Middlesex Centre Master Servicing Plan Class EA

Project File

April 2010

Executive Summary

1.0 INTRODUCTION

The Municipality of Middlesex Centre is a 588 km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan was required.

This study was conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act. Based upon the findings of the Master Servicing Plan, the Municipality has adopted a set of Guiding/Servicing Principles to assist Council in evaluating servicing issues. This document acts as a policy document from which implementation tools will be subsequently developed. The Master Servicing Plan has also identified certain strategic municipal and community level projects.

The public was encouraged to participate in the development of the Master Servicing Plan through three separate Public Information Centres, held between May 2009 and February 2010, throughout the Municipality. Notifications seeking input were also sent out to relevant agencies and stake holders.

2.0 GUIDING PRINCIPLES

In order to review the issues and opportunities in the Municipality with regards to servicing over the 20-year planning period, the following principles to guide future development were established by Middlesex Centre.

1. The MSP should be informed by the Municipality's Strategic Plan.

2. Servicing solutions should suit the Municipality's Growth Plan – If Middlesex Centre wishes growth in an area, the MSP would not and should not 'veto' it. However, areas that are not readily provided with municipal services would be costly (capital costs and operational costs).

3. Preference should be for long term servicing solutions over interim solutions.

4. All services to be fully funded through adequate planning, budgeting and identified revenue streams.

5. Servicing solutions should be developed which minimize risk to the municipality, users and others.

6. Proven, cost effective technologies that should be in long term use and are capable of continuous improvement should be utilized.

7. Middlesex Centre should service Middlesex Centre users, where possible.

8. Recommended servicing solutions should be 20-year solutions and ensure that there is expandability to 40-years, if possible (or to the life expectancy of the infrastructure).

9. Service Extension through Integration – Future growth and servicing should use existing infrastructure as much as possible to promote cost effectiveness.

10. Network Servicing versus Linear Servicing – A network of streets is more efficiently serviced than the equivalent length of a linear development.

11. High versus Low – As water servicing is supplied by pressure, development would be preferred at higher elevations to utilize gravity in sanitary and storm services.

12. Minimize Crossings – Where possible, servicing should attempt to avoid crossing physical features such as the Lake Huron Pipeline, hydro corridors, other utilities and naturalized areas.

13. Minimize Complexity – Examples include pumping from one pumping station to another, having two systems service one community, servicing occasional/seasonal users and servicing isolated development.

3.0 IMPLEMENTATION OF SERVICING RECOMMENDATIONS

The table below gives an overview of the servicing recommendations for solid waste, transportation, water, wastewater and stormwater management, along with an approximate implementation schedule.

SERVICE AREA	**0-1 Years**	**1-5 Years**	**5-10 Years**	**10 + Years**
SOLID WASTE	ongoing			
TRANSPORTATION – Transportation System Management				
Access Management				
Review access policy to minimize impacts on existing and future high volume roads.		✓		

SERVICE AREA	0-1 Years	1-5 Years	5-10 Years	10 + Years
Operational Improvements				
Continue with Municipal traffic count program required to monitor traffic volumes at regular intervals. Monitoring program will assist in determining required operational improvements when level of service is approaching capacity.	✓			
Improved Safety				
Conduct municipal-wide assessment of signage, traffic control, pavement marking and roadside barriers and implement improvements on a priority basis.		✓		
Assess need for traffic management measures that effectively balance role and function of roadway with user safety.		✓		
Develop evaluation process (guidelines and criteria) for reviewing control measures on a location by location basis.		✓		
Truck Route Designations / Upgrades				
Confirm by-laws that will stipulate the load factors, axle weight, vehicle height, hazardous goods restrictions and other criteria for municipal roadways to be conformed to by users.		✓		
Road Rationalization				
Confirm road hierarchy (local, collector, arterial) and designate municipal roadways within hierarchy.		✓		
Identify appropriate cross section and surface standards for road classes.		✓		
TRANSPORTATION - Travel Demand Management				
Plan Land Use				
Ensure managed growth. Review traffic impact study for new development.		✓		
Public Transportation				
Support work by others for increasing use of alternative transportation modes.		✓		
Promote carpool lot use and identify spaces in			✓	

SERVICE AREA	0-1 Years	1-5 Years	5-10 Years	10 + Years
existing public parking areas lots for commuter use potential.				
Promote Cycling and Walking				
Construct paved shoulders on major roads.			✓	
TRANSPORTATION – Network Expansion / Improvements				
Infrastructure Improvements				
Maintain current infrastructure.	ongoing			
Support roadwork by others for development.	ongoing			
Widen roads that have reached capacity when other solutions are not sufficient.				✓
WASTEWATER				
Arva				
Middlesex Centre to negotiate the terms of an amended sanitary agreement with the City of London. If this is not possible, Middlesex Centre may need to proceed with a Class EA to evaluate recommended servicing options.	✓			
Ilderton				
Complete Ilderton Water and Wastewater Servicing Class EA to determine wastewater treatment capacity that is needed to meet future growth.	✓			
Promote gravity servicing to reduce the number of pumping stations in operation. Would result in lower complexity in both operation and cost for Middlesex Centre. If a new PS is proposed, then proponent should investigate decommissioning of an existing PS.	ongoing			
Kilworth-Komoka				
Expansion of Komoka WWTF to accommodate future flows from Kilworth and Delaware.	✓			
Commence Kilworth West Sanitary Trunk Connection to Komoka WWTF Class EA. **(10+ Years, **however**, 0-1 Years tentative upon development)*	✓*			
Upgrade Komoka PS		✓		

SERVICE AREA	0-1 Years	1-5 Years	5-10 Years	10 + Years
Address sewer deficiencies along Komoka road if capacity issues arise with development outside of current growth boundary.			✓	✓
Delaware				
Council to determine whether to construct a communal wastewater system, complete with sanitary sewers, pumping station and forcemain to Komoka WWTF.	based on Council approval			
WATER				
Ilderton				
Upgrade storage capacity to suit current and future demands.		✓		
Delaware				
Implement storage upgrades as noted in the Komoka-Delaware Municipal Servicing Implementation Study.			✓	
Implement connection to Komoka distribution system as noted in the Komoka-Delaware Municipal Servicing Implementation Study.		✓		
Arva				
Undertake Class EA process to determine servicing options.			✓	
Melrose				
Connect to Komoka-Mt. Brydges Water Supply System at the end of the current pump stations life cycle.		✓		
STORMWATER				
Implement Stormwater Management Policy document.	✓			

Table of Contents

List of Tables

Table of Figures

List of Appendices

1.0 Introduction

1.1 INTRODUCTION

The Municipality of Middlesex Centre (Middlesex Centre) has undertaken a Master Servicing Plan (MSP). This is a strategic document to assist in the overall planning for a period of up to 20 years. The objectives of this MSP are as follows:

- Key problems and opportunities facing the municipality with regard to municipal infrastructure are properly identified;
- Past work, current knowledge and future trends and technology are adequately analyzed and identified to the municipality;
- Cost effective, sustainable and timely solutions are developed;
- For the Steering Committee to reach consensus as to the MSP strategy based on Stantec's work; and
- The MSP results in the implementation of the required projects on a cost effective and timely basis.

The five servicing areas that have been reviewed are:

- Wastewater;
- Water;
- Solid Waste;
- Stormwater Management; and
- Transportation.

1.2 STUDY OVERVIEW

The MSP provides a summary of existing conditions for services for Middlesex Centre. Servicing needs are identified and alternatives are developed to address these needs. Recommendations have been developed for the following municipal infrastructure: wastewater, water, solid waste management, stormwater management and transportation. The assessment for each of these services are summarized in the *Preparation of the Master Servicing Plan Request for Proposal, Municipality of Middlesex Centre (Stantec, 2008),* found in Appendix 1.1.

Through regular meetings between the Steering Committee and Stantec, modifications or revisions may have been made to the scope of work required.

1.3 STUDY SCHEDULE

The MSP was initiated in March 2009. Public Information Centre's (PICs) were held throughout the Study to obtain feedback and comments regarding problem identification and servicing alternatives. The MSP study concluded (to be added).

1.4 PROBLEM IDENTIFICATION

The Municipality of Middlesex Centre is a 588 km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, stormwater management, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required.

1.5 STEERING COMMITTEE

As part of the MSP development process, Middlesex Centre was represented by a Steering Committee to review Stantec's work and to provide guidance to Stantec. The members of the Steering Committee are:

- Maureen A. Looby, M.Eng., P.Eng., Director – Public Works and Engineering, Municipality of Middlesex Centre;
- Cathy Saunders, CAO / Clerk, Municipality of Middlesex Centre (until November 2009);
- Marc Bancroft, MPL, MCIP, RPP, Senior Planner, Municipality of Middlesex Centre; and
- Joe Heyninck, P.Eng., Development Advisory, IBI.

Meetings with the Steering Committee were undertaken to present the problem statement, study approach and development of alternative servicing strategies. Through discussions between Stantec and the Steering Committee, a list of guiding principles was developed to guide the MSP process.

