

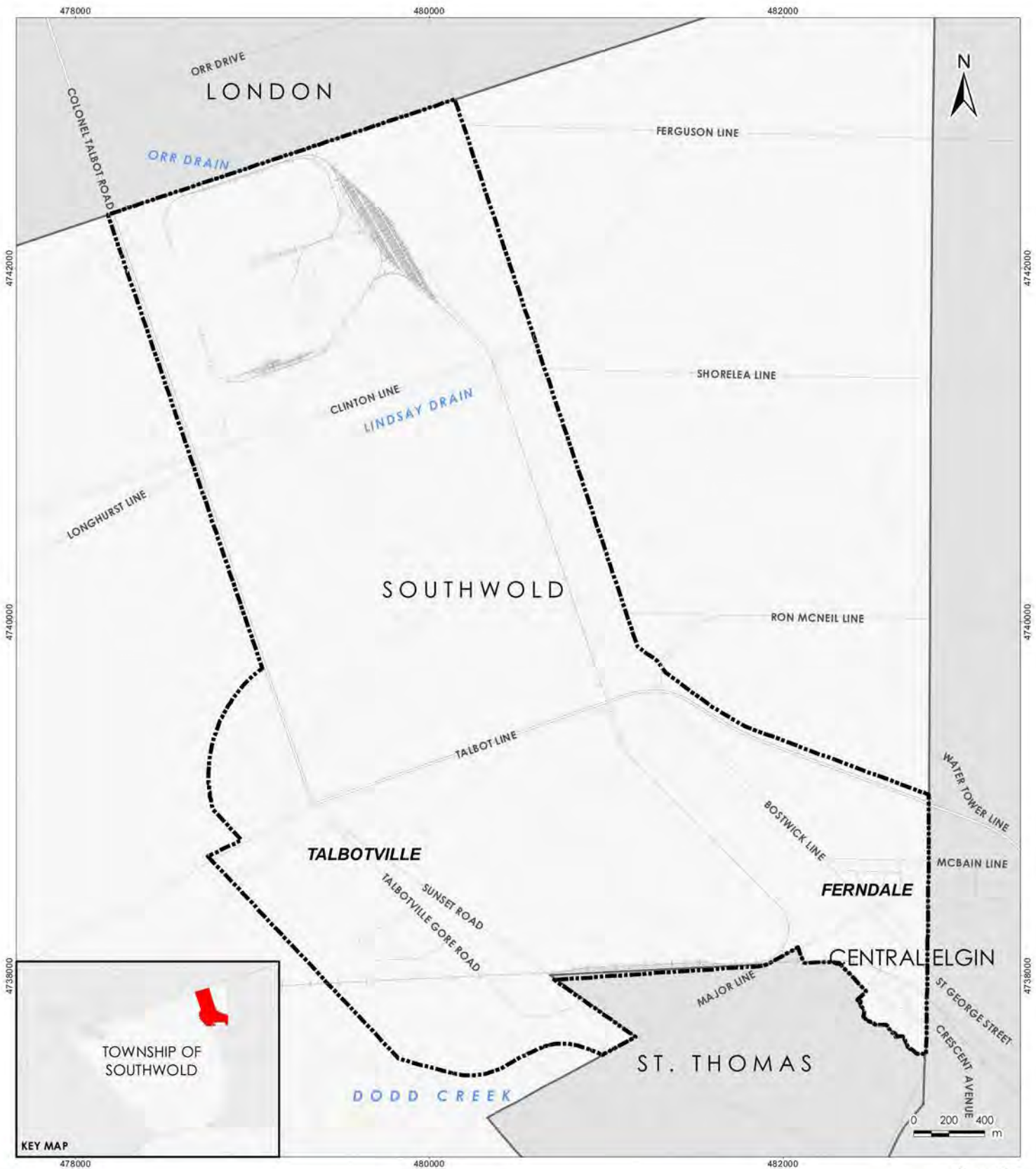
1.0 INTRODUCTION

1.1 BACKGROUND

The Township of Southwold (Southwold) is a small, rural municipality immediately west of the City of St. Thomas. The Township completed a Master Servicing Plan in May 2015 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 completed Phases 1 and 2 of the Class EA process; the current study builds upon the recommendations of the Master Servicing Plan for a new wastewater treatment plant (WWTP) in the settlement area of Talbotville in order to complete the requirements of Phases 3 and 4 for Schedule C projects under the Class EA process (Municipal Engineers' Association, 2000 as amended in 2007 and 2011).

1.2 STUDY AREA


Whereas the Master Servicing Plan investigated a large number of projects distributed throughout the settlement areas of Talbotville and Ferndale, the Talbotville WWTP Class EA focuses on two sites identified as potential locations for the new WWTP. The general area to the south of the Talbotville settlement area was identified as the future location for the WWTP within the Master Servicing Plan due to the proximity to a discharging water body (Dodd Creek or one of its tributaries), as well as allowing for the potential direction of flows to the new WWTP from the neighbouring settlement area of Ferndale in the future. Two parcels were then chosen based on necessary distance separation between residential and other sensitive land uses (Ministry of the Environment and Climate Change D-2 Guidelines), proximity to the receiving water courses, and the availability of land based on communications with land owners. Figure 1.1 outlines the Master Servicing Plan study area. Figure 1.2 illustrates the approximate WWTP location identified in the Master Servicing Plan, and Figure 1.3 identifies the two potential WWTP locations (North and South Sites).



February 2016
165500796



Legend

 Settlement Area / Master Servicing Plan Study Area

Client/Project

Township of Southwold
Talbotville WWTP
Class EA

Notes

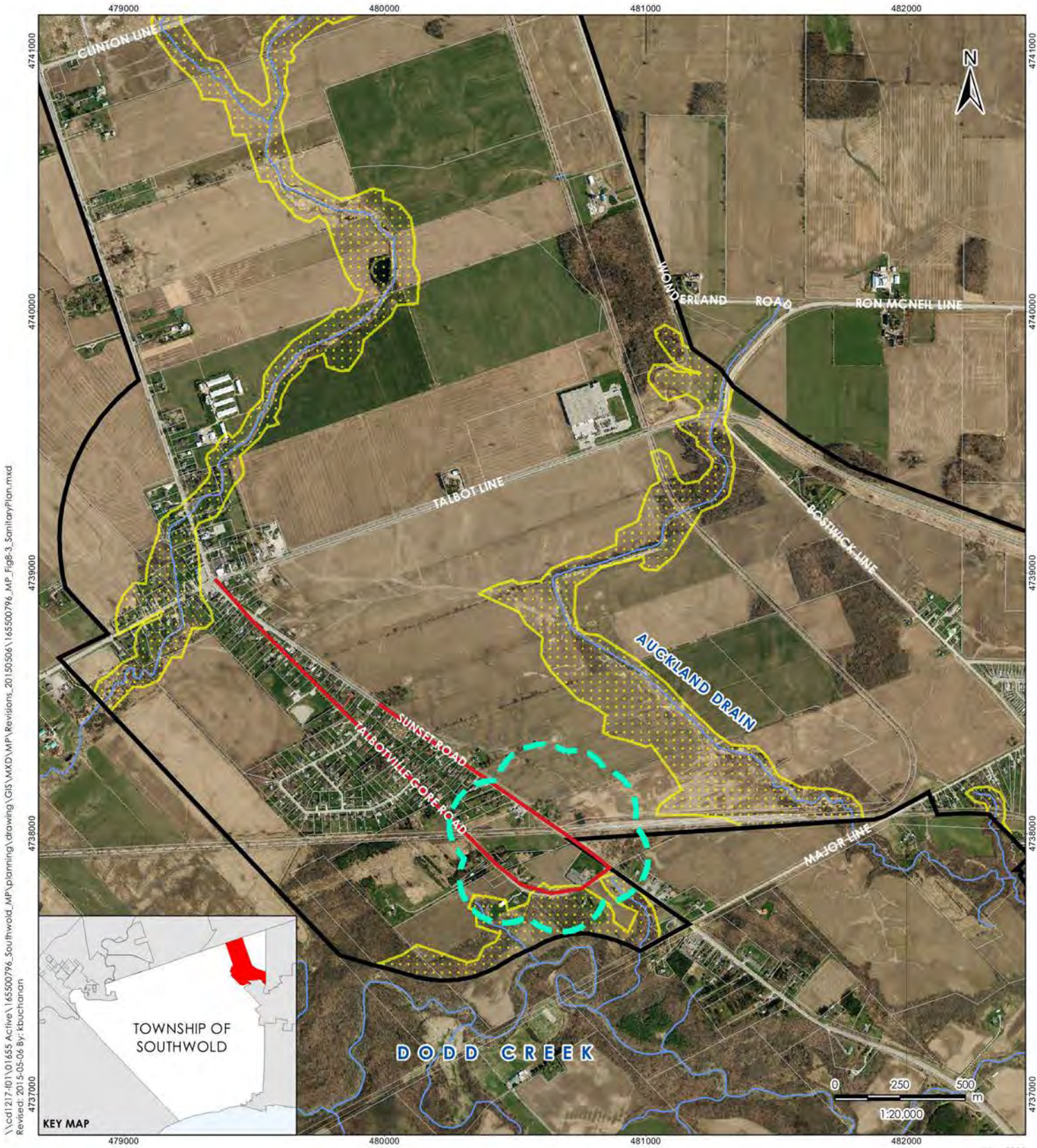
1. Coordinate System: NAD 1983 UTM Zone 17N
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Figure No.

1.1

Title

Master Servicing Plan Study Area



\\cd\1217-401\01655-Active\165500796_Southwold_MP\planning\drawing\GIS\MXD\MP_Revisions_20150506\165500796_MP_Fig8-3_SanitaryPlan.mxd
 Revised: 2015-05-06 By: kbuchanan

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
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- Legend**
- Settlement Area/Study Area
 - Parcel
 - Approximate Regulated Area
 - Proposed WWTP Location
 - Proposed Gravity Sewer

Client/Project
 Township of Southwold
 Talbotville WWTP
 Class EA

Figure No.
1.2

Title
**General WWTP
 Location as Identified
 in the Master Servicing
 Plan**



May 2015
 165500796



December 2015
165500796



Legend

- Potential WWTP Site
- Property Line (approx.)
- Municipal Boundary

Client/Project

Township of Southwold
Talbotville WWTP
Class EA

Figure No.

1.3

Title

**Study Area -
Proposed WWTP
Site Alternatives**

Notes

1. Coordinate System : NAD 1983 UTM Zone 17N
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3. 2010 orthoimagery © First Base Solutions, 2015. The image has been edited to remove an agricultural pond which no longer exists.

1.3 PROJECT SCOPE & OBJECTIVES

The intent of the Talbotville WWTP Class EA is to address public, agency, and First Nations community requirements and concerns and to ensure all feasible 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;
- Selection of potential WWTP locations based on the preferred wastewater servicing alternative as identified within the Master Servicing Plan;
- Review of the social, cultural, and natural environment;
- Development of alternative design concepts to implement the preferred wastewater servicing alternative as determined within the Master Servicing Plan;
- Undertake public consultation efforts in accordance with Phases 3 and 4 of the Class EA process; and
- Preparation of an Environmental Study Report.

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 the 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 outlines the Class EA process, and provides a review of the relevant consultation process followed for the Master Servicing Plan (Phases 1 and 2) as well as for the Talbotville WWTP Class EA (Phases 3 and 4).

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

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Consultation

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.

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 and Climate Change 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.

