 2 illustrate the results of the SWM vetting process where we analyzed the appropriateness of SWM options against watershed conditions and other factors including economic, environmental and social impact
 - Infiltration measures only considered in Talbotville area
 - Ability to meet SWM goals while creating environmental amenities for the community, all at reasonable cost
- Ultimately the best approach will utilize a number of these features in sequence – in a “treatment” train – and at all levels of control, lot level through end-of-pipe



Opinion of Probable Costs (-10% / +30%)

- Water
 - Sunset Drive (north of Talbot Line, subject to development of industrial lands) is \$1.0M
 - Sunset Drive (south of Talbot Line, subject to development of industrial lands) is \$950,000
 - Southminster Bourne/Wonderland Road extensions (subject to development of former Ford Plant and adjacent designated industrial lands) is \$1.4M
- Wastewater
 - New WWTP in Talbotville (545 m³/day): \$5.7M
 - New Sanitary Collection System in Talbotville: \$1.5M
 - Upgrade partial lengths of St. George Street gravity sewer: \$575,000 to \$950,000
 - Twin St. George Street gravity sewer: \$2.8M to \$4.7M
 - Redirect flows from Woodland Road PS: \$280,000
 - Redirect flows from Crescent Avenue PS: \$780,000
 - New Pumping Station and Forcemain from Ferndale: \$1.3M

Funding Opportunities

- Various funding sources for identified projects include provincial and federal grants, development charges and user rates
- Through development opportunities within the Township, progress would be achieved towards sustainability through stabilization of the tax assessment base, recently lost as the result of the closure of the Ford Talbotville Plant
- The Township recently submitted a grant funding application for the New Building Canada Fund Small Communities Fund (SCF) Expression of Interest but was not short-listed
- Ontario and Canada will each provide \$272 million to support critical projects in municipalities with populations less than 100,000 and is part of the federal government's ten-year Building Canada Fund
- Investigate other funding opportunities

Next Steps

- Following this presentation, provide written responses to the public (those who requested a response at PIC 2) – December 2014
- Meet with Township Staff to review Master Servicing Plan and funding opportunities – December 2014
- Finalize the Master Servicing Plan – January 2015
 - Awaiting comments from First Nation communities (as part of Aboriginal consultation requirements)
 - Provide draft Master Servicing Plan document to MOE for review (requested by local MOE office)
- Publish the Master Servicing Plan for 30-day review and issue Notice of Completion

Questions & Answers

Questions & Answers
Questions & Answers
Answers



Appendix 2.9

Notices





TOWNSHIP OF
Southwold

**NOTICE OF COMMENCEMENT &
PUBLIC INFORMATION CENTRE #1
TALBOTVILLE / FERNDALE MASTER
SERVICING PLAN**

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

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Date: Wednesday, March 19, 2014
Time: 6:30pm to 8:30pm (open house format)
Location: Keystone Complex, 35921 Talbot Line, Shedden ON

If you have any questions, comments or concerns, please contact:

Donna Clermont
CAO/Clerk/Deputy Treasurer
Township of Southwold
35663 Fingal Line
Fingal ON N0L 1K0
Tel: 519-769-2010
Fax: 519-769-2837
Email: cao@southwold.ca

Michele Oxlade, B.Sc., EPT, Env SP
Environmental Coordinator/Technologist
Stantec Consulting Ltd.
171 Queens Avenue, Suite 600
London ON N6A 5J7
Tel: 519-675-6652
Fax: 519-645-6575
Email: michele.oxlade@stantec.com

Interested parties wishing to be added to the project mailing list should also contact one of the above. Following the Public Information Centre, further comments are invited for incorporation into the planning and design of this project and will be received until April 2, 2014.

Personal information collected and recorded at the Public Information Centre or submitted in writing on this subject is collected under the authority of the Municipal Act, 2001 and will be used by members of Council and Township staff in their review of this study. Any written submission, including names and contact information will be made available to the public through the publication of the Master Servicing Plan document.