1.6 ENVIRONMENTAL ASSESSMENT PROCESS

The Ontario Environmental Assessment Act (Queens Printer for Ontario, 1990) in applying its requirements for undertakings identifies two types of environmental assessment (EA) planning and approval processes: Individual EAs (Part II of the *EA Act*), and Class EAs (Part II.1 of the *EA Act)* which are projects that are approved, subject to compliance with an approved class EA process with respect to a class of undertakings (MEA, 2007).

1.6.1 Municipal

The Municipal Engineers Association (MEA) developed Class EA documents for municipal road, water, and wastewater projects which, since 1987, are approved under the Ontario *EA Act*. A review and update of the Municipal Class EA took place in 1993 and their approval was extended. In 2000, the Class EAs for municipal road, water, and wastewater projects were consolidated and updated, and subsequently approved and included in the amended Municipal Class EA document – October 2000, as amended in 2007.

1.6.2 Planning and Design Process

1.6.2.1 Project Category

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

Schedule A projects have minimal adverse environmental effects and are pre-approved and therefore many proceed to implementation without the full planning process. Projects include municipal maintenance and operational activities.

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 are to be notified, no formal public consultation process is required.

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

Schedule C projects have the potential for significant environmental effects and must follow the full planning and documentation procedures specified in the Class EA document. An Environmental Study Report must be prepared and filed for review by public and review agencies. Projects generally include the construction of new facilities and major expansions to existing facilities (MEA, 2007).

1.6.2.2 Planning Process

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 and review agency contact is mandatory during this phase and input received along with information on the existing environment is used to establish the preferred solution. It is at this point that the appropriate Schedule (B or C) is chosen for the undertaking. If Schedule B is chosen, the process and decisions are then documented in a Project File. Schedule C projects proceed through the following Phases;

- Phase 3 – Examination of alternative methods of implementing the preferred solution established in Phase 2. This decision is based on the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects;

- Phase 4 – Preparation of an Environmental Study Report (ESR) summarizing the rationale, planning, design and consultation process of the project through Phases 1-3. The ESR is then to be made available to agencies and the public for review; and

- 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.

Figure 1.1 illustrates the Municipal Class EA process.

1.6.3 Middlesex Centre Master Servicing Plan Project Category

This project was initiated with the intention of completion as a Schedule B project. This approach would involve the preparation of a Master Servicing Plan document at the conclusion of Phase 1 and 2 of the Class EA process. This approach provides a broad level of assessment and would require specific projects to undergo investigations that are more detailed. The Middlesex Centre Master Servicing Plan Class EA Consultation Plan can be found in Appendix 1.2 and outlines the proposed EA process.

1.6.4 Project File

For projects following Schedule B, a Project File should be maintained. The intention of the Project File is to chronologically organize the steps taken from Phases 1 and 2. The Project File should contain a complete record of project correspondence, public consultation letters, notices bulletins, and memos outlining rationale in developing stages of the project, as well as copies of reports related to the project. Documentation for the Project File should be maintained so that it can be reviewed easily by the public (MEA, 2007).

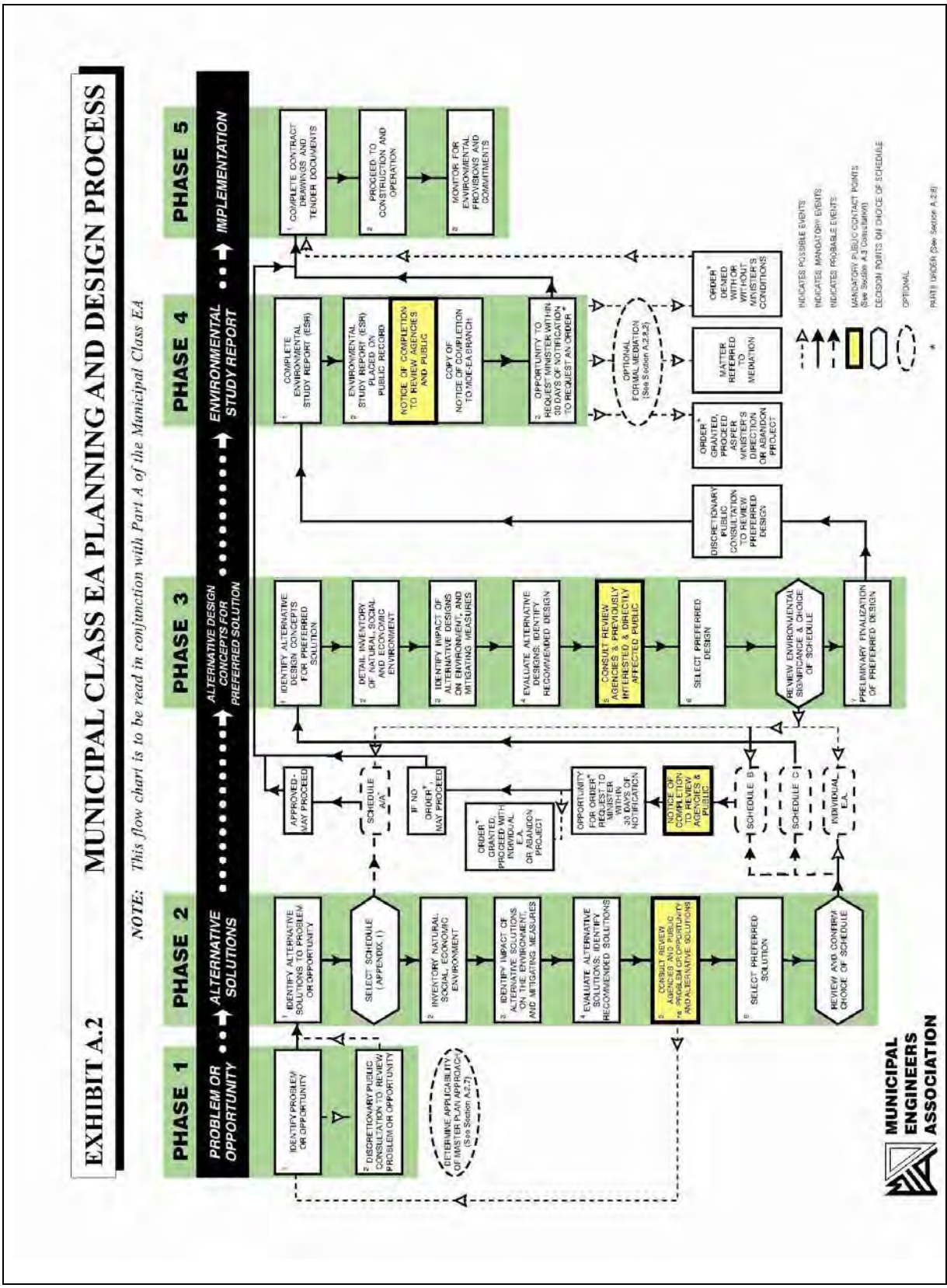


Figure 1.1 – MEA Class EA Planning and Design Process

1.6.5 Changing Project Status – "Part II Order"

Subsection 16 of the amended *EA Act* provides the Minister or delegate an opportunity to review the status of a project. Members of the public, interest groups, and review agencies may submit a request to the Minister or delegate to require a proponent to comply with Part II of the *EA 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 to the project;
- The adequacy 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
- 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 or delegate.

Timelines for the ministry's review or a decision on a request typically range from 30 to 66 days, depending on the class EA document. The ministry 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; and
- Grant the request and require the proponent to undergo an individual EA.

1.7 INTENT OF THIS REPORT

As shown in Figure 1.2, the intent of this report is not necessarily to detail when a specific municipal infrastructure project will be implemented but rather to review on behalf of the client the following:

- Project drivers or in other words the reasons for the need to initiate this project (such as to meet demand, have capacity for growth, etc); and
- Identifying the solutions that are possible and defining a preferred solution for the project.

This process is undertaken through the MEA Class EA process. With this information, the client has the ability to identify what would constitute a “trigger point” to implement the project. A “trigger point” is reached when the client considers that the need for the project (i.e. drivers) is greater than the cost to implement it. The MEA Class EA process currently allows a 10-year window for implementation following completion of the Class EA.