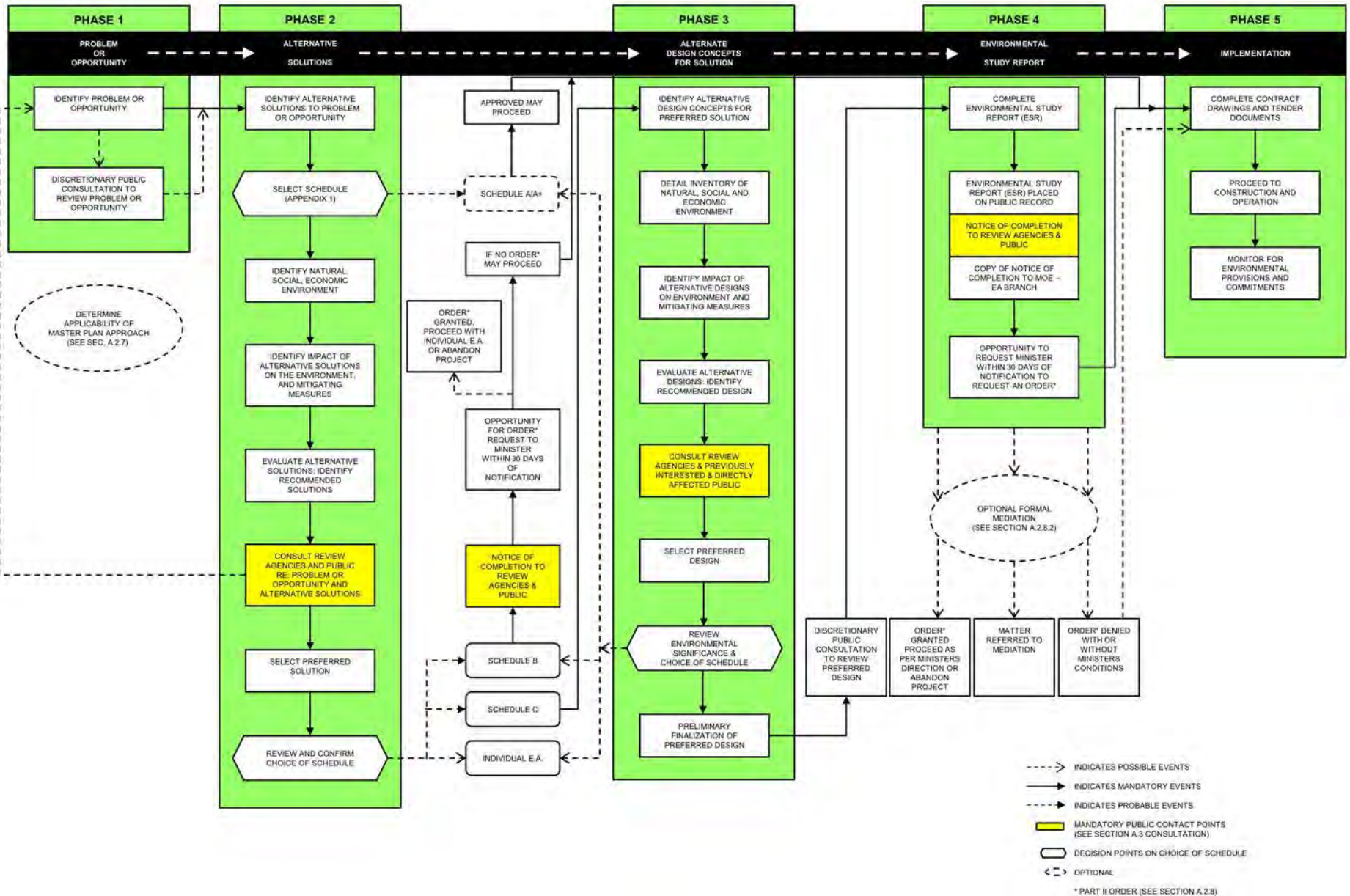
2.2.4 Schedule C

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



TALBOTVILLE WWTP SCHEDULE C CLASS EA

Consultation

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

- Clear documentation and traceable decision making.

2.4 RELATIONSHIP TO THE MASTER SERVICING PLAN

The Master Servicing Plan was completed following Master Plan Approach #2 provided within the MEA Municipal Class EA document. 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 Servicing Plan became the Notice of Completion for the Schedule B projects within it.

The recommended alternative for wastewater servicing in Talbotville as identified within the Master Servicing Plan, being the construction of a new wastewater treatment plant, is a Schedule C project; thus, this study will build upon the recommendations of the Master Servicing Plan to complete Phases 3 and 4 of the Municipal Class EA planning process.

2.5 CHANGING PROJECT STATUS – “PART II ORDER”

Subsection 16 of the amended Environmental Assessment Act provides the Minister of the Environment and Climate Change 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;
- 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

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Consultation

- 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 and Climate Change 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. All individuals who expressed interest in the Master Servicing Plan were automatically included in the contact list for the Talbotville WWTP Class EA project.
- **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) as part of the Master Servicing Plan, and one PIC as part of the current Talbotville WWTP Class EA 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 all public and agency correspondence.

2.7 ABORIGINAL CONSULTATION

A list of relevant Aboriginal communities was developed at the onset of the project based on known interests from previous projects, proximity to the study area, and correspondence with the Ministry of Aboriginal Affairs. Throughout the process, these communities were provided with letters notifying them of project commencement, an invitation to attend the PIC, and a follow-up email was sent to provide each community with the materials displayed at the PIC. The following nine 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;
- Oneida of the Thames First Nation;
- Chippewas of Kettle and Stony Point;
- Aamjiwnaang First Nation; and
- Metis Nation of Ontario.

At the request of Caldwell First Nation, Stantec met with Chief Hiller on December 14, 2015 to provide an overview of the project, the preferred WWTP location and answer questions. Based on the outcome of this meeting, Caldwell First Nation asked that their requests as outlined in the Master Servicing Plan be carried forward for the Talbotville WWTP Class EA, and are as follows:

- 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 (however, an Archaeological Assessment of the property was previously completed as part of the adjacent development application); and
- Be included on any future project correspondence.

TALBOTVILLE WWTP SCHEDULE C CLASS EA

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In addition to the items above, Caldwell First Nation would appreciate if consideration is given to the planting of Black Willows if the opportunity arises for such plantings. The Black Willow tree is used in the construction of Native sweat lodges.

At the request of Chippewas of the Thames First Nation, Stantec met with Mary Alikakos on January 27, 2016 to provide an overview of the project, the preferred WWTP location and answer questions. Based on the outcome of this meeting, Chippewas of the Thames First Nation asked that their requests as outlined in the Master Servicing Plan be carried forward for the Talbotville WWTP Class EA, and are as follows:

- Opportunity to provide an Aboriginal Monitor should a Stage 2 Archaeological Assessment be required (however, an Archaeological Assessment of the property was previously completed as part of the adjacent development application); and
- Be included on any future project correspondence.

At the request of Walpole Island First Nation, Stantec met with Jared Macbeth on January 28, 2016 to provide an overview of the project, the preferred WWTP location and answer questions. Based on the outcome of this meeting, Walpole Island First Nation requested the following:

- Be provided with a copy of the Assimilative Capacity Study (provided via email on February 2, 2016); and
- Opportunity to provide an Aboriginal Monitor (including compensation) should a Stage 2 Archaeological Assessment be required (however, an Archaeological Assessment of the property was previously completed as part of the adjacent development application).

Concerns were raised by Walpole Island First Nation that the preferred location of the WWTP (South Site) was in close proximity to a floodplain. Preference would be for a plant to have sufficient buffer area from the edge of a floodplain so that future impacts due to climate change or relocation of flood lines would not impact the treatment plant. Consideration should be given during detailed design to maximize the distance between the floodplain and WWTP.

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

All points of contact and communications received are documented in the Aboriginal Consultation Log included in Appendix 2.3. At the conclusion of the study, the Notice of Completion was sent to the above listed communities for their review and to request final project comments, as outlined in the Aboriginal Consultation Log. Appendix 2.4 contains a copy of all correspondence received.

2.8 ADDITIONAL AGENCY CONSULTATION

Consultation with approval agencies is an important part of the Class EA process, in order to identify the context in which subsequent approvals will be granted as the project moves to implementation and construction. The Ministry of the Environment and Climate Change (MOECC), who was involved in the Assimilative Capacity Study and in approving effluent limits for the new WWTP, the Ministry of Natural Resources and Forestry, and Kettle Creek Conservation Authority, were engaged throughout the project. Related correspondence is included in Appendix 2.2.

2.9 CONSULTATION WITH LAND OWNERS / CONSULTANTS

Local developers and land owners who were consulted as part of the Master Servicing Plan were also included on the mailing list for the Talbotville WWTP Class EA, and further consultation was undertaken during the selection of potential WWTP locations. As municipally owned land is not available, the Township must purchase property for a new wastewater treatment plant. As discussed later in the document, a potential site was offered by Dave Sparenberg of DHP Contracting. Property owned by Bob McCaig was also identified, and the availability of the land was discussed with the landowner. Related correspondence can be found in Appendix 2.5.

2.10 PUBLIC INFORMATION CENTRE

Public Information Centres are a method to communicate project information with the general public, interested parties, review agencies and First Nation communities. In addition to the two PICs that were held during the development of the Master Servicing Plan, one additional PIC was held for the Talbotville WWTP Class EA. The PIC, held on December 16, 2015, was advertised on the Township's 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.

The PIC was held as an open house on December 16, 2015 from 6:30 pm to 8:30 pm at the Keystone Community Complex located at 35921 Talbot Line, Shedden, Ontario. Information presented at the PIC included:

- Introductory panels, and summaries of recommendations of the Master Servicing Plan;
- A description of the Municipal Class EA process;
- Project overview and potential WWTP site figures;
- Evaluation boards for each of the two sites in terms of the social/cultural, technical, environmental, and economic evaluation criteria;
- Description of available treatment technologies;

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Consultation

- Description/results of the Assimilative Capacity Study; and
- Study recommendations.

Both Township staff and Stantec personnel were on hand to answer questions. Copies of the materials displayed were provided to anyone who requested via email while also being displayed on the Township's website. Attendees were encouraged to fill out and return comment sheets. Several comment sheets were taken at the PIC, however no comment sheets were returned to the project team. Thirty-seven people signed the attendance log. All information presented at the PIC, including a brief summary, is provided in Appendix 2.6.

Prior to the PIC, Stantec held a formal presentation on December 14, 2015 to Township staff and Council to present work completed to date and the draft findings and recommendations pertaining to the Talbotville WWTP Class EA. A copy of the presentation can be found in Appendix 2.7.

2.11 NOTICES

The Notice of Study Commencement combined with the Notice of PIC 1 was published in the Weekly News on December 3, 2015 and December 10, 2015. Letters were mailed via Canada Post to all individuals included on the contact list.

The Notice of Completion was sent out to agencies and all project contacts informing them that the Talbotville WWTP Class EA had been completed via Canada Post as well as being published in two separate issues of the Weekly News on February 25th and March 3rd, 2016. Copies of all notices are included in Appendix 2.8.

In addition, all project 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 remaining requirements of the Class EA planning and design process for Schedule C projects, building upon the recommendations within the Master Servicing Plan. The Environmental Study Report 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

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Consultation

- 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. Since this project builds upon the recommendations within the Talbotville & Ferndale Master Servicing Plan, the Problem and Opportunity Statement for that project is identified below:

"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."

To further define the problem and opportunities specific to the Talbotville WWTP Class EA, the following statement was developed and included in the letters and notices sent to agencies, the public, Aboriginal Communities, and other identified stakeholders:

"Currently, no municipal wastewater collection or treatment infrastructure exists within Talbotville. Existing development within the settlement area is serviced by private on-site septic systems. A number of wastewater collection and treatment alternatives for Talbotville were developed as part of the Master Servicing Plan. Through the completion of the Master Servicing Plan, the construction of a new municipally owned and operated wastewater treatment plant in Talbotville to service both existing and future development was selected as the preferred alternative."

3.2 GUIDING PRINCIPLES

The following guiding principles were developed as part of the Master Servicing Plan, and where applicable, have been carried over to be followed throughout the Talbotville WWTP Class EA:

- The project is developed in a logical, consistent and fair manner that reflects the values of the Township of Southwold (Council, staff, community).
- The project 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*.

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Phase 1 – Problem or Opportunity

- The project 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, and should build upon the work completed as part of the Master Servicing Plan.
- The project 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.
- Technical analysis based on data collection and modeling undertaken as part of the Master Servicing Plan is consulted 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 wastewater as identified in the Master Servicing Plan are adequately addressed.
- 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 on the recommendations of the Talbotville WWTP Class EA.

3.3 EXISTING INFRASTRUCTURE

3.3.1 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.

3.3.2 Industrial Land

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.

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Phase 1 – Problem or Opportunity

3.4 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 3.1 illustrates the sanitary catchments and proposed sanitary trunk routing in Talbotville.