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The Weekly News - Thursday, September 11, 2014



TOWNSHIP OF
Southwold

NOTICE OF PUBLIC INFORMATION CENTRE #2 TALBOTVILLE / FERNDALE MASTER SERVICING PLAN

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Date: Tuesday, September 23, 2014
Time: 6:30pm to 8:30pm (presentation at 7:00pm)
Location: Keystone Complex, 35921 Talbot Line, Sheddun ON

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St. Thomas - Elgin Weekly News



JESSE CNOCKAERT PHOTO

SOON TO BE OFF ON A JOURNEY:

On Sept. 12, Barb Matthews, left, executive director of Big Brothers Big Sisters of St. Thomas-Elgin congratulated Tracie Boudreau of St. Thomas, who is the winner of the annual WestJet draw. Boudreau won vouchers for two to fly anywhere WestJet flies. This year's draw raised \$3,800 for Big Brothers Big Sisters.

The Weekly News - Thursday, September 18, 2014

St. Thomas - Elgin Weekly News



#12 Brett Van Dusen centre in St. Thomas Sept



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TIM HARVEY PHOTO

Members of the St. Thomas EnergICE Synchronized Skating Team practice at the Timken Centre in St. Thomas for their upcoming competition, which begins March 29 in Dresden.

EnergICE dazzles in the rink

TIM HARVEY

Weekly News Correspondent

The team won gold last year. EnergICE has added six new skaters to their team this year. Their skaters hail from St. Thomas, London, Aylmer, and Counties.

The team was formed in 2011 to accommodate increasing demand for adult programs and specifically for synchronized skating. Team members are 19 years of age and older with at least half of the team over the age of 35.

The competition, which will be March 29-30, will include teams from Southwest-Central Ontario. This will be EnergICE's third year participating.



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Adam Mahovich, BSc. DVM
Veterinarian, Partner/Owner

Paw Prints The Importance of The Physical Exam

The most important thing an owner can do for their pet is to have routine physical examinations done by a veterinarian. Why are regular check-ups important?

Early Disease Detection

An exam allows a veterinarian to detect early signs of disease. Pets may not show illness in the early stages, and a "healthy" animal may have symptoms that will go undetected without an exam.

Nutritional Counselling

Nutrition plays a vital role in our pet's health. Over an animal's lifetime, nutritional needs change and a veterinarian can assess and recommend a diet to suit your pet's requirements.

Behavioural Problems

Behavioural problems often result in pet's being abandoned or euthanized. Catching unwanted behaviours early will make correcting them much easier. An owner can ask about behaviours during the exam.

What happens during an examination?

A check-up begins with a veterinarian asking questions concerning your pet's health. These questions will help the veterinarian focus in on any issues or concerns with your pet. Fecal testing is done to detect intestinal parasites. The veterinarian will examine your pet's eyes, ears, face, and mouth (teeth).

Skin, hair coat, body condition and weight are all examined as well. A stethoscope is used to listen to your pet's heart and lungs. Any problems found in an exam may lead the veterinarian to further testing.

How often should my pet be examined?

For optimal health and long life, your pet should see a veterinarian at least once a year for a general physical examination.

Call us today to book a check-up for your furry friend.



Elgin Veterinary Clinics
Elgin Animal Hospital - 9789 Sunset Rd.
St. Thomas 631-0430
www.elginanimalhospital.com
Talbot Animal Clinic - 930 Talbot St.
St. Thomas 633-5970



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JESSE CNOCKAERT
The Weekly News

A St. Thomas man has been taken into custody after a conflict that left one man in the hospital with a stab wound.
 St. Thomas police were called to a Ross Street apartment on Feb. 28 at approximately 6 p.m. where they found a 39-year-old man who


had been stabbed in his chest. The man was taken to St. Thomas Elgin General Hospital with what was deemed a non-life threatening injury.
 A suspect had fled the apartment on foot, but was located by police the night of March 5.
 Police say the suspect was "arrested without incident" and he is in custody being held for court.