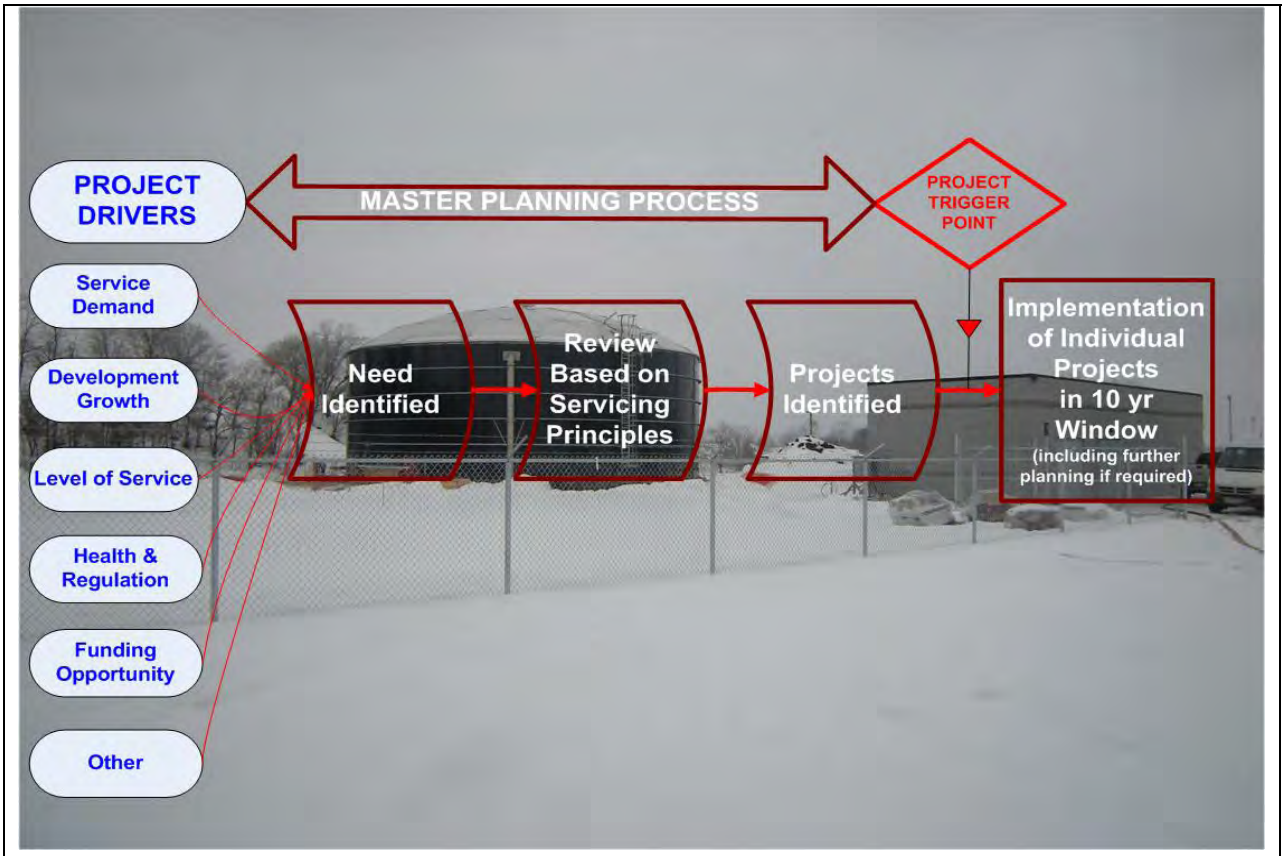


Figure 1.2 – Intent of Project

2.0 Public and Review Agency Consultation

2.1 INTRODUCTION

The consultation process is an integral component of the Class EA process. Effective communication with agencies, stakeholders and the general public can reduce or avoid controversy that ultimately lead to project delays and general discontent of project stakeholders. This section details the consultation process followed for the MSP.

2.2 REVIEW AGENCY CONSULTATION

A list of relevant agencies and the appropriate contact person was developed at the onset of the project. Throughout the process, these contacts were sent letters notifying them of the project and milestones including the development of the preferred planning alternative and the preferred design solution. Appendix 2.1 contains the agency contact list and Appendix 2.2 contains a copy of each response received.

2.3 STAKEHOLDER CONSULTATION

Residents within this area were provided with a Notice of Commencement, which contained information on Public Information Centre 1 (PIC 1), Notice of Public Information Centre 2 (PIC 2), Notice of Public Information Centre 3 (PIC 3) and Notice of Completion through Canada Post. Appendix 2.3 contains the stakeholders list.

2.4 PUBLIC INFORMATION MEETINGS

All agencies, stakeholders and the general public were notified of each of the three PICs through advertising in the London Free Press (LFP) before the scheduled PIC.

2.4.1 PIC 1

PIC 1 was held Thursday, May 14, 2009 at the Komoka Community Centre in Komoka. The PIC was held as a drop in session from 3:00pm to 5:00pm with a presentation at 3:30pm. A second drop in session was held later that evening from 7:00pm to 9:00pm with a presentation at 7:30pm. Twenty-one people were in attendance. Following the presentation, a question period was held. In addition, comment sheets were provided to all attendees. Appendix 2.4 contains a copy of the presentation handout and comment sheet given to all attendees, a copy of the attendance sheet, and copies of all comments received.

2.4.2 PIC 2

PIC 2 was held Tuesday, September 29, 2009 at the Komoka Community Centre in Komoka. The PIC was held as a drop in session from 7:00pm to 9:00pm with a presentation at 7:30pm. Nineteen people were in attendance. Following the presentation, a question period was held.

In addition, comment sheets were provided to all attendees. Appendix 2.5 contains a copy of the presentation handout and comment sheet given to all attendees, a copy of the attendance sheet, and copies of all comments received.

2.4.3 PIC 3

PIC 3 was held Tuesday, February 16, 2010 at the Coldstream Community Centre in Coldstream. The PIC was held as a drop in session from 7:00pm to 9:00pm with a presentation at 7:30pm. 15 people were in attendance. Following the presentation, a question period was held. In addition, comment sheets were provided to all attendees. Appendix 2.6 contains a copy of the presentation handout and comment sheet given to all attendees, a copy of the attendance sheet, and copies of all comments received.

2.5 NOTICES

Three notices were published throughout the Schedule B planning process for the Middlesex Centre Master Servicing Plan.

2.5.1 Notice of Commencement

The Notice of Commencement was published in the London Free Press in two separate issues in early May 2009. As well, the Notice was displayed on the Middlesex Centre website prior to the meeting. Appendix 2.7 contains of copy of the Notice of Commencement.

2.5.2 Notice of PIC 2

The Notice of PIC 2 was published in the London Free Press in two separate issues on Wednesday, September 23, 2009 and Saturday, September 26, 2009. As well, the Notice was displayed on the Middlesex Centre website prior to the meeting. Appendix 2.8 contains a copy of each date of the newspaper notice.

2.5.3 Notice of PIC 3

The Notice of PIC 3 was published in the London Free Press in two separate issues on Thursday, February 11, 2010 and Saturday, February 13, 2010. As well, the Notice was displayed on the Middlesex Centre website prior to the meeting. Appendix 2.9 contains a copy of each date of the newspaper notice.

2.5.4 Notice of Completion

The Notice of Completion was published in two separate issues of the London Free Press on Wednesday, April 28, 2010 and Saturday, May 1, 2010. The publishing of this Notice signals the beginning of the 30-day review period.

3.0 Supporting / Background Information

3.1 GUIDING / SERVICING PRINCIPLES

In order to review the issues and opportunities in the Municipality with regards to servicing over the 20-year planning period, the following principles to guide future development were established by Middlesex Centre.

1. The MSP should be informed by the Municipality's Strategic Plan.

2. Servicing solutions should suit the Municipality's Growth Plan – If Middlesex Centre wishes growth in an area, the MSP would not and should not 'veto' it. However, areas that are not readily provided with municipal services would be costly (capital costs and operational costs).

3. Preference should be for long term servicing solutions over interim solutions.

4. All services to be fully funded through adequate planning, budgeting and identified revenue streams.

5. Servicing solutions should be developed which minimize risk to the municipality, users and others.

6. Proven, cost effective technologies that should be in long term use and are capable of continuous improvement should be utilized.

7. Middlesex Centre should service Middlesex Centre users, where possible.

8. Recommended servicing solutions should be 20-year solutions and ensure that there is expandability to 40-years, if possible (or to the life expectancy of the infrastructure).

9. Service Extension through Integration – Future growth and servicing should use existing infrastructure as much as possible to promote cost effectiveness.

10. Network Servicing versus Linear Servicing – A network of streets is more efficiently serviced than the equivalent length of a linear development.

11. High versus Low – As water servicing is supplied by pressure, development would be preferred at higher elevations to utilize gravity in sanitary and storm services.

12. Minimize Crossings – Where possible, servicing should attempt to avoid crossing physical features such as the Lake Huron Pipeline, hydro corridors, other utilities and naturalized areas.

13. Minimize Complexity – Examples include pumping from one pumping station to another, having two systems service one community, servicing occasional/seasonal users and servicing isolated development.

3.2 POLICY REVIEW

The following policies, guidelines, regulations and acts were reviewed during the MSP process:

- Municipality of Middlesex Centre Official Plan: The purpose of the Official Plan is to provide for the orderly growth and development of the Township, and provide guidance in the management of change. In particular, the Official Plan includes goals and policies relating to land use, agricultural and settlement areas, and the classification of a Township natural areas system, economic, social and servicing matters;
- Municipality of Middlesex Centre Strategic Plan; and
- Other various regulations (as referenced in each individual technical memorandum).

3.3 POPULATION PROJECTIONS

Table 3.1 shows the estimated current populations of each community based on data by Watson & Associates and lot counts from aerial photos, completed by Stantec.

Table 3.1: Population Estimates

	Population			
Community	**2009**	**2019**	**2029**	**2049**
Ilderton (1)	2,200	3,100	3,500	4,800
Kilworth-Komoka (1)	3,400	5,000	6,800	10,200
Delaware (1)	1,600	2,100	3,200	4,800
Arva (2)	430	805	1,180	1,930
Ballymote (3)	130	--	--	--
Birr (3)	265	--	--	--
Bryanston (3)	200	--	--	--
Coldstream-Poplar Hill (3)	810	--	--	--
Denfield (3)	240	--	--	--
Lobo (3)	190	--	--	--
Melrose (3)	330	--	--	--

Notes:
(1) Middlesex Centre Population Projections (Watson & Associates, 2009)
(2) Stantec Estimated Population (Stantec)
(3) Estimated Population (by aerial lot count, Stantec)

4.0 Wastewater

4.1 GENERAL

Refer to Appendix 4.1 for the complete wastewater technical memorandum for further explanation of constraints, existing and future servicing, and any other relevant information regarding wastewater servicing in Middlesex Centre.