3.5 POPULATION PROJECTIONS

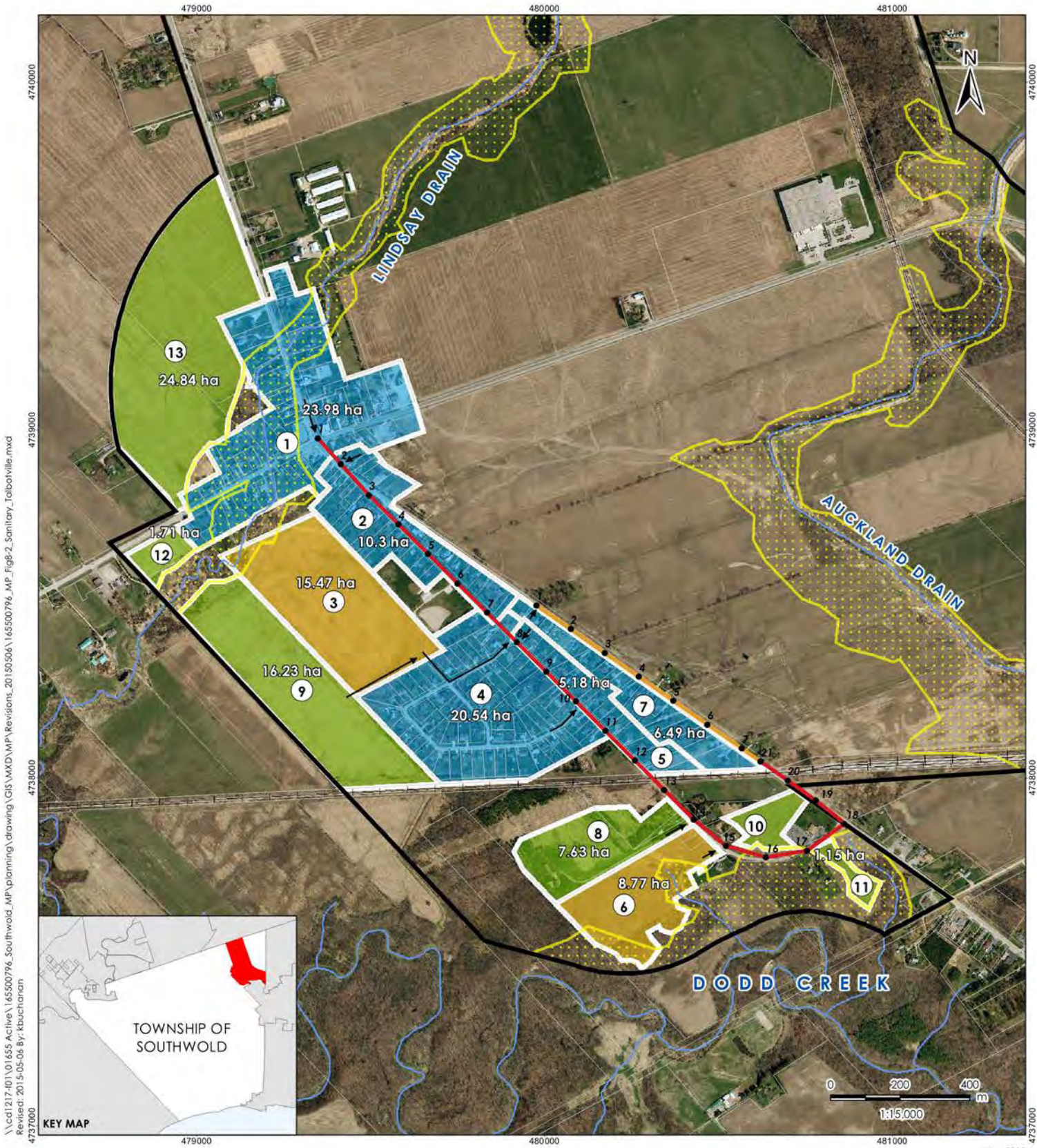
Population projections for Talbotville were based upon the *Addendum to Allocation of Equivalent Residential Units Tables and Responses to OMAFRA and MMAH Land Supply Review and Small Settlement Servicing Study* for the next 20 years (2012). Population projections are based on three people per equivalent 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. Existing, future and total population projections are provided in Table 3.1.

Table 3.1: Population Projections for Talbotville

| | Existing | Future | Total |
|-------------|----------|--------|-------|
| Talbotville | 462 | 1,800 | 2,262 |



\\cd\1217-101\01655_Active\165500796_Southwold_MP\planning\drawing\GIS\WXD\WP_Revisions_20150506\165500796_MP_Fig8-2_Sanitary_Talbotville.mxd
 Revised: 2015-05-06 By: kbuchanan
 4737000

May 2015
165500796



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

Client/Project
 Township of Southwold
 Talbotville WWTP
 Class EA

Figure No.
3.1

Title
**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.
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3.6 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. Table 3.2 outlines the preliminary phasing for the WWTP.

Table 3.2: 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 |

3.7 POTENTIAL WASTEWATER TREATMENT PLANT LOCATIONS

It was proposed through the Master Servicing Plan that a new municipal wastewater treatment plant be located in the southern end of Talbotville. The plant would discharge to Dodd Creek, or one of its tributaries. 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.

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, it was identified that the Township would likely have to purchase property for a new wastewater treatment plant.

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

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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. 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.

3.8 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. This 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.

4.0 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. Components of Phase 2 were carried out through the Master Servicing Plan.

4.1 ENVIRONMENTAL COMPONENTS

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

Table 4.1: 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 was used to consider the suitability of alternative servicing strategies for wastewater and to identify significant advantages and disadvantages with respect to a specific set of evaluation criteria identified for each environment component.

4.2 WASTEWATER SERVICING ALTERNATIVES (TALBOTVILLE)

The process of identifying and evaluating alternative solutions during Phase 2 of the Master Servicing Plan included the following activities:

- Development of a long list of potential alternatives, and screening of those to a short list;

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Phase 2 – Alternative Solutions

- 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 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

4.3 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 were identified. 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. The decision matrix that was developed to document the potential impacts associated with each option and to assist in the selection of the preferred alternative as part of the Master Servicing Plan is presented in Table 4.2.


The preferred alternative for wastewater servicing within Talbotville was determined to be the construction of a new municipally owned and operated wastewater treatment plant

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Phase 2 – Alternative Solutions

(Alternative T5). As part of the Master Servicing Plan, approximate plant capacity, site area requirements and various treatment technologies were discussed.

Table 4.2: 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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Phase 2 – Alternative Solutions

| 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 <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> |
|---|--|--|--|-----------------------|--|---|--|--|---|
| | Natural | Social | Economic | | Land | Technical | | | |
| | | | Capital | O&M | | | | | |
| | <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 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. | <input type="radio"/> |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | |
| 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. | <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"/> | |

5.0 POLICY, PLANNING AND DESIGN DOCUMENTS

5.1 POLICY DOCUMENTS

5.1.1 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.

5.1.2 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 from Section 1.0 – Building Strong Healthy Communities pertaining to the Talbotville WWTP Schedule 'C' project 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.

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

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system capacity shall include treatment capacity for hauled sewage from private communal sewage services and individual on-site sewage services.

The project must also have regard for Section 2.0 – Wise Use and Management of Resources in protecting the appropriate Natural Heritage features, water, agricultural, mineral and aggregate resources, and cultural heritage and archaeological resources; as well as Section 3.0 Protecting Public Health and Safety by minimizing risks associated with natural and anthropogenic hazards.

5.1.3 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 Talbotville WWTP project 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.

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.

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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)

The Township acknowledges that full municipal water and sanitary sewage services are the preferred method of servicing new development in Settlement Areas.

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.

5.2 PLANNING DOCUMENTS & PREVIOUS STUDIES

5.2.1 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 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

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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.

5.3 TOWNSHIP OF SOUTHWOLD DESIGN SPECIFICATIONS

Design standards and specifications were reviewed and considered in the development of alternative designs for the Talbotville WWTP.

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. The planning and design of future servicing networks will rely on the design criteria listed within this document.

5.4 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*.

5.5 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.

5.6 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.

5.6.1 Design Considerations for Wastewater Treatment Plants

Chapter 8 of the MOECC Design Guidelines for Sewage Works (2008) outlines design considerations as they relate to wastewater treatment plants including, but limited to, plant location, plant layout, provisions for future expansion, plant outfalls and operator licensing.

5.6.1.1 Plant Location

A new wastewater plant site is to be evaluated through the MEA Municipal Class EA process and is to be documented in an Environmental Study Report. Factors that should be considered are as follows:

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- Location of drinking water sources, surface water intakes and groundwater wells;
- Adequacy of isolation from residential areas and land use surrounding the plant site;
- Prevailing wind direction;
- Susceptibility of site to flooding;
- Suitability of soil conditions;
- Adequacy of site for future expansion and/or provision for additional treatment stages;
- Suitability of site with respect to access to receiving body of water or other means of treated sewage effluent disposal;
- Assimilation capacity of receiving water body;
- Acceptability of site with respect to sludge disposal/utilization options on site or access to areas off site; and
- Design capacity.

5.6.1.2 Flood Protection

The wastewater treatment plant structures, electrical and mechanical equipment should be protected from physical damage by the 100-year flood event. This requirement applies to both new construction and to existing facilities undergoing expansion. Flood plain regulations of provincial and federal agencies and the municipal requirements related to flood plain protection must be followed. If necessary, mitigation measures to prevent flooding may need to be implemented as directed by the Conservation Authority, Ministry of Natural Resources and Forestry or the Township.

5.6.1.3 General Plant Layout

The general arrangement of the treatment plant within the site should take into account the subsurface conditions and natural grades to provide the necessary facilities at a minimum cost. In the layout of the plant, buildings should be oriented to provide adequate allowances for future linear expansions of the various treatment stages and process units. Building orientation may be used to minimize effects of odours, misting and freezing problems and energy usage (heating).

The layout of various process units should be arranged in a logical progression to avoid the necessity for major pipelines or conduits to convey sewage, sludge or chemicals from one module to the next and also to arrange the plant layout to provide for convenience of operation and ease of flow splitting for proposed and future treatment units.

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Where site roadways are provided for truck access, the road design should be sufficient to withstand the largest anticipated delivery and disposal vehicles with due allowance for vehicle turning and forward exit from the site.

In order to avoid the dangers of high voltage lines crossing the site, a high voltage pole should be located at the property line. A step-down transformer may be required.

The wastewater treatment plant site works should be adequately fenced and posted to prevent persons from gaining unauthorized entry. The perimeters of open tanks or excavations should be adequately safeguarded. Gates and buildings should have locks.

5.6.1.4 Provisions for Future Expansion

In addition to the site size needed to physically accommodate future treatment plant expansions, it is necessary to include provisions to accommodate future expansions or process changes.

The layout and sizing of channels and plant piping should be such that additional treatment units can be added in the future or increases in loading rates can be accommodated hydraulically. The location of buildings and tanks should allow for the location of the next stages of expansion. Buffer areas should be provided.

Within buildings, space should be provided for the replacement of equipment with larger capacity units such as pumps and blowers. Adequate working space should be provided around equipment and provisions made for the removal of equipment for replacement, or major maintenance operations.

In sizing inlet and outlet sewers, the ultimate plant capacity should be considered. Provided that problems will not occur with excessive sedimentation in sewers, these sewers should be sized for the ultimate condition.

5.6.1.5 Plant Outfalls

The proper site and design of the plant outfall structure is important in minimizing the impact on receiving water quality. In many cases, it may be a controlling factor in ensuring protection of nearby water supplies, recreational beaches or fisheries habitat.

Outfalls should be designed and located so as to obtain the greatest possible dilution of the plant effluent during periods of greatest susceptibility of nearby water uses to adverse impacts.

For extended outfalls, outfall capacity should be sufficient to handle not only the treated effluent but also all flows received at the plant so as to eliminate overflowing of untreated or partially treated flows at shore.

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5.6.1.6 Operator Licensing

Wastewater treatment plants are to be operated by persons holding a valid operator's license of the same type as the type for the facility. At least one operator needs to hold a license of the same class or a higher class than the class of the facility and the license needs to be prominently displayed.

6.0 CULTURAL HERITAGE REVIEW

As part of the neighbouring development (10065 Gore Road), a Stage 1 and 2 Archaeological Assessment was completed for the property in which the South Site is located. The assessment concluded that no additional field investigations were necessary, and the report has been filed with the Ontario Ministry of Tourism, Culture, and Sport (MTCS) (see Appendix 6.1). This report did not include the land identified for the North Site. According to the MTCS *Criteria for Evaluating Archaeological Potential* checklist, if the North Site is chosen as the preferred site, a Stage 1 Archaeological Assessment (at minimum) will be required prior to detailed design based on the proximity of the location to a water source (Dodd Creek/Auckland Drain).

The MTCS *Criteria for Evaluation Build Heritage and Cultural Landscapes* checklist was also completed for the two locations, which were deemed to be of low potential for built heritage or cultural heritage landscapes. All checklists and communications from the MTCS are included in Appendix 2.2.

7.0 NATURAL ENVIRONMENT REVIEW

7.1 BACKGROUND

The Talbotville WWTP Class EA is being undertaken to complete the requirements of a Schedule C project, building upon the recommendations for wastewater servicing set out in the Master Servicing Plan.

As part of the Class EA process, an inventory of the natural environment should be undertaken early in the planning process. The purpose of this Natural Environment Review (NER) is to: characterize the significance and sensitivity of the natural features in the study area from a policy and mapping perspective and to 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 design alternatives being considered within the Talbotville WWTP Class EA, which builds upon the recommendations of the Master Servicing Plan.

7.2 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 design alternatives. Whereas the Master Servicing Plan investigated a large number of projects distributed throughout the settlement areas of Talbotville and Ferndale, the Talbotville WWTP Class EA is focused on two sites identified for the potential location of the new WWTP. The general area to the south of the Talbotville settlement area was identified within the Master Servicing Plan due to the proximity to a discharging water body (Dodd Creek or one of its tributaries), as well as allowing for the potential direction of flows to the new WWTP from the neighbouring settlement area of Ferndale in the future. Two parcels were then chosen based on necessary distance separation between residential and other sensitive land uses (Ministry of the Environment and Climate Change D-2 Guidelines), proximity to the receiving water courses, and availability of land based on communication with land owners. An Assimilative Capacity Study (ACS) has been completed and approved by the MOECC for both potential locations. Figure 1.3 above illustrates the study area composed of the two potential WWTP locations.