Happy 80th Birthday
Ken Garton



**Join us for cake and coffee
 Saturday March 29, 2014
 Belmont Odd Fellows Hall
 1 - 4pm: Open House
 Best Wishes Only**

Retiring Taxi Driver
Patrick Biggs (Biggsy)



Surprise!
 "65"th
Birthday
**Retirement Party
 Open House**
 Saturday March 15th at 6pm
 St. Thomas,
 Roadhouse Restaurant
 in the Large Room

The Weekly News - Thursday, March 13, 2014 16



**TOWNSHIP OF
 Southwold**

**NOTICE OF COMMENCEMENT
 & PUBLIC INFORMATION CENTRE #1
 TALBOTVILLE / FERDALE MASTER
 SERVICING PLAN**

The Township of Southwold is a small, rural municipality immediately west of the City of St. Thomas. The Township is seeking to improve development opportunities within its settlement areas with the completion of a Master Plan to provide full services. Currently, the Township is serviced with water and limited wastewater infrastructure.

The purpose of the Talbotville / Ferndale Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the municipality. Specifically, the Master Servicing Plan is to address the provision of water, wastewater, and stormwater management for existing and future growth areas for the Talbotville / Ferndale settlement area as defined in the Township's Official Plan. The Master Servicing Plan is to identify which services are to be provided and where, the level or nature of the services that would be appropriate for each area and circumstance, and the mechanism or strategy for the provision or extension of services.

This study is being conducted as a Master Plan (Phases 1 and 2) under the Municipal Class Environmental Assessment process (Municipal Engineer's Association, as amended in June 2007 and 2011). Under this process, agency and public input is invited for incorporation into the planning and design for this study. The first Public Information Centre to introduce this study will be held on:

Date: Wednesday, March 19, 2014
Time: 6:30 pm to 8:30 pm (open house format)
Location: Keystone Complex, 35921 Talbot Line, Sheddin ON

If you have any questions, comments or concerns, please contact:

Donna Clermont
 CAO/Clerk/Deputy Treasurer
 Township of Southwold
 35863 Fingal Line
 Fingal ON N0L 1K0
 Tel: 519-769-2010
 Fax: 519-769-2837
 Email: cao@southwold.ca

Michele Oxlade, B.Sc., EPT, Env SP
 Environmental Coordinator/Technologist
 Stantec Consulting Ltd.
 171 Queens Avenue, Suite 600
 London ON N6A 5J7
 Tel: 519-675-8652
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Interested parties wishing to be added to the project mailing list should also contact one of the above. Following the Public Information Centre, further comments are invited for incorporation into the planning and design of this project and will be received until April 2, 2014.

Personal information collected and recorded at the Public Information Centre or submitted in writing on this subject is collected under the authority of the Municipal Act, 2001 and will be used by members of Council and Township staff in their review of this study. Any written submission, including names and contact information will be made available to the public through the publication of the Master Servicing Plan document.

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of the 41 Stars shots
 ced by the Vipers.
 There were many cl
 Thomas fought hard r
 zzer, but Lasalle went
 tory.
 The following night S
 y their final game of
 fered a 7-3 loss to La
 yoffs.

facebook.com/darav

"Bell Let's Talk" talk show ev
 edalist Clara Hughes, who
 feedback on what mental ha
 as she rides out of town at

ING: The Talbot Teen Centre
 745 Talbot Street, St. Tho
 Youth ages 13-18
 *Seating limited, RSVP soon
 519-631-8820 or
 aravisitstheetc@gmail.com

Talk



Appendix 9.1

SWM Pond Maintenance & Outlet Modification Drawing





Appendix 9.2

Precipitation Dots



Short Duration Rainfall Intensity-Duration-Frequency Data
 Données sur l'intensité, la durée et la fréquence des chutes
 de pluie de courte durée

Gumbel - Method of moments/Méthode des moments

2014/12/21

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ST THOMAS WPCP                                ON          6137362
(composite)
Latitude: 42 46' N    Longitude: 81 13' W    Elevation/Altitude: 209      m
Years/Années : 1926 - 2007          # Years/Années : 75
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 Table 1 : Annual Maximum (mm)/Maximum annuel (mm)