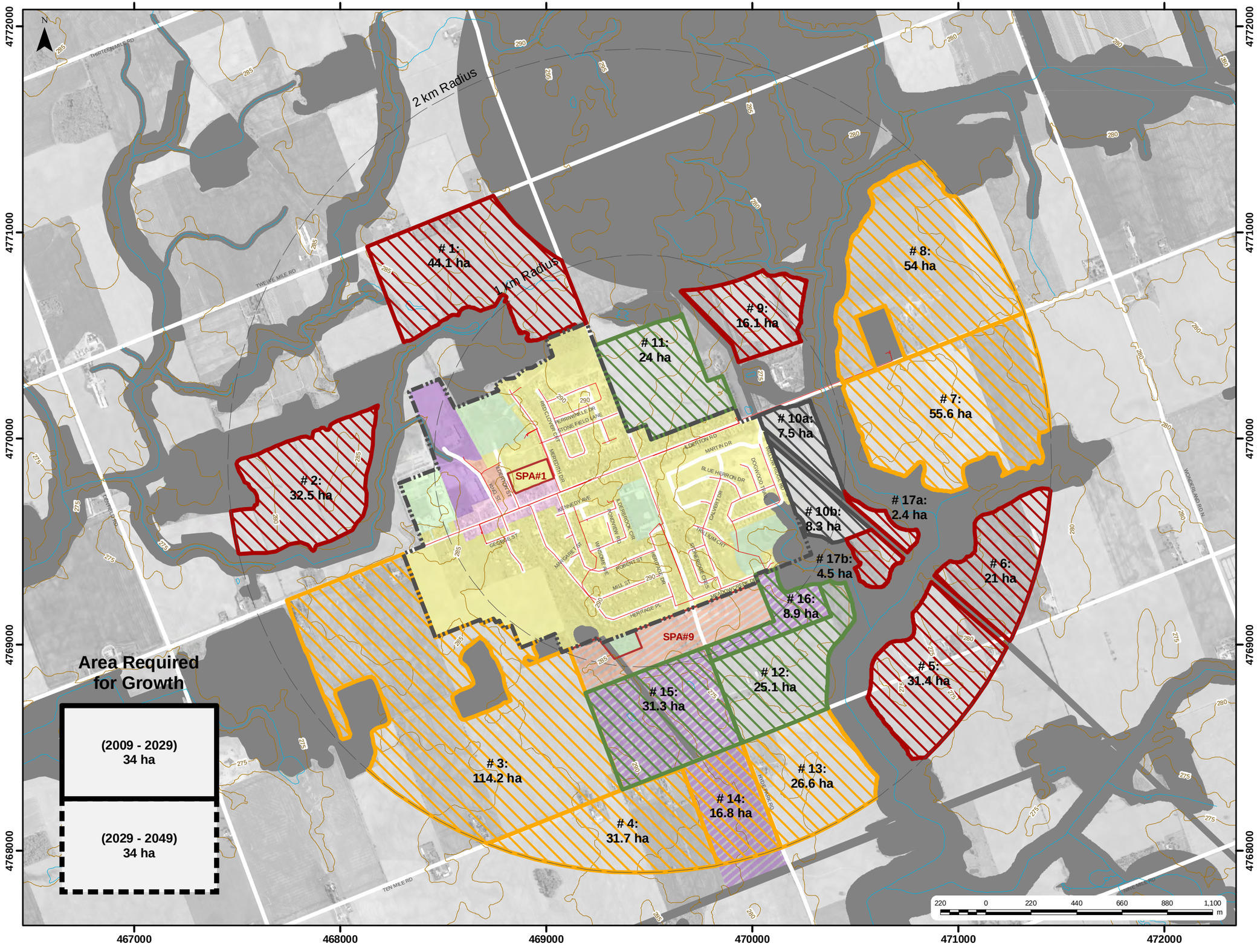
In general, collection of wastewater flows can be accomplished most economically by the use of relatively shallow gravity sewers which are directed to a wastewater treatment facility. More cost and complexity arise when deeper sewers are required and/or pumping stations and forcemains are required to collect wastewater and divert it to a wastewater treatment facility. The capital, operations and maintenance costs for wastewater servicing are very dependent upon topography and constraints of an area being serviced. Therefore in assessing the requirements, opportunities, and relative cost to provide wastewater services, this report will do this on the basis of constraints to the use of relatively shallow gravity sanitary sewers.

To better evaluate planning strategies for each community, two concentric rings have been superimposed over each community, centered on a main intersection. The first ring has a one kilometer radius and the second ring, a two kilometer radius. In terms of growth, it is more viable for future growth and servicing to use existing infrastructure to promote cost effectiveness. Therefore, projecting growth originating from the centre of the community outwards would best meet this objective. It is important to note that these rings do not inhibit or directly promote growth in a certain area, as if Middlesex Centre wishes growth in an area, the Master Servicing Plan would not and should not 'veto' it. However, areas that are not as readily provided with municipal services could be costly to develop.

4.2 ILDERTON

4.2.1 Growth

Figure 4.1 shows various undeveloped parcels in Ilderton and each is summarized in Table 4.1. For illustrative reasons, areas are bounded by the concentric rings, but should not be considered as absolute boundaries. When reviewing the serviceability of land within Ilderton, it is important to put the area of land required into context. After review, it appears that much of the 20-year growth could be allocated within the current growth boundary, in the southwestern quadrant of Ilderton. Future growth could also be accommodated quite easily just to the east of existing development in Ilderton. By providing a visual representation of the area required, the Municipality can readily examine other potential development areas and determine which is more logical.



Middlesex Centre

Stantec

Legend

- Area suitable for service extension with few (if any) issues or constraints
- Area capable for service extension with some issues or constraints
- Area constrained for service extension with significant issues or constraints
- Indetermined
- 5 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Watershed Boundary
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre

- Special Policy Area

Notes

Not an official planning document. Consult appropriate agencies for policies and mapping. Data used under license with Middlesex Centre and the Ontario Ministry of Natural Resources.
Projection: UTM Zone 17N, NAD 1983

Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
4.1	2	Feb. 2010

Title

Ilderton Area

Table 4.1: Ilderton Growth Options

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles (as found on pages 3.1/3.2)	Notes
AREAS SUITABLE FOR SERVICE EXTENSION WITH FEW (IF ANY) ISSUES OR CONSTRAINTS						
11	24	919	251	▪ This area is situated in the northeast quadrant of Ilderton ▪ Adjacent to existing development	Advantages ▪ Proximity to existing development would allow for easy integration into existing infrastructure (GP#9) ▪ Sanitary flows could drain by gravity into the existing collection system, and would not require construction of a pumping station to service this area (GP#5,11) ▪ Would provide a sufficient area for efficient growth for 20-year design horizon ▪ Geometry of parcel would promote network servicing (GP#10) ▪ Development of this area would eliminate need to cross various physical features and utilities corridors (GP#12)	▪ Adjacent to existing development allows for easy integration into community, which is centred around Ilderton Road & Hyde Park Road ▪ Very few constraints present ▪ Within 1km radius of centre of community (reduce sprawl)
12, 15, 16	40.3	1544	421	▪ This area is situated on the south side of Ilderton ▪ North of Ten Mile Road, on either side of Hyde Park Road	Advantages ▪ Could potentially service through a gravity sewer to the WWTF (GP#11) ▪ Not constrained by naturalized areas or utility corridors (GP#12) ▪ Close proximity to current growth boundary (GP#9)	▪ Outside of growth boundary, however, it has been zoned for rural/industrial development
INDETERMINED AREAS						
10a	7.5	287	78	▪ This area is situated in the southeast quadrant of Ilderton ▪ South of Ilderton Road, bordering eastern limit of existing development	Advantages ▪ Access to Ilderton Road would allow for ease of integration to existing infrastructure (GP#9)	▪ Proponent would have to approach LHPWSS for permission to develop areas surrounding transmission main corridor
10b	8.3	318	87	▪ This area is situated in the southeast quadrant of Ilderton ▪ South of LHPWSS corridor, bordering eastern limit of existing development	Advantages ▪ Road access to existing development, ease of integration to existing infrastructure (GP#9) ▪ Areas 10a and 10b provide sufficient area for efficient growth for design horizon	▪ Proponent would have to approach LHPWSS for permission to develop areas surrounding transmission main corridor
AREAS CAPABLE FOR SERVICE EXTENSION WITH SOME ISSUES OR CONSTRAINTS						
8	54	2068	564	▪ This area is situated in the northeast quadrant of Ilderton	Advantages ▪ Geometry of parcel would promote network servicing (GP#10) ▪ Gravity sewers could be used to service development and flow could be directed	▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl)