7.3 METHODOLOGY AND DATA COLLECTION

This NER was completed as a desktop exercise based on a review of available planning and policy documents, and supplemented by site investigations on November 26, 2015 in order to confirm the presence and location of Natural Heritage Features, identify potential Species at Risk (SAR) habitat not included in existing records review and to identify additional constraints that may be associated with the two potential sites.

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Natural Environment Review

This project is being conducted to complete Phases 3 and 4 of the Municipal Class EA process, with Phases 1 and 2 completed by the Master Servicing Plan; thus, the findings and recommendations of Section 5.0 – Natural Environment Review therein shall be considered in conjunction with the additional field data and recommendations below.

As part of the desktop review, the following documents were reviewed:

- Natural Heritage Information Centre (NHIC) Biodiversity Explorer Database (2015) (1km squares: 17MH8137, 17MH8037, 17MH8138, and 17MH8038);
- Species at Risk in Ontario List (database) (MNRF, 2015);
- Atlas of the Mammals of Ontario (Dobbyn, 1994);
- Atlas of the Breeding Birds of Ontario, 2001-2005 (Cadman et al., 2007);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2015);
- Land Information Ontario (LIO) Database;
- Township of Southwold Zoning Bylaw No. 2011-14 and Schedule A Map 4;
- KCCA Regulation 97/04 Map D3;
- KCCA Watershed Report Card (2013);
- Ontario Regulation 181/06 (2006) under the Conservation Authorities Act (1990);
- Draft Talbotville/Ferndale Master Servicing Plan Municipal Class EA (Stantec, 2014);
- Correspondence with Aylmer District Ministry of Natural Resources and Forestry (MNRF) included in Appendix 2.2; and
- Environmental Impact Study completed by Leonard & Associates in Landscape Architecture (LAILA 2014) for the development application for 10065 Gore Road, Township of Southwold (DHP Contracting), and subsequent correspondence (see Appendix 7.1).

7.4 ENVIRONMENTAL PLANNING AND POLICY CONSIDERATIONS

Policy and guideline documents provide the context within which projects can be approved and implemented. The following policies may be relevant to the design alternatives being evaluated for the Talbotville WWTP.

7.4.1 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 wellbeing. Accordingly, the *Provincial Policy Statement* (PPS) 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 PPS provides direction for the protection of Natural Heritage features, and requires that Natural Heritage Systems be identified and afforded a greater level of protection within Southern Ontario (EcoRegion 7E), where development pressures are greatest.

According to Sections 2.1.4 through 2.1.8 of the PPS, development or site alteration shall not be permitted in or adjacent to the following features in Ecoregion 7E unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

- Significant wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat/habitat of endangered and threatened species;
- Significant Areas of Natural and Scientific Interest (ANSIs); and
- Fish habitat.

Section 3.1 of the PPS provides protection of Ontario's long term prosperity, environmental health and social well-being, by reducing the potential for harm resulting from natural or anthropogenic hazards. Development shall generally be directed away from areas identified as hazardous lands which are impacted by flooding or erosion hazards. Policy 3.1.5 states hazardous lands shall not be utilized for land uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

To comply with the applicable Provincial policies above, further investigation by a qualified agent may be required to determine the significance and boundaries of Natural Features and adjacent hazard lands.

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7.4.2 Township of Southwold Official Plan

The Township's Official Plan (OP) sets the framework for planning and land use matters, and contains goals, objectives, and policies to guide development in order to reconcile the natural, social, and economic needs of the community.

Natural Heritage features are designated on Schedule B and B1 of the Township's OP, and are governed by policies outlined in Section 2. These features may include: Provincially Significant Wetlands, Significant Habitat of Endangered Species, and Threatened Species, Areas of Natural and Scientific Interest (ANSIs), Great Lakes Systems Shoreline, Woodlands, Valley Lands, Locally Significant Wetlands, Significant Wildlife Habitat, Nature Reserves, and Fish Habitat.

Development or site alteration is not permitted in Provincially Significant Wetlands, or Significant Habitat of Endangered Species and Threatened Species.

Development or site alteration *may* be permitted in or adjacent to the following, provided that it has been determined through an Environmental Impact Statement that there will be no negative impacts on the natural features or their ecological functions: Significant Woodlands, Significant Valleylands, Significant Wildlife Habitat, and/or ANSIs. Table 1 – Lands Subject to Natural Heritage Features and Areas Policies states that lands within 120m of any of the natural features listed above is subject to the completion of an Environmental Impact Statement to be completed in consultation with the relevant Conservation Authority.

According to Schedule 'A-1' of the OP, the North Site is within lands designated as Industrial, and the South Site is located within lands designated as Residential, with a Hazard Lands overlay. Hazard Lands are subject to policies within Section 2.3 of the OP. Uses prohibited within the Hazard Lands designation include uses associated with the disposal, manufacture, treatment or storage of hazardous substances. Furthermore, development or site alteration may only occur within land designated as Hazard Lands only where flood proofing standards can be met to the satisfaction of the Conservation Authorities.

7.4.3 Township of Southwold Zoning Bylaw No 2011-14

The North Site is zoned as Commercial Industrial 1 (Map 4), while the South Site is zoned as Residential R1-15, as well as being designated as Natural Area and Adjacent Lands. Natural Area and Adjacent Lands are subject to the restrictions on development found in Section 3.4 of the Zoning Bylaw, which states that *no new buildings or structures permitted by the applicable zone shall be erected in a Natural Area or Adjacent Land unless an Environmental Impact Study demonstrates that there will be no negative impacts on Natural Areas or Provincially Significant Wetlands.*

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7.4.4 Conservation Authority

The study area is located within the Dodd Creek subwatershed, within the jurisdiction of the Kettle Creek Conservation Authority. Both the North and South Sites are located within floodplain regulated by the Kettle Creek Conservation Authority. Figure 7.1 illustrates the approximate Conservation Authority Regulated Limit.

The Conservation Authorities Act (CAA) grants each of Ontario's 36 Conservation Authorities (CAs) the authority to make regulations within the areas under their respective jurisdictions (S. 28). O. Reg. 97/04 of the CAA establishes necessary criteria for regulations to be established by each CA under this clause. O. Reg. 181/06 is developed by the Kettle Creek Conservation Authority (KCCA) to meet the requirements of O. Reg. 97/04 within the lands under its jurisdiction, including the Dodd Creek subwatershed. Under S.3 (1) of O. Reg. 181/06, KCCA may grant permission to develop within regulation limits if, in its opinion, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development.

Thus, a Section 28 permit issued by KCCA will be required for any work within or adjacent to lands regulated by O. Reg. 181/06.

7.4.5 Species at Risk Act

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. SARA prohibits various activities related to listed species, such as killing or harming of species, or destroying critical habitat identified in recovery strategies, action plans, or management plans prepared under the Act.

The protection and conservation measures afforded by SARA apply to those species identified on Schedule 1 of the Act. Other species identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as SAR that require further assessment in accordance with current assessment criteria are identified on Schedule 2 (Endangered and Threatened), and Schedule 3 (Special Concern) of the Act. All listed (Schedule 1) aquatic species and migratory birds in Canada are protected by SARA, but for other listed species (i.e. plants, mammals, reptiles, amphibians) these protections only apply where they occur on federal lands (i.e. National Parks, First Nations Reserves).

Any activity affecting a listed species or its critical habitat requires the prior issuance of a Permit from the applicable agency (Environment Canada or Department of Fisheries and Oceans). 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.

7.4.6 Endangered Species Act

The *Endangered Species Act* (ESA) protects wildlife species and habitat designated as threatened, endangered, or extirpated in Ontario. Provincial SAR are identified and designated into 1 of 4 categories by the Committee on the Status of Species at Risk in Ontario (COSSARO): **extirpated, endangered, threatened, or special concern.**

The ESA automatically protects both flora and fauna species listed by COSSARO as threatened, endangered, or extirpated in Ontario and their habitats by prohibiting anyone from killing, harming, harassing or possessing protected species, as well as by prohibiting any damage or destruction to the habitat of the listed species. All listed species are provided with general habitat protection under the ESA aimed at protecting areas that species depend on to carry out their life processes such as reproduction, rearing, hibernation, migration or feeding. Some species have had detailed habitat regulations passed that go beyond general habitat protection to specifically define the extent and character of protected habitats.

Activities that may impact a protected species or its habitat require the prior issuance of a Permit from the Ministry of Natural Resources and Forestry, unless the activities are exempt under Ontario Regulation 242/08. This Regulation identifies activities which are exempt from the permitting requirements of the Act, subject to rigorous controls outside the permit process including registration of the activity and preparation of mitigation. Activities that are not exempted under O.Reg. 242/08 require the completion of a complete permit application process.

7.4.7 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.

7.5 EXISTING NATURAL FEATURES AND FUNCTIONS

7.5.1 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 desktop exercise. Further review may be required depending on final selection of the alternative and prior to detailed design.

7.5.2 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 7.1 below.

Table 7.1: 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 | --- |

7.5.3 Physiography, Geology, Soils, and Topography

The Township of Southwold is situated in two physiographic regions. The majority 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 undrumlined fill plain.

The bedrock geology across the township 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.

Within the greater Township of Southwold 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

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over 70% of the Dodd Creek watershed combined with extensive municipal drains leads to ongoing sediment flushing.

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 topography of the North Site is generally flat, consisting of agricultural row crops.

The topography of the Site South is located within areas adjacent to the Dodd Creek valleylands, beneath a slope running from the development table lands to Dodd Creek, in a range of 20-28% (LAI LA 2014).

7.5.4 Hydrology

The study area is under the jurisdiction of KCCA, and falls into the Dodd Creek subwatershed area. Dodd Creek is Kettle Creek's largest tributary, with a drainage area of 133 km².

7.5.5 Aquatic Resources

There have been a total of 30 fish species identified including Largemouth Bass and Smallmouth Bass. The 2013 Watershed 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 during the permitting process to determine the presence or absence of at risk species.

7.5.6 Water Quality

The KCCA 2013 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.

The results for the Dodd Creek watershed are outlined in Table 7.2 below.

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Table 7.2: 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 / 100mL | F 0.764 mg/L | D FBI = 5.9 | D |
| 2013 Annual Watershed Report Card Update | C 265 CFU / 100mL | D - IMPROVED 0.182 mg/L | D FBI = 5.9 | D |

7.5.7 Terrestrial Resources

7.5.7.1 Plant Species at Risk

To determine the potential for floral Species at Risk within the North and South Sites, information was compiled from the Natural Heritage Information Centre (NHIC), correspondence with Aylmer District MNRF staff, Kettle Creek Watershed Report Cards, and a cursory site visit.

An NHIC search of records of protected species since 1970 noted Spoon-Leaved Moss in the vicinity of the study area. Correspondence with the Aylmer District of the Ministry of Natural Resources and Forestry however, identified known occurrences of two floral SAR within the vicinity of the South Site. These species are listed in Table 7.3 below along with their classification on the Species at Risk in Ontario List, ESA afforded protection, and the results of potential habitat screening noted during field investigations on November 26, 2015. A memorandum outlining the results of this field investigation performed by Stantec staff is included in Appendix 7.2. Additional information provided by Leonard and Associates in Landscape Architecture subsequent to the field investigation is included in Appendix 7.1.

Table 7.3: At-Risk Flora Species

| Species | SARO Classification | Protection under the ESA | Record Source | Comments on Potential Habitat |
|--|------------------------|----------------------------------|--|---|
| False Rue- anemone (<i>Enemion bifernatum</i>) | Threatened | General Habitat Protection | MNRF Correspondence , KCCA Watershed Report Card 2008 | Potentially suitable habitat in woodland riparian area of Dodd's Creek adjacent to South Site No suitable habitat on North Site |

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| Species | SARO Classification | Protection under the ESA | Record Source | Comments on Potential Habitat |
|--|---------------------|----------------------------|----------------------------------|--|
| Spoon Leaved Moss (<i>Bryoandersonia illecebra</i>) | Endangered | General Habitat Protection | MNRF Correspondence KCCA 2008 | Suitable habitat is present in riparian woodland at Dodd Creek on South Site. No suitable habitat on North Site. |

7.5.7.2 Wildlife Species at Risk

The NHIC database does not list any occurrences of faunal Species at Risk within the vicinity of the study area; however, correspondence with the MNRF noted the known occurrence of one faunal Species at Risk. The KCCA 2008 Watershed Report Card lists a total of one at-risk bird species, one insect and one mammal within the Dodd Creek Subwatershed. These species are listed in Table 7.4 below, along with their classification on the Species at Risk in Ontario List, ESA afforded protection, and the results of potential habitat screening noted during field investigations on November 26, 2015.