Year Année	5 min	10 min	15 min	30 min	1 h	2 h	6 h	12 h	24 h
1926	8.1	11.9	16.3	24.9	41.1	56.4	75.7	80.3	104.4
1927	7.1	9.4	10.2	15.5	18.3	29.7	40.9	46.2	56.6
1929	9.7	15.0	18.3	21.1	38.4	38.4	38.4	38.4	40.9
1930	8.1	16.0	18.3	24.4	29.0	35.6	49.5	50.3	51.6
1931	8.4	10.7	16.0	20.6	23.1	23.4	33.8	37.1	37.1
1932	7.1	9.9	12.2	22.6	39.4	59.4	64.3	65.3	65.5
1933	10.2	11.2	11.2	11.7	12.2	14.7	24.9	24.9	27.4
1934	7.1	8.4	10.4	12.2	15.2	16.0	25.9	27.2	27.2
1935	14.0	26.4	32.8	49.8	60.2	63.2	63.2	63.2	63.2
1936	6.3	11.4	12.2	14.2	19.0	20.3	30.2	32.8	32.8
1937	8.9	17.8	25.1	37.8	43.9	49.8	54.9	56.9	74.4
1938	10.7	14.0	15.0	17.0	17.8	24.9	46.0	47.5	47.5
1939	6.9	11.7	17.5	21.1	21.6	22.1	27.9	30.0	30.5
1940	6.6	12.4	18.3	25.4	33.5	35.3	38.9	50.5	72.9
1941	8.6	13.2	17.0	27.4	37.8	38.1	38.1	41.4	50.5
1942	15.0	20.3	22.6	23.6	32.0	41.7	47.2	52.8	54.9
1943	7.6	12.2	15.2	20.6	25.9	26.4	40.6	48.8	50.3
1944	8.1	14.5	17.3	21.8	26.4	26.7	33.5	33.5	33.5
1945	9.1	12.2	13.0	18.0	20.1	30.7	47.2	55.4	75.4
1946	9.4	15.0	16.8	17.8	24.6	24.9	27.9	36.3	42.2
1947	9.4	18.3	21.8	29.0	31.7	33.0	40.9	44.2	56.6
1948	10.2	14.7	19.6	19.8	19.8	19.8	26.7	28.2	39.1
1949	6.3	9.9	12.2	14.0	14.2	21.8	33.3	33.5	35.1
1952	8.1	13.7	15.5	23.9	33.0	38.6	44.2	71.4	76.7
1953	5.1	7.9	9.4	16.5	20.6	23.9	25.4	31.0	40.6
1954	5.3	8.9	10.9	16.0	16.3	25.1	33.8	47.2	69.3
1955	6.9	9.9	10.7	12.4	16.0	20.1	33.0	45.5	54.1
1956	10.7	14.7	19.3	23.1	38.1	41.4	51.3	57.7	60.7
1957	12.4	18.5	21.8	24.6	30.7	34.5	42.2	42.7	42.9
1958	6.9	9.7	10.9	18.5	21.1	28.7	36.3	36.3	36.8
1959	9.1	14.7	18.8	25.1	27.4	31.2	35.6	35.8	35.8
1960	8.9	16.0	17.3	21.6	27.4	27.7	31.5	38.6	46.2
1961	12.7	16.0	18.0	20.1	22.6	27.4	31.7	31.7	31.7
1962	12.2	15.7	18.8	18.8	20.8	21.3	36.6	42.7	48.0
1963	4.8	5.8	8.6	10.9	20.6	26.4	29.7	36.1	41.7