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles (as found on pages 3.1/3.2)	Notes
				▪ North of Ilderton Road, surrounding Oxbow P.S.	towards Ilderton Road (GP#11) ▪ Although a forcemain and pumping station would be required, parcels 7 and 8, which encompass a large area of land, could utilize this sanitary drainage area to make the construction costs more economical ▪ Could decommission pumping station at Oxbow P.S. (GP#13)? Disadvantages ▪ Servicing solution would be similar to that of Oxbow Public School. Forcemain and pumping station would be required to cross Oxbow Creek. (GP#11,12) ▪ Would most likely not be able to reuse existing forcemain that services Oxbow P.S. as it would be undersized. ▪ There is an existing PS ~500m to the west on Ilderton Road, consideration given to decommission and redirect flows (GP#5)	▪ Distance from centre of community may be a constraint ▪ Oxbow Creek is main constraint
7	55.6	2130	581	▪ This area is situated in the southeast quadrant of Ilderton ▪ South of Ilderton Road, across from Oxbow P.S.	Advantages ▪ Geometry of parcel would promote network servicing (GP#10) ▪ Gravity sewers could be used to service development and flow could be directed towards Ilderton Road (GP#11) ▪ Although a forcemain and pumping station would be required, parcels 7 and 8, which encompass a large area of land, could utilize this sanitary drainage area to make the construction costs more economical ▪ Could decommission pumping station at Oxbow P.S. (GP#13) Disadvantages ▪ Servicing solution would be similar to that of Oxbow Public School. Forcemain and pumping station would be required to cross Oxbow Creek. (GP#11,12) ▪ Would most likely not be able to reuse existing forcemain that services Oxbow P.S. as it would be undersized. ▪ There is an existing PS approximately 500m to the west on Ilderton Road, future consideration needs to be given to decommission it and redirecting flows (GP#5)	▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl) ▪ Distance from centre of community may be a constraint ▪ Oxbow Creek is main constraint
13,14	43.4	1662	453	▪ This area is situated in both the southwest and southeast quadrant of Ilderton ▪ South of Ten Mile Road	Advantages ▪ Geometry of parcel could potentially promote network servicing (GP#10) Disadvantages ▪ Situated on opposite of drainage divide as the WWTF, area relatively flat, but tends to drop in elevation further to the west (GP#11)	

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles (as found on pages 3.1/3.2)	Notes
4	31.7	1214	331	▪ This area is situated in the southwest quadrant of Ilderton ▪ South of Ten Mile Road	Advantages ▪ Geometry of parcel could potentially promote network servicing (GP#10) Disadvantages ▪ Situated on opposite of drainage divide as the WWTF, area relatively flat, but tends to drop in elevation further to the west (GP#11)	
3	114.2	4374	1193	▪ This area is situated in the southwest quadrant of Ilderton ▪ Between Ilderton Road and Ten Mile Road	Advantages ▪ Geometry of parcel could potentially promote network servicing (GP#10) Disadvantages ▪ Situated on opposite of drainage divide as the WWTF, area relatively flat, but tends to drop in elevation further to the west (GP#11)	▪ Road access to both north and south of parcel ▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl) ▪ Distance from centre of community may be a constraint
AREAS CONSTRAINED FOR SERVICE EXTENSION WITH <u>SIGNIFICANT</u> ISSUES OR CONSTRAINTS						
9	16.1	617	168	▪ This area is situated in the northeast quadrant of Ilderton ▪ North of Ilderton Road, between Hyde Park Road and Oxbow P.S.	Disadvantages ▪ Land slopes rapidly towards Oxbow Creek, could be problematic to service by gravity sewers (GP#11) ▪ To integrate servicing to existing infrastructure crossing of the LHPWSS corridor (high pressure water transmission main) or through naturalized area would be required (GP#12)	▪ Landlocked parcel ▪ Difficult to service as it is bounded by LHPWSS pipeline corridor to the west, MDS buffer to the north, and natural constraints on remaining sides
6	21	804	219	▪ This area is situated in the southeast quadrant of Ilderton ▪ East of Oxbow Creek	Disadvantages ▪ Would require a forcemain and pumping station to service this area to cross Oxbow Creek (GP#12) ▪ Due to distance from existing development, it may be uneconomical to service or tie these lands into existing infrastructure (GP#9)	▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl)
5	31.4	1203	328	▪ This area is situated in the southeast quadrant of Ilderton ▪ East of Oxbow Creek	Disadvantages ▪ Would require a forcemain and pumping station to service this area to cross Oxbow Creek (GP#12) ▪ Due to distance from existing development, it may be uneconomical to service or tie these lands into existing infrastructure (GP#9)	▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl)
1	44.1	1689	461	▪ This area is situated in the northwest quadrant of Ilderton ▪ Northwest corner of	Disadvantages ▪ The topography along Hyde Park Road near this area is between two drainage divide and could prevent flows from being transported by gravity sewer. A pumping station and forcemain along Hyde Park Road may be required.	▪ Near MDS buffer zone ▪ Constrained by natural areas to the south which is in between future and existing development

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles (as found on pages 3.1/3.2)	Notes
				Twelve Mile Road and Hyde Park Road	(GP#5,11)	
2	32.5	1245	339	▪ This area is situated in the northwest quadrant of Ilderton ▪ North of Ilderton Road	Disadvantages ▪ Land slopes away from Ilderton Road and therefore could be problematic to service and integrate into existing infrastructure (GP#9,11) ▪ Restricted on all sides by natural constraints (GP#12)	▪ Landlocked parcel

Notes/Comments:

1. **If an area is within the 20-year growth boundary for Middlesex Centre, it is assumed that servicing can be provided (Stantec's approach)**
2. If there is a nearby existing pumping station and a developer requires an additional pumping station to be constructed to service a new development, the Municipality would recommend the decommissioning of the existing pumping station and redirection of flows to the new pumping station. This would be to cap or reduce the number of pumping stations in Ilderton. The cost to decommission, redirect existing flow and construct a new pumping station would be borne by the developer.

4.2.2 Sanitary Collection Network

Ilderton's sewage collection network consists of five pumping stations. A network of gravity sanitary sewers and forcemains collect sewage from the community and transport sewage to various pumping stations and then to the Ilderton WWTF. Figure 4.2 illustrates the location of each pumping station within Ilderton. It also shows the general direction of flow within the community. Future trunk sewers are dependent on development. These routes should either:

- Allow for gravity flow to an existing pumping station; and/or
- Allow for gravity flow to a **temporary** pumping station.

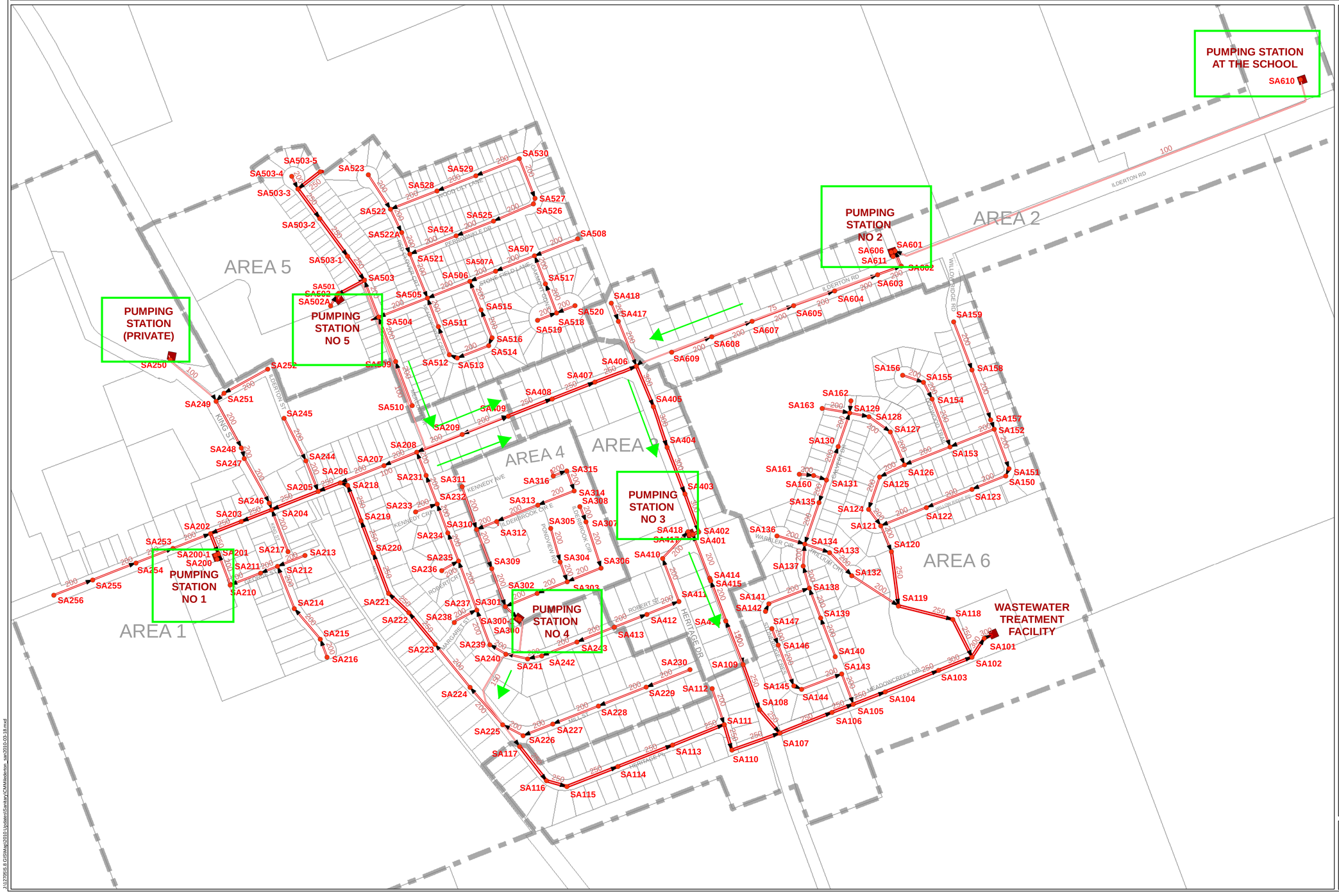
For a community the size of Ilderton, there are an above average number of pumping stations. Additional pumping stations within the community would become an economic and operations/maintenance burden for the Municipality. Limiting or reducing the number of pumping stations in Ilderton should be a long-term goal as it would reduce operational complexity and operating costs to the system. Ilderton's location between two drainage divides has been one of the driving elements for the number of pumping stations. It is important to take this factor into consideration in the planning of future trunk sewers. As well, it is not good practice for one pumping station to feed into another, as this would use up capacity for the receiving pumping station and increase operational complexity. It is recommended to set planning goals that will address future drainage areas and build collection systems towards long-term development.