Table 7.4: At-Risk Fauna Species

| Species | SARO Classification | Protection under the ESA | Record Source | Comments on Potential Habitat |
|--|---------------------|------------------------------------|--|--|
| Acadian Flycatcher <i>Empidonax virescens</i> | Endangered | General Species/Habitat Protection | KCCA Watershed Report Card 2008 and 2013 | No Maple or Beech in deciduous forest on North or South Sites (i.e. no suitable habitat) |
| Monarch <i>Danaus plexippus</i> | Special Concern | N/A | KCCA Watershed Report Card 2008 | No significant populations of milkweed are likely on either site. |
| Eastern Meadowlark <i>Sturnella magna</i> | Threatened | General Species/Habitat Protection | KCCA Watershed Report Card 2008 | Potentially suitable habitat in hay field on South Site No suitable habitat on North Site |
| Barn Swallow <i>Hirundo rustica</i> | Threatened | General Species/Habitat Protection | MNRF Correspondence | Potential category 3 habitat on North and South sites |

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Natural Environment Review

For projects and areas with a high potential for Species at Risk protected by the ESA, the MNRF recommends that a qualified biologist use the information provided by the MNRF to complete on-site field investigations. Cursory field investigations were completed as part of this Class EA, the results of which have been incorporated into this Natural Environment Review, and included in Appendix 7.2. Additional field investigations were performed by Leonard and Associates in Landscape Architecture (LAIiLA) in conjunction with the Environmental Impact Study (EIS) completed for the adjacent residential development (10065 Gore Road, DHP Contracting/Ricor Engineering), to confirm the presence of the above identified SAR. In a memorandum dated January 14, 2016 LAiLA stated that updated field investigation confirmed that none of the protected species identified as likely to occur within the south site were identified within the area of direct impact of the potential WWTP. The EIS for the approved development, as well as all correspondence from LAiLA is included in Appendix 7.1.

7.5.8 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 (floodplains);
- Wave uprush along Lake Erie;
- Long term stable slopes;
- Dynamic beaches;
- Riverine meander belts;
- Wetlands;
- Other hazardous lands; and
- Additional setbacks from these features.

Regulated areas associated with the floodplain and riverine corridors are located in both the North and the South Sites. Although construction of the WWTP at either locations can likely be situated outside of this area, a Section 28 permit will likely be required, and will be identified through consultation with the Kettle Creek Conservation Authority. The approximate Regulation Limit is identified on Figure 7.1.

The Township of Southwold Official Plan also has policies that govern these areas, and identify areas using the Hazard Land Overlay on Schedule A-1, as well as the Hazard Lands designation on Schedule B-1.

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Natural Environment Review

The eastern portion of the North Site may be within lands designated as Hazard Lands Overlay on Schedule A-2, as well as Hazard Lands on Schedule B-1. The South Site is located within lands designated as Hazard Lands Overlay on Schedule A-1, and Hazard Lands on Schedule B-1.

Hazard Lands are subject to policies within Section 2.3 of the OP. Uses prohibited within the Hazard Lands designation include uses associated with the disposal, manufacture, treatment or storage of hazardous substances. Furthermore, development or site alteration may only occur within land designated as Hazard Lands only where flood proofing standards can be met to the satisfaction of the Conservation Authorities.

7.5.9 Wetlands

There are no Wetlands identified within the study area.

7.5.10 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. There are no areas that may qualify as Significant Woodlands within the North Site, while a portion of the South Site may qualify. Forested areas that may qualify as Significant Woodlands are identified on Figure 7.1 as Wooded Areas.

7.5.11 Other Natural Features

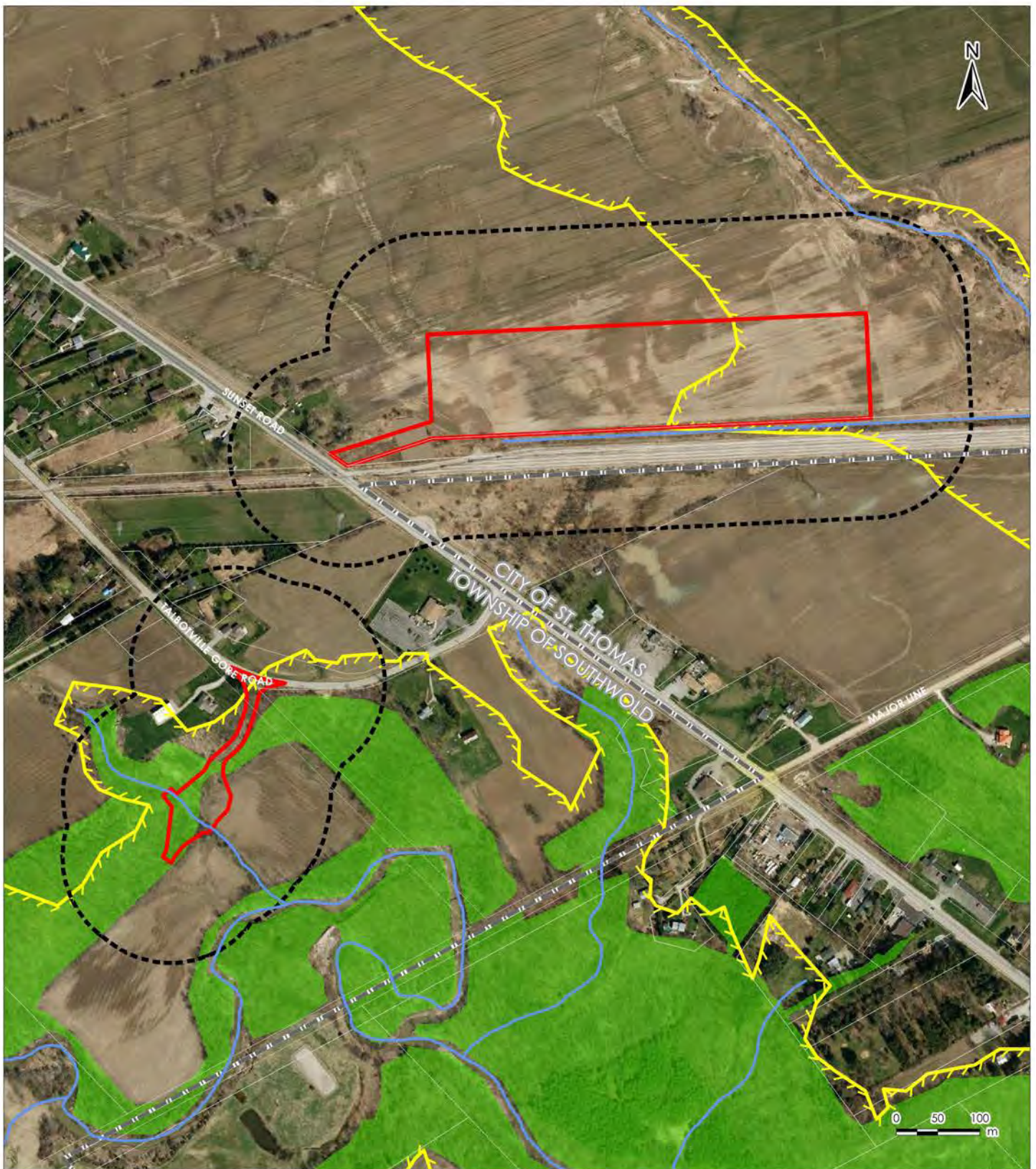
No Areas of Natural and Scientific Interest (ANSIs) have been identified in the study area. No other natural features subject to the Natural Heritage Features and Areas policies within the Township of Southwold Official Plan were identified.

7.5.12 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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- Notes**
1. Coordinate System : NAD 1983 UTM Zone 17N
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 3. 2010 orthoimagery © First Base Solutions, 2015. The image has been edited to remove an agricultural pond which no longer exists.

Legend

- NOTE**
- Potential WWTP Site
 - 120 Metre Study Area
 - Regulated Limit (approx.)
 - Watercourse
 - Wooded Area
 - Property Line (approx.)
 - Municipal Boundary

Client/Project

Township of Southwold
Talbotville WWTP
Class EA

Figure No.

7.1

Title

**Natural Heritage
Features**

7.5.13 Drinking Water Source Protection

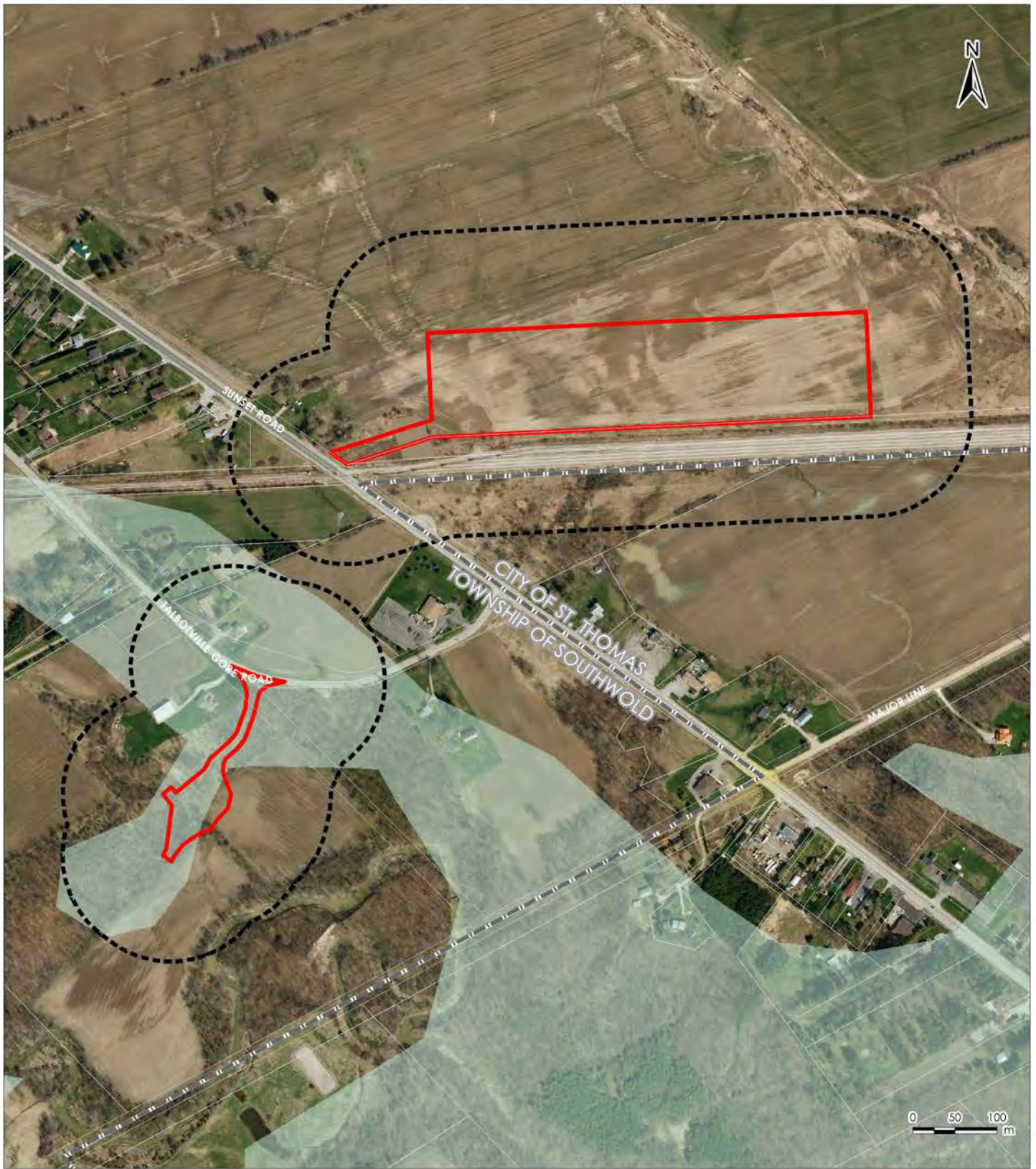
Drinking Water Source Protection represents the first barrier in the protection of drinking water. Protecting surface and ground water from becoming contaminated or overused will ensure a sufficient supply of clean, safe drinking water. The Clean Water Act 2006 (CWA) is intended to protect existing and 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 (AAR) prepared by the LESPR identifies Wellhead Protection Areas (WHPAs), Intake Protection Zones, Highly Vulnerable Aquifers, and Significant Groundwater Recharge Areas (SGRAs), and assigns vulnerability scores from 0-10, 10 being the most vulnerable areas. The AARs also identify potential threats within each type of vulnerable area. 'Significant Threats' are identified as certain prescribed activities which occur in an area identified with a vulnerability score of 8-10.