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1964	11.9	15.0	16.8	23.1	37.1	67.3	86.4	86.9	86.9
1965	5.6	7.6	9.1	12.2	19.3	25.1	31.0	44.2	56.6
1967	6.3	9.4	13.2	23.6	38.1	58.4	66.8	76.2	78.5
1968	11.4	17.8	20.3	25.4	35.8	44.7	86.6	101.6	104.6
1969	29.2	30.5	38.1	45.0	48.5	49.5	49.5	49.5	52.6
1970	5.3	5.8	6.9	11.4	13.5	15.5	29.7	29.7	36.1
1971	10.4	12.7	14.7	22.4	22.4	22.4	26.7	26.7	30.2
1972	5.1	10.2	11.7	15.5	15.5	25.4	27.2	31.7	40.4
1973	6.1	7.4	7.4	8.9	10.2	14.0	23.6	28.4	33.8
1974	6.1	7.4	9.9	11.2	14.5	20.6	25.1	26.9	26.9
1975	10.9	21.8	27.2	35.8	39.4	61.0	66.8	75.9	79.0
1976	20.3	21.6	23.4	25.1	25.4	27.7	49.0	51.6	51.6
1977	11.7	17.3	20.3	22.6	22.6	30.5	45.0	46.0	48.8
1978	9.0	11.4	13.6	16.0	18.7	21.6	32.0	34.4	41.0
1979	5.0	5.8	6.6	8.6	14.0	17.2	27.0	42.8	51.8
1980	8.9	12.3	12.7	16.0	25.1	31.7	34.9	52.9	73.0
1981	-99.9	-99.9	-99.9	-99.9	34.0	36.9	49.2	66.8	73.9
1982	8.5	13.1	16.1	21.2	29.3	30.0	55.6	65.4	68.0
1983	10.7	13.9	18.0	30.6	42.8	50.1	82.2	99.4	108.7
1984	8.6	13.0	14.7	29.4	40.6	64.7	92.1	95.3	124.3
1985	6.5	10.2	14.9	18.4	27.6	34.6	34.8	47.4	52.8
1986	8.9	10.2	13.1	23.9	25.2	37.9	45.1	49.4	50.4
1987	6.1	8.1	8.6	16.3	23.0	27.8	39.4	51.6	51.8
1988	8.9	12.1	13.9	26.9	33.7	40.8	50.4	52.2	52.6
1989	6.1	7.7	9.3	15.4	25.7	26.2	27.2	27.2	27.4
1990	10.3	16.3	21.2	36.4	51.1	56.2	56.7	56.7	76.9
1991	6.1	10.4	13.2	21.4	25.6	27.6	36.9	44.0	46.0
1992	8.4	12.0	17.2	21.2	28.8	30.7	32.2	39.1	52.2
1993	4.0	4.4	5.8	9.0	12.8	13.4	27.5	29.0	34.4
1994	10.3	12.0	12.7	18.4	27.4	31.5	48.6	52.2	52.2
1995	8.1	11.3	12.1	17.4	20.6	31.4	60.0	69.5	72.0
1996	12.1	15.8	18.3	19.1	19.1	24.3	25.3	44.4	52.0
1997	11.4	12.3	16.4	27.2	30.7	31.3	43.4	43.4	46.7
1998	11.7	20.7	29.2	41.5	43.0	43.0	43.0	52.2	56.3
1999	8.5	12.2	16.2	23.0	24.2	25.8	32.9	36.6	36.6
2000	8.5	12.5	16.4	27.8	31.5	44.8	47.5	53.4	58.4
2001	6.1	10.7	11.9	21.4	24.5	24.5	34.8	38.6	40.4
2002	8.4	11.1	14.4	18.8	21.2	23.9	23.9	25.2	34.4
2003	8.1	14.4	16.3	20.6	32.9	38.0	38.4	38.4	38.4
2004	10.2	14.3	15.8	16.9	26.0	26.0	34.7	35.9	45.0
2005	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	-99.9	66.6
2007	5.4	7.7	9.7	13.7	14.7	15.7	19.5	-99.9	-99.9
# Yrs.	75	75	75	75	76	76	76	75	76
Années									
Mean	8.9	12.9	15.7	21.3	27.1	32.5	41.7	47.5	53.5
Moyenne									
Std. Dev.	3.6	4.6	5.8	7.9	10.0	13.0	15.9	17.4	20.1
Écart-type									
Skew.	2.86	1.13	1.23	1.22	0.77	1.00	1.37	1.26	1.26
Dissymétrie									
Kurtosis	16.47	5.64	5.92	5.49	3.64	3.50	4.77	4.61	4.93

*-99.9 Indicates Missing Data/Données manquantes

Warning: annual maximum amount greater than 100-yr return period amount
 Avertissement : la quantité maximale annuelle excède la quantité pour une période de retour de 100 ans

Year/Année	Duration/Durée	Data/Données	100-yr/ans
1935	30 min	49.8	46.1
1935	1 h	60.2	58.5
1969	5 min	29.2	20.2
1969	10 min	30.5	27.3

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1969	15 min	38.1	33.8
1976	5 min	20.3	20.2
1984	6 h	92.1	91.6
1984	24 h	124.3	116.4

Table 2a : Return Period Rainfall Amounts (mm)
Quantité de pluie (mm) par période de retour