4.2.3 Ilderton WWTF

The Ilderton WWTF is currently rated for 1,120 m^3/d annual average flow per its C of A. Flows currently average approximately 600 m^3/d as an annual average and reserve capacity has been largely committed to planned residential growth. There is a need to expand wastewater treatment to serve additional future growth within the Ilderton growth area within a 10-year time frame.

The scope of such an expansion will be identified in the *Ilderton Servicing Class EA*. This would be dependent on the rate of development as to when the expansion would be required. Proven cost effective technologies for long term use and are capable of continuous improvement should be utilized. Any expansion should be a 20-year solution that ensures there is expandability to 40 years, if possible. This expansion could be similar to that proposed for the Komoka WWTF in the *Komoka-Delaware Municipal Servicing Implementation Study (Stantec, 2009)*. Depending on design and/or effluent constraints either membrane bioreactor (MBR) or extended aeration (EA) technology could be considered, as both are currently utilized by the Municipality.

Ilderton Wastewater System



Municipality of Middlesex Centre

LEGEND

- 75mm
- 100mm
- 150mm
- 200mm
- 250mm
- 300mm
- Lateral Service Connection
- SA102 Maintenance Hole
- Pumping Station, Wastewater Treatment Facility
- Ilderton Pumping Station Collection Areas
- Parcels

1:3,500 (22" X 34")

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

J:\127055.8 GIS\Map\2010\Updates\Sanitary\CMMIlderton_san2010-03-18.mxd

4.3 ARVA

4.3.1 Growth

Within the current Official Plan growth boundary, there are two areas in the community that could experience residential growth. As the majority of land to the east of Richmond Street North has been developed, land to the west, bordering either side of Medway Road has the potential to be developed. There is another area of land to the north, bordered to the west by Richmond Street North and the Thames River to the east, which encompasses a significant woodlot. It should be noted that these locations and others **have not been** selected for actual development, but rather to assist in developing servicing policies for Arva.

Figure 4.3 shows various undeveloped parcels in Arva and each is summarized in Table 4.2.

4.3.2 Treatment

Middlesex Centre has an agreement with the City of London that allows them to collect and pump their sewage to London for treatment. This agreement limits growth in Arva, as the Agreement controls the amount of sewage that London will accept.

4.3.3 Servicing Solutions

Based on a review of servicing solutions by Middlesex Centre's Servicing Principles the following three solutions could be considered by Middlesex Centre with respect to sanitary servicing for development in Arva, and will be discussed in further detail:

- Do nothing;
- Amend City of London agreement; or
- Construct a new municipal wastewater treatment facility for Arva.

4.3.3.1 Option 1: "Do Nothing"

As with all Class EAs, alternative solutions to the project must be reviewed against the "Do Nothing" alternative. This option does not appear to be a logical alternative, as it would restrict any growth to occur in Arva. Therefore, by doing nothing, the problem of lack of sanitary capacity in Arva would not be solved and would inhibit future growth. As it stands, land within the current settlement boundary cannot be adequately serviced due to this constraint. If such land cannot be utilized, then future plans for Arva to expand beyond its growth boundary would not be possible. The Do Nothing option will not be carried forward.

475000 476000 477000

4767000

4766000

N

1 km Radius

Grain Handling Facility

SPA#19

EIGHT MILE RD

RICHMOND ST

SIR ROBERT PL

SIR JAMES CRT

ELGIN ST

ARVA ST

WELDON AVE

ST JOHN'S DR

CROYDON PL

CROYDON DR

KETWAY RD

BARTON AVE

MIDDLESEX CENTRE

LONDON

Typical WWTF Buffer Area

100 0 100 200 300 400 500 m

Middlesex Centre

Stantec

Legend

- Typical WWTF *(~ 500 m³/day)*
- 150 m Buffer Area
- 5 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Municipal Boundary
- Planning Constraints
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre
- Special Policy Area

Notes

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Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
4.3	**2**	**Feb. 2010**

Title

Arva Area

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles	Notes
AREAS SUITABLE FOR SERVICE EXTENSION WITH FEW (IF ANY) ISSUES OR CONSTRAINTS**						
	20.7	793	238	▪ This area is situated within the northwest and southwest quadrant of Arva ▪ West of Richmond Street	Advantages ▪ Proximity to existing development would allow for easy integration into existing infrastructure (GP#9) ▪ Sanitary flows could drain by gravity into the existing collection system, and would not require construction of a pumping station to service this area (GP#5,11) ▪ Development in this area would eliminate need to cross various physical features and utility corridors (GP#12) ▪ Subdivision plans have been drafted and illustrate effective network servicing (GP#10)	▪ Within current growth boundary ▪ Subdivision plans have already been created, would allow for development to begin almost immediately
AREAS SUITABLE FOR SERVICE EXTENSION WITH SOME ISSUES OR CONSTRAINTS**						
	7.4	283	85	▪ This area is situated within the northeast quadrant of Ava ▪ Richmond Street to the west, Medway Creek to the south east	Advantages ▪ Proximity to existing development would allow for easy integration into existing infrastructure (GP#9) Disadvantages ▪ Sanitary flows may require pumping in order to cross Medway Creek (GP#11) ▪ Development in this area may involve crossing of physical features (GP#12)	▪ Within current growth boundary ▪ Contains a significant woodlot

Notes/Comments:

WITHIN GROWTH BOUNDARY

1. **If an area is within the 20-year growth boundary for Middlesex Centre, it is assumed that servicing can be provided (Stantec's approach)**

Table 4.2: Arva Growth Options

4.3.3.2 Option 2: Amend Sanitary Agreement

The second alternative would involve a proposed amendment to the current sanitary agreement between Middlesex Centre and the City of London. Middlesex Centre could approach the City and ask for an increase in sanitary capacity to allow for development to occur **within** the current settlement boundary. As this land has subsequently been zoned, the main reason that development has been inhibited is due to lack of sanitary capacity.

Middlesex Centre would be responsible for negotiating the terms of an amended agreement with the City of London. Amending the City of London Sanitary Agreement appears to be the preferred solution. If an Agreement can not be reached with the City, Middlesex Centre may need to proceed with a Class EA as soon as possible.

4.3.3.3 Option 3: Construct a New Municipal WWTF for Arva

The third alternative would involve the construction of a new municipal WWTF for Arva. However, the Municipality would have to decide whether the construction would be justified or not, and if it provides a long term servicing solution for Arva. As well, existing residents serviced should not be assumed to be brought into a new system until the Municipality deems this to be in the rate payer's best interest.

Potential sites within the area of Arva need to have adequate buffer zones and a suitable receiving stream for the treated effluent. Figure 4.3 illustrates the approximate buffer area required. An assimilative capacity would have to be carried out to determine the imposed effluent limits and whether the receiving stream could adequately handle the flows generated from the WWTF.

Some considerations for this option include:

- Operational efficiency;
- Economics;
- Expandability;
- Location; and
- Technology.

The construction of a new WWTF in Arva could prove to be a long term solution for the sanitary capacity shortage that exists in Arva. However, this is secondary to amending the agreement with the City of London. Constructing a new WWTF would create a point source discharge to the Medway Creek, and will impact the environment. This option would only be considered if an agreement to provide service to the current community boundary through the City is not feasible. This will require the provision of additional sewage capacity, and require a Schedule B

Class EA to plan and evaluate servicing options. A Schedule C Class EA would be required for implementation. If a Class EA is required, then it would be recommended to bring the Do Nothing option back into consideration given the potential cost, complexity and impacts to the natural, social and economic environment. The EA would be municipally led, and funded by the benefiting parties.

A list of advantages and disadvantages for all three options can be found in Appendix 4.1.