Within the Approved Assessment Report (2015) Section 4.3 and outlined on Map 4-6, a Significant Groundwater Recharge Area (SGRA) is identified in proximity to the South Site, with a vulnerability score of 2. Since 'Significant Threats' can occur only in areas with an 8-10 vulnerability score, no such threats occur within SGRAs. Moderate and Low drinking threats, however, have been identified within the SGRA, and include chemical threats (moderate-low), and Dense Non-Aqueous Phase Liquids (DNAPLs) (moderate-low). As stated in the Kettle Creek Source Protection Plan, the existing document only contains policy applicable for significant drinking water threats, and may be updated to include specific policies on moderate-low threats (Section 3.2).

Figure 7.2 illustrates the approximate boundaries of the SGRAs.



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Legend

NOTE

- Potential WWTP Site
- 120 Metre Study Area
- Watercourse
- Approximate Significant Groundwater Recharge Area
- Property Line (approx.)
- Municipal Boundary

Client/Project

Township of Southwold
Talbotville WWTP
Class EA

Figure No.

7.2

Title

**Drinking Water
Source Protection
Vulnerable Areas**

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Natural Environment Review

7.5.14 Natural Environment Review - Closing

The foregoing characterization of the natural environment has been completed to provide the context in which permitting and approvals may be granted by the various authorities (municipal, provincial, review agencies, etc.). Opportunities and constraints identified for the potential WWTP locations should be noted within this ESR, and supporting documentation received has been included in the appropriate Appendices; during detailed design and construction, the proponent shall ensure that appropriate field investigation has been completed to comply with the policies discussed herein. The opinions contained within are based on conditions and information existing at the time of writing and do not take into account any subsequent changes. While the information presented is based on the best available resources at the time of writing, this memo is intended to inform the decision-making process as part of the Class EA and is not represented as being complete or accurate for legal purposes. Stantec does not, expressly or otherwise, make legal recommendations to the client or any third party.

8.0 ASSIMILATIVE CAPACITY STUDY

An Assimilative Capacity Study (ACS) was undertaken as part of the Talbotville WWTP Class EA. The general objectives of the Assimilative Capacity Study are to:

- Characterize the receiving water quantity and quality;
- Select and configure an appropriate water quality model;
- Apply the model to several scenarios which involve different rates of effluent discharge from the new WWTP and background conditions;
- Assess the potential impact on Auckland Drain (associated with the North Site), and Dodd Creek (associated with the South Site); and
- Make recommendations on effluent limits to be reviewed by the MOECC, with which the design and operation of a new WWTP must comply.

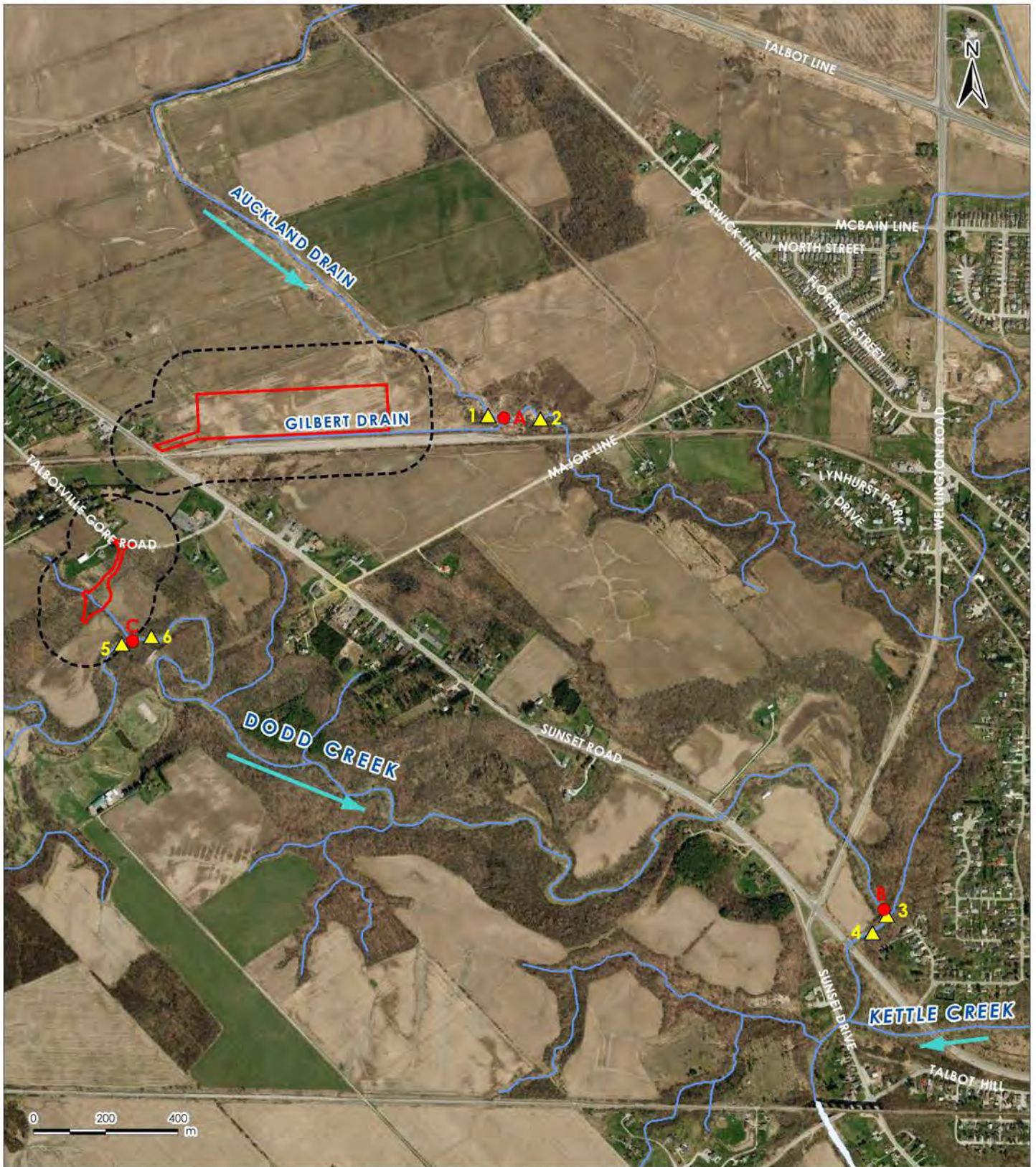
Following discussions with the MOECC, it was concluded that available water quality data for Dodd Creek was not adequate to characterize the background water quality of Dodd Creek. Therefore, an in-situ monitoring program was implemented. Dodd Creek and Auckland Drain were sampled on a seasonal basis. The water quality parameters of interest included total ammonia, total suspended solids, total kjeldahl nitrogen, and anions. In-situ measurements of temperature, pH, conductivity and dissolved oxygen were also taken at each sampling station along the creek.

A large number of municipal drains create a network across the sub-watershed. Two drains of interest are the Gilbert Drain and the Auckland Drain. One proposed location for the Talbotville WWTP is located on the Gilbert Drain (North Site). The Gilbert Drain runs from the west to the east into Auckland Drain which flows to the southeast into Dodd Creek. The South Site drains directly into Dodd Creek.

Water quality sampling was undertaken to obtain receiving water quality data for the Auckland Drain and Dodd Creek as follows:

- November 25, 2014 (Fall Sample);
- April 15, 2015 (Spring Sample); and
- July 14, 2015 (Summer Sample).

Samples were taken at the North Site, South Site and near the confluence of the Auckland Drain and Dodd Creek. Sample locations are illustrated in Figure 8.1.



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Legend

- Water Sampling Location
- ▲ Benthic Sampling Station
- ➔ Flow Direction
- Watercourse

Notes

1. Coordinate System : NAD 1983 UTM Zone 17N
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Township of Southwold
Talbotville WWTP
Class EA

Figure No.

8.1

Title

**Assimilative
Capacity Sampling
Locations**

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Assimilative Capacity Study

Benthic macroinvertebrates are small-bodied organisms that live on the bottom substrates of aquatic environments, such as lakes and rivers. They are commonly used as biological indicators of water and habitat quality. More specifically, macroinvertebrates are good indicators of overall water quality and environmental conditions for the following reasons:

- They are abundant in all types of aquatic systems;
- They are readily identifiable by experienced taxonomists;
- They usually remain in a localized area, as they have restricted mobility and specific habitat preferences / requirements;
- They are continuously subjected to all conditions of the local environment through their life cycle; and
- They integrate the effects of all pollutants and environmental conditions over time and, therefore, provide a holistic measure of water quality.

Field samples were collected at six locations organized as paired upstream reference and downstream exposure stations at each potential outfall:

- Auckland Drain, upstream of a proposed WWTP outfall option;
- Auckland Drain, downstream of a proposed WWTP outfall option;
- Dodd Creek, upstream of its confluence with the Auckland Drain;
- Dodd Creek, downstream of its confluence with the Auckland Drain;
- Dodd Creek, upstream of a proposed WWTP outfall option; and
- Dodd Creek, downstream of a proposed WWTP outfall option.

Sampling locations were chosen in an effort to minimize variation in habitat between paired stations. Riffle habitats with cobble, gravel and sand substrates and moderate to fast water velocity were targeted for each sampling station.

The baseline benthic macroinvertebrate survey was conducted in the Auckland Drain (outlet associated with the North Site) on November 25, 2014, and in Dodd Creek (outlet associated with the South Site) on April 15, 2015. The results of the benthic sampling suggest that water quality conditions are impaired in both receivers; therefore, the effluent quality criteria to be assigned to the proposed Talbotville WWTP should not exacerbate this condition. Complete results of the benthic sampling as part of the ACS are included in Appendix 8.1.

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Assimilative Capacity Study

Sampling results demonstrated elevated total suspended solids (TSS) and total phosphorous (TP) concentrations in Dodd Creek as well as the Auckland Drain, although to a lesser degree. Total ammonia-N concentrations were consistently low while elevated nitrate-N concentrations were evident in both receivers. Conductivity is elevated in both Dodd Creek and Auckland Drain, indicating high concentrations of dissolved solids. Results of benthic invertebrate sampling suggests that the water quality of both Dodd Creek and Auckland Drain are impaired.

The effluent limits recommended for the proposed Talbotville WWTP reflect dry ditch criteria which were verified to ensure compliance with MOECC policies for the receiver. The limits proposed are valid for the initial build out or an effluent capacity of 550 m³/d. These effluent limits should be verified and revised as needed upon introduction of additional plant capacity that increases effluent flow rates. Further monitoring of the receiving environment should be undertaken to support adoption of the effluent criteria proposed and to determine the need for any alterations to the criteria.

The recommended effluent limits and objectives for the Talbotville WWTP are outlined in Table 8.1 below:

Table 8.1: Effluent Limits and Objectives

| Parameter | Effluent Limit | Effluent Objective |
|--|--------------------------|--------------------------|
| CBOD5 | 10 | 5 |
| TSS | 10 | 5 |
| Total Phosphorous | 0.3 | 0.2 |
| Total Ammonia-N (non-freezing period) | 1.5 | 1 |
| Total Ammonia-N (freezing period) | 4 | 3 |
| pH | 6.0 to 8.5 | 6.0 to 8.5 |
| E. Coll | 150 organisms per 100 mL | 150 organisms per 100 mL |

Note:

- (a) Non-freezing period represents the period from May 1st through November 30th
- (b) Freezing period represents the period from December 1st through April 30th

The effluent limits and objectives presented in the table above were deemed to be acceptable by the MOECC on November 23, 2015.

9.0 PHASE 3 – DESIGN ALTERNATIVES

As part of Phase 3 of the Class EA planning process, design alternatives were developed to implement the preferred alternative identified within the Master Servicing Plan, which generally involved the selection of the location for the Talbotville WWTP. 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.

9.1 EVALUATION CRITERIA

A qualitative evaluation has been used to consider the suitability of alternative designs for the implementation of the Talbotville WWTP, and to identify significant advantages and disadvantages with respect to a specific set of evaluation criteria identified for each environmental component. Table 9.1 below outlines the evaluation criteria identified for this study.