Durati on/Durée	2 yr/ans	5 yr/ans	10 yr/ans	25 yr/ans	50 yr/ans	100 yr/ans	#Years Années
5 mi n	8.4	11.5	13.6	16.3	18.3	20.2	75
10 mi n	12.2	16.2	18.9	22.3	24.8	27.3	75
15 mi n	14.7	19.8	23.2	27.5	30.6	33.8	75
30 mi n	20.0	27.0	31.6	37.5	41.8	46.1	75
1 h	25.4	34.3	40.1	47.6	53.1	58.5	76
2 h	30.3	41.8	49.4	59.0	66.1	73.1	76
6 h	39.1	53.1	62.4	74.2	82.9	91.6	76
12 h	44.6	60.0	70.2	83.0	92.6	102.1	75
24 h	50.2	67.9	79.7	94.5	105.5	116.4	76

Table 2b :

Return Period Rainfall Rates (mm/h) - 95% Confidence Limits
Intensité de la pluie (mm/h) par période de retour - Limites de confiance de 95%

Durati on/Durée	2 yr/ans	5 yr/ans	10 yr/ans	25 yr/ans	50 yr/ans	100 yr/ans	#Years Années
5 mi n	100.3	138.4	163.7	195.6	219.3	242.8	75
10 mi n	+/- 9.0	+/- 15.1	+/- 20.4	+/- 27.5	+/- 32.9	+/- 38.3	75
15 mi n	73.0	97.2	113.3	133.6	148.7	163.6	75
30 mi n	+/- 5.7	+/- 9.6	+/- 13.0	+/- 17.5	+/- 20.9	+/- 24.4	75
1 h	59.0	79.4	92.8	109.9	122.6	135.1	75
2 h	+/- 4.8	+/- 8.1	+/- 10.9	+/- 14.7	+/- 17.6	+/- 20.5	75
6 h	40.1	54.0	63.3	75.0	83.6	92.2	75
12 h	+/- 3.3	+/- 5.5	+/- 7.5	+/- 10.1	+/- 12.0	+/- 14.0	75
24 h	25.4	34.3	40.1	47.6	53.1	58.5	76
1 h	+/- 2.1	+/- 3.5	+/- 4.7	+/- 6.3	+/- 7.6	+/- 8.9	76
2 h	15.2	20.9	24.7	29.5	33.0	36.6	76
6 h	+/- 1.3	+/- 2.3	+/- 3.0	+/- 4.1	+/- 4.9	+/- 5.7	76
12 h	6.5	8.9	10.4	12.4	13.8	15.3	76
24 h	+/- 0.5	+/- 0.9	+/- 1.2	+/- 1.7	+/- 2.0	+/- 2.3	76
1 h	3.7	5.0	5.8	6.9	7.7	8.5	75
2 h	+/- 0.3	+/- 0.5	+/- 0.7	+/- 0.9	+/- 1.1	+/- 1.3	75
6 h	2.1	2.8	3.3	3.9	4.4	4.9	76
12 h	+/- 0.2	+/- 0.3	+/- 0.4	+/- 0.5	+/- 0.6	+/- 0.7	76

Table 3 : Interpolati on Equati on / Équati on d' interpolati on: $R = A \cdot T^B$

R = Interpolated Rainfall rate (mm/h) / Intensité interpolée de la pluie (mm/h)

RR = Rainfall rate (mm/h) / Intensité de la pluie (mm/h)

T = Rainfall duration (h) / Durée de la pluie (h)

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Statistics/Statistiques	2	5	10	25	50	100
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans
Mean of RR/Moyenne de RR	36.1	49.0	57.5	68.3	76.2	84.2
Std. Dev. /Écart-type (RR)	34.7	47.4	55.8	66.3	74.2	82.0
Std. Error/Erreur-type	8.9	11.3	12.9	14.9	16.4	17.8
Coefficient (A)	21.9	29.7	34.8	41.3	46.2	50.9
Exponent/Exposant (B)	-0.694	-0.694	-0.694	-0.694	-0.694	-0.694
Mean % Error/% erreur moyenne	9.9	10.0	10.0	10.0	10.1	10.1

Short Duration Rainfall Intensity–Duration–Frequency Data

2014/12/21

Données sur l'intensité, la durée et la fréquence des chutes de pluie de courte durée