4.3.3.3.1 Review of Alternatives

The preferred option for sanitary servicing in Arva would be to amend the agreement with the City of London. However, if an amendment cannot be made, it is recommended that a small WWTF be constructed, if there is sufficient growth to justify a municipally owned WWTF in Arva.

4.4 DELAWARE

4.4.1 Growth

Presently, Delaware has partial servicing with municipal water services being provided. Middlesex Centre recently completed an Environmental Study Report (Stantec, 2009) to develop a plan to provide for municipal wastewater servicing to Delaware. The timing for the implementation of full wastewater servicing has not yet been determined.

Future growth and development within the Official Plan boundaries for Delaware will occur primarily on the east side of the community. This land is at a higher elevation than the west side, which slopes down to meet the Thames River. Land between Harris Road and Wellington Street, between Wellington Street and Longwoods Road, to the south of Longwoods Road, and to the north of Harris Road, are potential locations for new subdivision development in Delaware. Outside of the growth boundaries, areas further south of Longwoods Road could also be potentially serviced in the future. It should be noted that other areas are not restrictive in terms of development, however, the above identified lands are situated at higher elevations and are more easily and economically feasible for sanitary servicing.

Figure 4.4 shows various undeveloped parcels in Delaware and each is summarized in Table 4.3.

4.4.2 Collection and Treatment

Delaware relies on private sewage systems. The Municipality has proposed that Delaware become serviced as future development, and as stated by the MOE, “should be fully serviced if at all possible”.

464000 465000 466000 467000 468000 469000

4752000 4751000 4750000 4749000

N

1: 8.5 ha

2: 8.8 ha

3: 27.7 ha

4: 105.4 ha

5: 40.9 ha

6: 48.7 ha

7: 58.3 ha

8: 11.9 ha

SPA#3 SPA#4 SPA#5 SPA#10 SPA#8

1 km Radius

2 km Radius

STRATHROY-CARADOC

MIDDLESEX CENTRE

Area Required for Growth

(2009 - 2029)
42 ha

(2029 - 2049)
57 ha

220 0 220 440 660 880 1,100 m

Middlesex Centre

Stantec

Legend

- Area suitable for service extension with few (if any) issues or constraints
- Area capable for service extension with some issues or constraints
- Area constrained for service extension with significant issues or constraints
- 5 m Contour
- Watermain
- Watercourse
- Municipal Boundary
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre

- Special Policy Area

Notes

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Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
4.4	2	Feb. 2010

Title

Delaware Area

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles	Notes
AREAS SUITABLE FOR SERVICE EXTENSION WITH FEW (IF ANY) ISSUES OR CONSTRAINTS						
Areas within Delaware's current growth boundary						
AREAS CAPABLE FOR SERVICE EXTENSION WITH SOME ISSUES OR CONSTRAINTS						
3-5,8	185.9	7120	2848	▪ This area is situated in the south half of Delaware	▪ Geometry of parcel would promote network servicing (GP#10) ▪ Future growth to the south of Delaware would allow for the extension of services through integration of existing infrastructure. (GP#9) ▪ Majority of land could potentially allow for gravity sewers to be used to service development and flow could be directed towards Longwoods Road (GP#11) ▪ No physical barriers such as water crossings between undeveloped land and existing development (GP#12)	▪ Adequate land available within Delaware's current growth boundary to satisfy growth for a significant portion of the design period
AREAS CONSTRAINED FOR SERVICE EXTENSION WITH SIGNIFICANT ISSUES OR CONSTRAINTS						
6,7	107	4098	1639	▪ This area is situated in the south half of Delaware ▪ North of Highway 402	▪ Land slopes away from Delaware, due to Thames River tributary, could be problematic to service by gravity sewers (GP#11) ▪ To integrate servicing to existing infrastructure crossing through naturalized area would be required (GP#12) ▪ Distance from existing development would hinder service extension through integration of existing infrastructure (GP#9)	▪ Borders 400 series highway
Notes/Comments: 1. **If an area is within the 20-year growth boundary for Middlesex Centre, it is assumed that servicing can be provided (Stantec's approach)**						

Table 4.3: Delaware Growth Options

A pumping station is necessary to transport Delaware's sanitary sewage to the Komoka WWTF. A number of locations have been evaluated, with the preferred location in the northwest part of Delaware, at a topographical low spot. The subject property is municipally owned and is in a built up area. This location would allow for gravity flow from nearly all existing and planned development areas in Delaware. Its location outside the UTRCA regulated limit also means that there would be no special approvals required. Preliminary investigation of a possible sewer system indicated that the required depth of the pumping station would not be prohibitive.

Treatment of Delaware's sanitary waste would be achieved at the Komoka WWTF, located on the northern side of the Komoka Bridge. Transported via forcemain from Delaware, along Gideon Drive, the sewage would be treated and then discharged to the Thames River. This would involve capacity upgrades to the WWTF.

Middlesex County reviewed the preferred alignment of the forcemain along Gideon Drive and Komoka Road. As per correspondence documented in the Komoka-Delaware ESR, there are no concerns. The only condition placed on the route at this time is that the Komoka Bridge not be used for the crossing. This will require a trenchless crossing of the Thames River.

4.5 KILWORTH-KOMOKA

4.5.1 Growth

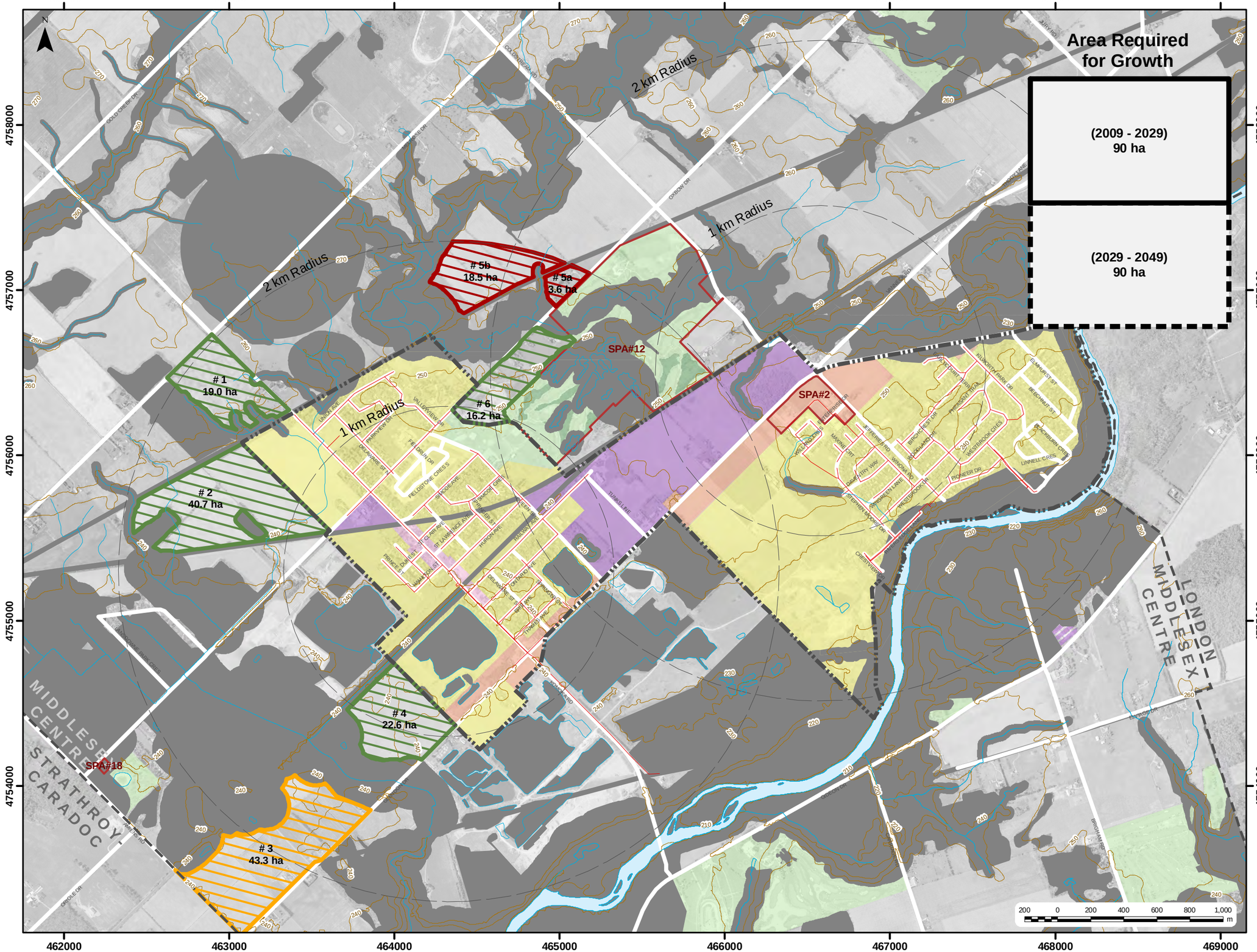
Future growth and development within the Official Plan boundaries for Kilworth will occur primarily to the west of existing development. The Municipality has stated that this land will be serviced by the Komoka WWTF. Future growth and development for Komoka will occur primarily to the west and adjacent to existing development.

Figure 4.5 shows various undeveloped parcels in Kilworth-Komoka and each is summarized in Table 4.4.