Table 9.1: Evaluation Criteria

| CRITERIA | ISSUE | RATIONALE |
|------------------------|--|---|
| SOCIAL/ CULTURAL | Impact to Adjacent Land Uses/Public Health and Well-Being | Potential impacts to adjacent land uses, including requirements for minimum distance separation for sensitive land uses (MOECC Guidelines D-2). Potential nuisance impacts including noise from operating equipment, odour, etc. |
| | Cultural Heritage/Archaeological Resources | Disruption of site having significant archaeological, historical, or architectural value |
| | Meets Applicable Planning Policies – Official Plan and Provincial Policy Statement | Conforms to Municipality's Official Plan (OP), Provincial Policy Statement 2014 (PPS), and other relevant policies. |
| | Meets Applicable Planning Policies – Zoning Bylaw | Conforms to the Township's Zoning Bylaw |
| | Concerns from Aboriginal Communities | Land Claims/Treaty Rights, or other concerns expressed from Aboriginal Communities |
| NATURAL ENVIRONMENT | Floodplain Impact/Policy | Impacts to surrounding floodplain areas. |
| | Erosion and Sedimentation Impacts | Impacts and mitigation measures for erosion and sedimentation downstream |
| | Aquatic Habitats | Reduction or deterioration of habitat including potential SAR habitat Effects of contamination on aquatic life |

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Phase 3 – Design Alternatives

| CRITERIA | ISSUE | RATIONALE |
|-----------|--|--|
| | Terrestrial Habitats | Reduction or deterioration of wildlife habitat, including potential SAR habitat |
| | Migratory/Other Birds | Impacts to seasonal concentration areas or breeding bird habitat |
| | Groundwater Quality and Quantity/Source Water Protection | Changes or impacts to the quality and quantity of groundwater, Source Water Protection Policies/Impacts |
| TECHNICAL | Township Design Specifications | Design and Construction Standards for the Township of Southwold (2012) |
| | MOECC Guidelines | MOECC Guidelines D-2 (Compatibility between Sewage Treatment and Sensitive Land Uses) MOECC Design Guidelines for Sewage Works (2008) |
| | Modular Plant Design | Construction/expansion of plant is accomplished using phased modules |
| | Plant Expansion | Area required for logical and cost effective plant expansion |
| | Effluent Parameters | Ability to achieve current effluent limits |
| | Operator Requirements | Level of certification required by operators to meet plant classification |
| | Maintenance Requirements | Frequency and extent of maintenance activities |
| | Hydro | Power consumption and availability of hydro service |
| | Lifespan of Plant | Select technology which maximizes lifespan of plant to minimize costs to Township |
| | Additional Components | Determine which components are included for a certain technology and which are not |
| | Type of Technology | Proven technology, proof of successful installations within Canada and Southwestern Ontario within the last 10 years |
| | Warranty | Length of Warranties, service and support locations |
| | Gravity vs. Pumping | Requirement for pumping station and forcemain |
| | Depth of Trunk Sewers | Depth of trunk sewer would increase cost of installation, could also impose pumping requirements at headworks of plant |
| | Outfall Location | Effluent discharge location |

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Phase 3 – Design Alternatives

| CRITERIA | ISSUE | RATIONALE |
|----------------------|---------------------------------|---|
| | Site Access | Proper access routes on site required for maintenance vehicles, chemical delivery, operations personnel, trucking of sludge (includes entry and exit from site) |
| | Topography | Ability to construct on site with minimal earth moving requirements or close stability issues |
| | Geotechnical | Ensure that bearing capacity of soil allows for construction of plant |
| | MOECC Approvals | Environmental Compliance Approval (ECA) Application |
| | KCCA Approvals | Construction with/adjacent to KCCA Regulated Lands |
| | Constructability | Ease of construction on site dependent on existing site conditions |
| ECONOMIC / FINANCIAL | Initial Capital Costs | Capital costs required to construct treatment plant |
| | Property Acquisition Costs | Costs associated with required property acquisitions, since no Municipally owned land is available |
| | Operation and Maintenance Costs | Operation and maintenance costs, including labour, power, chemicals, sludge disposal, equipment replacement |
| | Lifecycle Costs | Costs incurred by the Township to replace equipment dependent on age and condition |
| | Modular Plant Design | Costs associated with the expansion of plant accomplished using phased modules |
| | Regulation Changes | Costs associated with upgrades triggered by more stringent effluent quality criteria set by MOECC |

9.2 EVALUATION OF ALTERNATIVES

The opportunities and constraints for each WWTP location were evaluated based on the criteria listed above. The identification of these opportunities and constraints are listed in Table 9.2, Table 9.3, Table 9.4, and Table 9.5 below.

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Phase 3 – Design Alternatives

Table 9.2: Site Evaluation Criteria (Economic)

| Issue | Description | North Site | South Site |
|----------------------|---|--|--|
| Capital Costs | Capital cost required to construct treatment plant. | Slight reduction in capital costs due to ease of constructability and minimal site constraints. Cost dependent on technology chosen and site layout. | Constructability issues and site constraints may increase construction costs dependent on technology chosen and site layout. |
| O & M | Operation and maintenance cost (includes labour, power, chemicals, sludge disposal, equipment replacement). | Operation and maintenance costs would be similar for both sites. | Operation and maintenance costs would be similar for both sites. |
| Property Acquisition | Property acquisition would be required as no municipally owned property is available. | Cost of property acquisition unknown as not yet discussed with landowner. | Subject property would be donated by the developer to the Township at no cost. |
| Lifecycle Costs | Costs incurred by the Township to replace equipment dependent on age and condition, higher quality equipment is preferred which may cost more upfront but will cost less to operate and maintain. | Type of treatment technology selected during predesign would determine life cycle costs. | Type of treatment technology selected during predesign would determine life cycle costs. |
| Modular Plant Design | Construction / expansion of plant is accomplished using phased modules. | Should ensure that initial capital investment is not a "throw away" cost if the next expansion phase deems components of it to be either redundant or undersized. Cost savings do exist to accurately size (or oversize) treatment works initially. Operating costs will increase when operating multiple smaller units in parallel. | Should ensure that initial capital investment is not a "throw away" cost if the next expansion phase deems components of it to be either redundant or undersized. Cost savings do exist to accurately size (or oversize) treatment works initially. Operating costs will increase when operating multiple smaller units in parallel. |
| Regulation Changes | More stringent effluent quality criteria would trigger upgrades and higher costs. | Technology selected should be adaptable so that it is not constrained if future more stringent effluent limits are put into place. | Technology selected should be adaptable so that it is not constrained if future more stringent effluent limits are put into place. |

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Phase 3 – Design Alternatives

Table 9.3: Site Evaluation Criteria (Technical)

| Issue | Description | North Site | South Site |
|---------------------------------------|--|---|--|
| Township Design Specifications | Design and Construction Standards for the Township of Southwold (2012). | Design and Construction Standards for the Township of Southwold shall be adhered to for the design and construction of the plant. | Design and Construction Standards for the Township of Southwold shall be adhered to for the design and construction of the plant. |
| MOECC Guidelines | MOECC Guideline D-2 (Compatibility between Sewage Treatment and Sensitive Land Use). | Site is currently zoned industrial and would be set back from existing or planned development, ensuring that an adequate separation distance exists >100 m. | Site is situated < 100 m from adjacent planned residential development. Township should ensure that odour and noise mitigation measures are in place that are acceptable to the MOECC. |
| MOECC Guidelines | MOECC Design Guidelines for Sewage Works (2008). | Ensure that design guidelines are followed where practical. Any legislation or regulations take precedence over the design guidelines and must be adhered to. | Ensure that design guidelines are followed where practical. Any legislation or regulations take precedence over the design guidelines and must be adhered to. |
| Modular Plant Design | Construction / expansion of plant is accomplished using phased modules. | Diversion (flow splitting) of flows from the inlet sewer to each module can create operational issues. | Diversion (flow splitting) of flows from the inlet sewer to each module can create operational issues. |
| Plant Expansion | Area required for logical and cost effective plant expansion. | Large, flat area to easily provide room for future plant expansion. | Limited space available for future plant expansion, constrained by steep wooded slopes to the north and KCCA regulated limit to south. |
| Effluent Parameters | Ability to achieve current effluent limits. | Effluent limits and objectives developed through the ACS were the same for the discharge location on the north site (Gilbert/Auckland) as they were for the south site. | Effluent limits and objectives developed through the ACS were the same for the discharge location on the south site (Dodd Creek) as they were for the north site. |
| Effluent Parameters | Ability to achieve current effluent limits. | Technology selected should be adaptable so that it is not constrained if future more stringent effluent limits are put into place. | Technology selected should be adaptable so that it is not constrained if future more stringent effluent limits are put into place. |
| Operator Requirements | Level of certification required by operators to meet plant | Ensure that operating authority or staff has the appropriate level of certification to | Ensure that operating authority or staff has the appropriate level of certification to |

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Phase 3 – Design Alternatives

| Issue | Description | North Site | South Site |
|--|---|---|---|
| | classification. | operate plant. | operate plant. |
| Maintenance Requirements | Frequency and extent of maintenance activities. | Ensure that operating authority or staff complete maintenance as required to prolong the life of the treatment plant. Technology selected should require minimal maintenance. | Ensure that operating authority or staff complete maintenance as required to prolong the life of the treatment plant. Technology selected should require minimal maintenance. |
| Hydro | Power consumption and availability of hydro service. | Ensure that required hydro service is available to supply treatment plant with sufficient power. Treatment options should evaluate power consumption requirements to minimize cost to the Township. | Ensure that required hydro service is available to supply treatment plant with sufficient power. Treatment options should evaluate power consumption requirements to minimize cost to the Township. |
| Lifespan of Plant | Select technology which maximizes lifespan of plant to minimize costs to Township. | Materials and equipment should be evaluated such that the Township is not burdened by replacement costs prior to end of design life. | Materials and equipment should be evaluated such that the Township is not burdened by replacement costs prior to end of design life. Equipment and materials should be selected based on their performance and investment cost over the lifetime of the plant. |
| Additional Technology / Implementation Considerations | Determine which components are included for a certain technology and which are not. Proven technology, proof of successful installations within Canada and Southwestern Ontario in similar climatic and soil conditions. Length of warranties, service and support locations. | Township should ensure all equipment, materials, installation costs, etc. are accounted for during preliminary design. Technology should be selected during preliminary design which limits risk to Township. Ensure that technology selected has sufficient warranty period to protect the Township from defective equipment and nearby service and support locations. | Township should ensure all equipment, materials, installation costs, etc. are accounted for during preliminary design. Technology should be selected during preliminary design which limits risk to Township. Ensure that technology selected has sufficient warranty period to protect the Township from defective equipment and nearby service and support locations. |
| Gravity vs. Pumping | Requirement for pumping station and forcemain. | Trunk sanitary sewer could flow to site via gravity. Would require on-site pumping station to lift flow into headworks. | Trunk gravity sewer could flow to site via gravity. Pumping station not required. |
| Depth of Trunk Sewers | Depth of trunk sewer would increase cost of installation, could also impose pumping requirements at headworks of plant. | Longer trunk sewer length required would result in deeper depth of pipe. | Shorter trunk sewer length required would result in shallower depth of pipe. |

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Phase 3 – Design Alternatives

| Issue | Description | North Site | South Site |
|--------------------------------------|--|--|--|
| Outfall Location | Effluent discharge location. | Outfall to Gilbert Drain. | Outfall to Dodd Creek. |
| Site Access | Proper access routes on site required for maintenance vehicles, chemical delivery, operations personnel, trucking of sludge (includes entry and exit from site) and access for future expansion works. | No apparent issues with access to site. | Site layout must ensure that access roads are designed with adequate width and do not exceed maximum slope. Layout must allow for truck access and maneuvering and consider future expansion needs. |
| Topography / Constructability | Ability to construct on site with minimal earth moving requirements or slope stability issues. | No apparent issues with ability to construct on site. | Large variation in topography across site. Earth works and/or retaining wall may be required. |
| Geotechnical | Ensure that bearing capacity of soil allows for construction of plant. | Geotechnical investigation would need to be undertaken for this site. | Geotechnical investigation report should be referenced. Additional boreholes may be necessary depending on site layout. |
| MOECC Approvals | Environmental Compliance Approval (ECA) Application. | ECA must be obtained prior to commencement of construction activities. Approximate timeline for ECA approval is 6-12 months. | ECA must be obtained prior to commencement of construction activities. Approximate timeline for ECA approval is 6-12 months. |
| KCCA Approvals | Construction of a wastewater plant should not be located within the regulatory flood hazard limit. | Construction will not impact regulatory flood hazard limits. | Permission should be obtained from KCCA for minor alterations to the regulatory flood hazard limit to allow for the construction of the plant to extend into the current floodplain. This would allow for greater flexibility to locate treatment works on site. Approval will be required prior to issuance of ECA. |
| Constructability | Ease of construction on site dependent on existing site conditions. | Minimal constraints to constructability on site. | Moderate constraints (topography, regulated limits, etc.) exist on site, design of site must consider and mitigate these constraints. |

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Table 9.4: Site Evaluation Criteria (Natural Environment)

| Issue | Description | North Site | South Site |
|--|--|--|---|
| Floodplain Impact / Policy | Impacts to surrounding floodplain areas. | Entire site can be situated outside of floodplain (confirmation needed for floodplain mapping). | Future expansions may encroach on Regulated Floodplain, requiring approval and permitting from KCCA and potential earthworks. |
| Erosion and Sedimentation Impacts | Impacts and mitigation measures for erosion and sedimentation downstream. | Minimal erosion concerns. | Erosion mitigation measures required since site is situated adjacent to Dodd Creek floodplain. |
| Aquatic Habitats | Reduction or deterioration of habitat including potential SAR habitat. Effects on contamination on aquatic life. | No anticipated impacts to aquatic habitats or species at risk. | No anticipated impacts to aquatic habitats or species at risk. |
| Terrestrial Habitats | Reduction or deterioration of habitat including potential SAR habitat. | No anticipated impacts to terrestrial habitats (field currently utilized for row corn) or species at risk. | Some tree clearing/vegetation removal required. Potential for habitats for species at risk and plant species at risk requiring additional investigation/surveys and mitigation/compensation measures. |
| Migratory/Other Birds | Impacts to seasonal concentration areas or breeding bird habitat. | Area not currently treed. No impacts to bird habitat. | Some tree clearing required. Additional investigation needed to determine impact to potential bird habitats/seasonal concentration areas. |

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Table 9.5: Site Evaluation Criteria (Social / Cultural)

| Issue | Description | North Site | South Site |
|---|---|--|---|
| Impact to Adjacent Land Uses / Public Health and Wellbeing | Potential impacts to adjacent land uses, including requirements for minimum distance separation for sensitive land uses (MOECC Guideline D-2). Potential nuisance impacts including noise from operating equipment, odour, etc. | Site is located within Industrial land designation, no anticipated impacts to adjacent land uses. Appropriate noise and odour mitigation measures to be implemented. | Site is less than the recommended 100 m from residential land uses. MOECC must be consulted to determine required separation distance/additional mitigation measures. |
| Cultural Heritage / Archaeological Resources | Disruption of site having significant historical, architectural, or archaeological value. | Site within disturbed area (agricultural/rail line). Low potential for disruption to archaeological/cultural heritage resources. | Low potential for disruption to archaeological/cultural heritage resources. |
| Planning Policies – Official Plan and Provincial Policy Statement | Conforms to the Township's Official Plan - OP, and Provincial Policy Statement – PPS (2014). | Located within Industrial Land Use Designation (Schedule A-1): eastern portion of site may touch upon Hazard Lands (Schedule B-1). Development must conform to policies within Section 2.3 of the Official Plan, which may include the implementation of flood proofing measures to the satisfaction of KCCA. No significant natural heritage features are identified on Schedule B. In compliance with PPS. | Located within Residential Land Use Designation (Schedule A-1), and Hazard Lands (Schedule B-1). Development must conform to policies within Section 2.3 of the Official Plan, which may include the implementation of flood proofing measures to the satisfaction of KCCA. Woodlands above and below 4 hectares are identified on Schedule B and is subject to an Environmental Impact Statement (EIS). Significance of natural features to be determined by EIS for compliance with PPS. |
| Planning Policies – Zoning Bylaw | Conforms to the Township's Zoning Bylaw. | Zoned as CM1 –Commercial Industrial. May be subject to a zoning amendment. | Zoned as Residential and Natural Area and Adjacent Lands. Subject to an EIS, and Zoning Bylaw amendment. |
| Concerns from Aboriginal Communities | Land Claims / Treaty Rights. | No concerns expressed to-date, will continue consultation throughout project. | No concerns expressed to-date, will continue consultation throughout project. |

9.3 PRELIMINARY PREFERRED ALTERNATIVE

Provided that appropriate mitigation and compensation measures are implemented with regard to natural environment and minimum distance separation guidelines, and applicable permitting and approvals are received, both the North and South sites could be chosen for the new Talbotville WWTP. Figure 9.1 and Figure 9.2 illustrate possible treatment plant configurations for each site.

9.3.1 Consultation

A presentation was given to the Township of Southwold's Council (December 14, 2015), prior to the Public Information Centre (December 16, 2015). Based on significantly lower costs associated with land required for the WWTP, as well as the elevation of the site making a pumping station unnecessary, Council confirmed that the South Site was their preferred location.

Additional communications with Ricor Engineering, on behalf of DHP Contracting, provided information pertaining to subsequent fieldwork in support of the South Site. These communications are included in Appendix 2.5 and Appendix 7.1.

9.4 PREFERRED LOCATION

Based on the evaluation above and guidance from the Township of Southwold staff and Council, the South Site was confirmed as the preferred WWTP location, provided that appropriate mitigation and compensation measures and subsequent permitting and approvals are received.

9.5 WASTEWATER TREATMENT TECHNOLOGY ALTERNATIVES

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 considered during evaluation included, but were not limited to:

- Ability for logical and cost effective plant expansion;
- Ability to meet effluent limits and objectives;
- Operational and maintenance costs;



December 2015
165500796



Legend

- Potential WWTP Site
- Watercourse
- Property Line (approx.)
- Municipal Boundary

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. 2010 orthoimagery © First Base Solutions, 2015. The image has been edited to remove an agricultural pond which no longer exists.

Client/Project

Township of Southwold
Talbotville WWTP
Class EA

Figure No.

9.1

Title

**North Site -
Possible WWTP
Configuration**



December 2015
165500796



- Legend**
- Potential WWTP Site
 - Watercourse
 - Property Line (approx.)
 - Municipal Boundary

Client/Project
Township of Southwold
Talbotville WWTP
Class EA

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. WWTF layout from Ricor Engineering Ltd. (November 2015).
 3. Base Features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2015.
 4. 2010 orthoimagery © First Base Solutions, 2015.

Figure No.
9.2

Title
**South Site -
Possible WWTP
Configuration**

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- Life cycle costs; and
- Proven technology, proof of successful installations within Canada and Southwestern Ontario (similar climate) within the last 10 years.

A brief overview of the following technologies is provided in subsequent sections:

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

9.5.1 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.

9.5.2 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.

9.5.3 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.

9.6 PREFERRED TREATMENT TECHNOLOGY

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.

All alternatives presented would be technically feasible and would provide reliable treatment and as so, the appropriateness of each is to be determined in the preliminary design phase.

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.

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

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Summary of Cost Opinions

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.

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:

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Summary of Cost Opinions

- 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 opinion provided in this report, Stantec considers it 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.

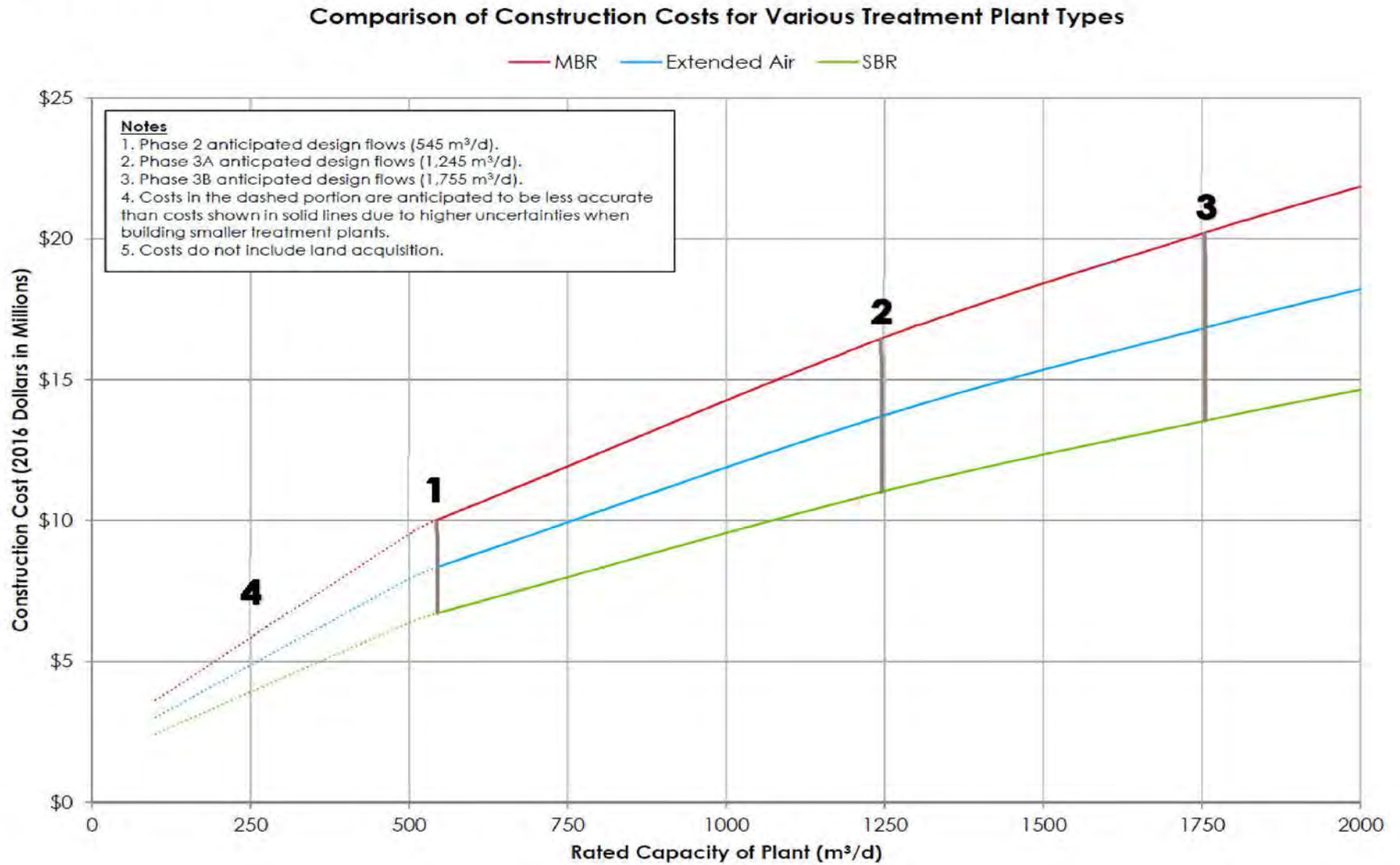
10.2 TALBOTVILLE WWTP OPINON OF PROBABLE COST

Figure 10.1 illustrates the comparison of construction costs for various treatment plant types at various rated capacities. Construction costs are -10% / +30% and do not include engineering, inspection/testing, or H.S.T.

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Summary of Cost Opinions

Figure 10.1: Comparison of Construction Costs for Various Treatment Plant Types



10.3 ENVIRONMENTAL RECOMMENDATIONS AND MITIGATION MEASURES

10.3.1 Potential 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 during the detailed design of the Talbotville WWTP.

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 and Forestry

- Fish Collection Permit
- Endangered Species Act (2007)

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

10.3.2 Recommended 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 10.2 below summarizes typical recommended mitigation and enhancement measures, and suggested application, to minimize and mitigate the potentially adverse environmental impacts associated with the Talbotville WWTP 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.

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Summary of Cost Opinions

Table 10.2: 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 construction of the proposed WWTP 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"> • There is low potential for impacts to aquatic species at risk during construction; however, the following measures should be |

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Summary of Cost Opinions

| Potential Impact | Typical Recommended Mitigation and Enhancement Measures |
|---|---|
| | <p>considered in protecting potential habitats.</p> <ul style="list-style-type: none"> • Improve water quality by incorporating enhanced erosion control. • Restore riparian vegetation cover through the planting of overhanging grasses, forbs and shrubs, to provide cover, shade and a source of food (insects). • 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 by the MNRF 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 MNRF protocols. |
| Terrestrial Habitat and Species | |
| Impacts on species at risk | <ul style="list-style-type: none"> • Consultation with MNRF during detailed design is recommended in order to identify additional habitat/species surveys and requirements under the ESA. |
| 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. |

TALBOTVILLE WWTP SCHEDULE C CLASS EA

Summary of Cost Opinions

| Potential Impact | Typical Recommended Mitigation and Enhancement Measures |
|---|---|
| | <ul style="list-style-type: none">• 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. |

11.0 CONCLUSIONS

11.1 OVERVIEW

This Schedule C Municipal Class EA has been undertaken to build upon the recommendations within the Talbotville & Ferndale Master Servicing Plan, to determine the preferred location of the new Talbotville WWTP, and framework for choosing the treatment technology needed to reach effluent limits as approved by the MOECC.

The following summarizes the results of the Talbotville WWTP Class EA.

11.2 CONSULTATION

In accordance with the requirements of the Class EA, a Notice of Project Commencement, PIC Notice and Notice of Completion were published in a local newspaper. All appropriate comments received were incorporated into the Class EA (Environmental Study Report). 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 Consultation Log was completed for this project and documents the consultation process with Aboriginal communities contacted as part of the Class EA process.

11.3 WASTEWATER TREATMENT ALTERNATIVES

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**.

11.4 PREFERRED TALBOTVILLE WWTP LOCATION

Based on the evaluation above and guidance from the Township of Southwold staff and Council, the South Site was confirmed as the preferred WWTP location, provided that appropriate mitigation and compensation measures and subsequent permitting and approvals are received.

11.5 PREFERRED TALBOTVILLE WWTP TECHNOLOGY

Items considered during the evaluation include, but were not limited to:

- Ability for logical and cost effective plant expansion;
- 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.

The following technologies would be technically feasible and would provide reliable treatment and as so, the appropriateness of each is to be determined in the preliminary design phase

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