4.5.2 Collection and Treatment

In terms of future development and growth in the Komoka area, there appears to be sanitary sewer deficiencies along Komoka Road that will inhibit additional flow from outside the existing drainage area (as delineated by Totten Sims Hubicki, 1994). Any land that falls outside the current sanitary sewershed boundary would have to be examined by the proponent to determine if the existing trunk sewers had sufficient capacity to support future development.

There are two sections of pipe along Komoka Road that may exceed their design capacity if additional land is developed outside the design area. Figure 4.6 shows the two areas and their remaining capacities. However, there is land within the sanitary design area that has not been developed so the municipality could re-designate lands for development without exceeding capacity. Three possible options to correct the deficiencies can be found within the wastewater tech memo in Appendix 4.1.



Middlesex Centre

Stantec

Legend

- Area suitable for service extension with few (if any) issues or constraints
- Area capable for service extension with some issues or constraints
- Area constrained for service extension with some issues or constraints
- 10 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Municipal Boundary
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre
- Special Policy Area

Notes

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Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
4.5	**3**	**Feb. 2010**

Title

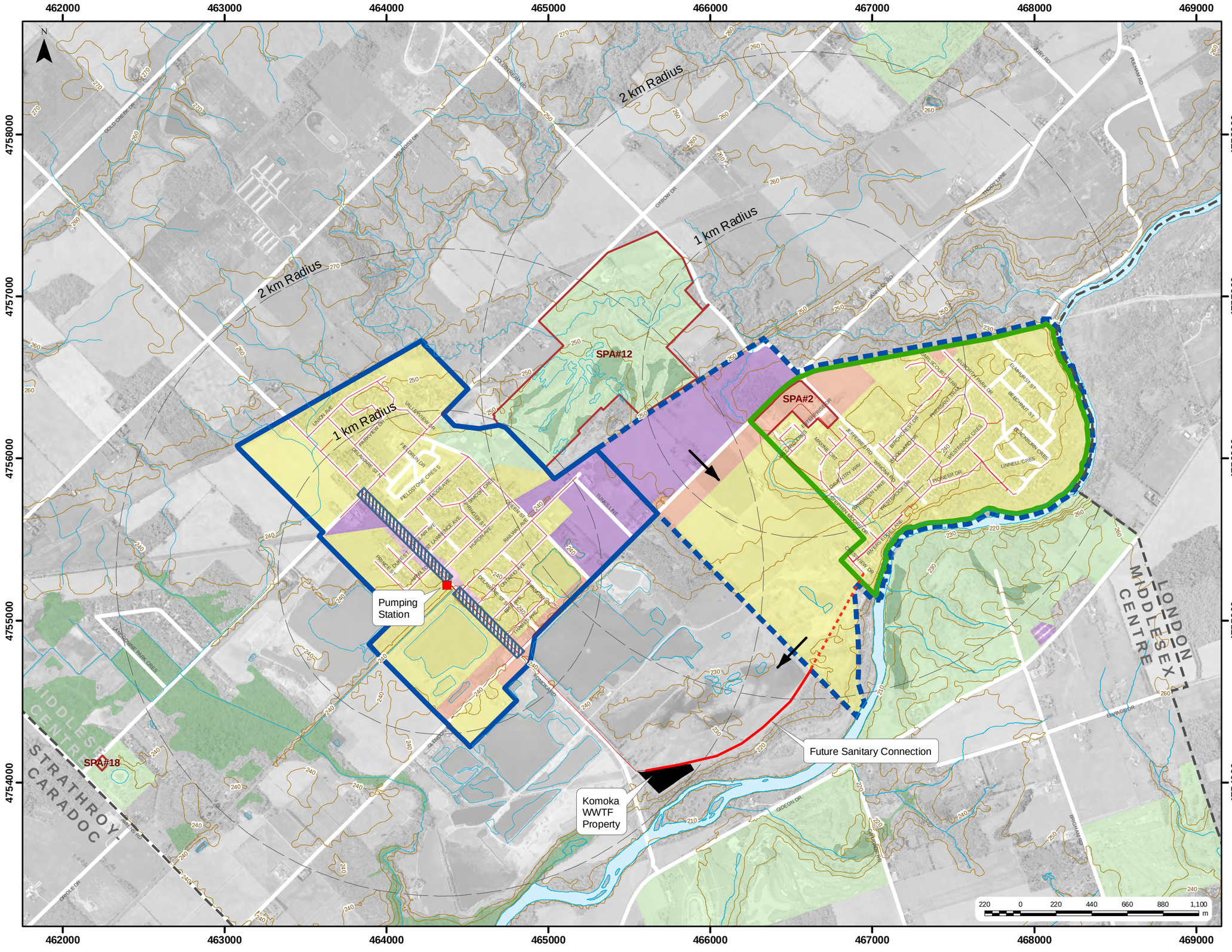
Kilworth - Komoka Area

Table 4.4: Kilworth-Komoka Growth Options

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles	Notes
AREAS SUITABLE FOR SERVICE EXTENSION WITH FEW (IF ANY) ISSUES OR CONSTRAINTS						
1	19.0	728	255	▪ This area is situated in the northwest quadrant of Komoka ▪ North of CN Rail line	▪ Geometry of parcel would promote network servicing (GP#10) ▪ Extension of services through integration of existing infrastructure. (GP#9) ▪ Majority of land could potentially allow for gravity sewers to be used to service development and flow could be directed towards Komoka Road (GP#11)	
2	40.7	1559	546	▪ This area is situated in the northwest quadrant of Komoka ▪ Between CN and CP Rail lines	▪ Geometry of parcel would promote network servicing (GP#10) ▪ Extension of services through integration of existing infrastructure. (GP#9) ▪ Majority of land could potentially allow for gravity sewers to be used to service development and flow could be directed towards Komoka Road (GP#11)	
4	22.6	866	303	▪ This area is situated in the southwest quadrant of Komoka ▪ North of Glendon Drive	▪ Geometry of parcel would promote network servicing (GP#10) ▪ Extension of services through integration of existing infrastructure. (GP#9) ▪ Majority of land could potentially allow for gravity sewers to be used to service development and flow could be directed towards Komoka Road (GP#11)	
AREAS CAPABLE FOR SERVICE EXTENSION WITH SOME ISSUES OR CONSTRAINTS						
3	43.3	1658	580	▪ This area is situated west of Komoka ▪ Borders Strathroy-Caradoc / Middlesex Centre boundary ▪ North of Glendon Drive	▪ Hinders extension of services through integration of existing infrastructure due to isolated location and proximity to neighbouring municipality. (GP#9) ▪ Majority of land could potentially not allow for gravity sewers to be used to service (GP#11) ▪ Water crossings between undeveloped land and existing development (GP#12)	▪ Isolated from existing development
AREAS CONSTRAINED FOR SERVICE EXTENSION WITH SIGNIFICANT ISSUES OR CONSTRAINTS						
5	22.1	846	296	▪ This area is situated in the northeast quadrant of Komoka ▪ Borders CN rail line	▪ Land slopes away from Komoka due to Thames River tributaries, could be problematic to service by gravity sewers (GP#11) ▪ To integrate servicing to existing infrastructure crossing through naturalized area would be required (GP#12) ▪ Distance from existing development would hinder service extension through integration of existing infrastructure (GP#9)	

Notes/Comments:

1. **If an area is within the 20-year growth boundary for Middlesex Centre, it is assumed that servicing can be provided (Stantec's approach)**



Middlesex Centre

Stantec

Legend

- Pumping Station
- Sanitary Sewer or Forcemain
- Future Sanitary Connection
- Sewer Deficiency
- Komoka WWTF Property
- Komoka WWTF Service Area
- Future Komoka WWTF Service Area
- Kilworth WWTF Service Area *(To Komoka WWTF Post 2029)*
- 10 m Contour
- Watercourse
- Municipal Boundary
- 1 km Radius Marker

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre
- Special Policy Area

Notes

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Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
4.6	**3**	**Mar. 2010**

Title

Kilworth - Komoka Wastewater Overview

The Komoka PS is fitted with duty/standby pumps, each rated for 2,800 m^3/day flow. Data taken from higher pump volume days suggest that the duty pump capacity is at least 3,000 m^3/day. According to preliminary calculations, once the Komoka WWTF reaches approximately 800 m^3/day, the actual pumping capacity at the PS may exceed its C of A rated capacity. Furthermore, in order to handle increase sanitary flow generated by population growth in Komoka, upgrades to the PS will be required. Field testing should be carried out to determine the actually capacity of each pump. Upgrades may be required at the pumping station to increase the physical capacity, pump capacity and to bring the current PS up to current standards.

Future development on the west side of Kilworth, and ultimately, all sanitary flow from Kilworth once the Kilworth WWTF reaches the end of its design lifespan, will be sent to the Komoka WWTF. Sewage from Kilworth to Komoka will be transferred via a trunk sewer (gravity or forcemain). An easement will allow the trunk sewer to cross Komoka Provincial Park and the sewer routing is found on Figure 4.7.

Stantec completed a Schedule C Class EA to provide for projected 20-year development growth to serve the Komoka sanitary servicing area. The Class EA analysis and results are documented in an ESR completed by Stantec in November 2009.

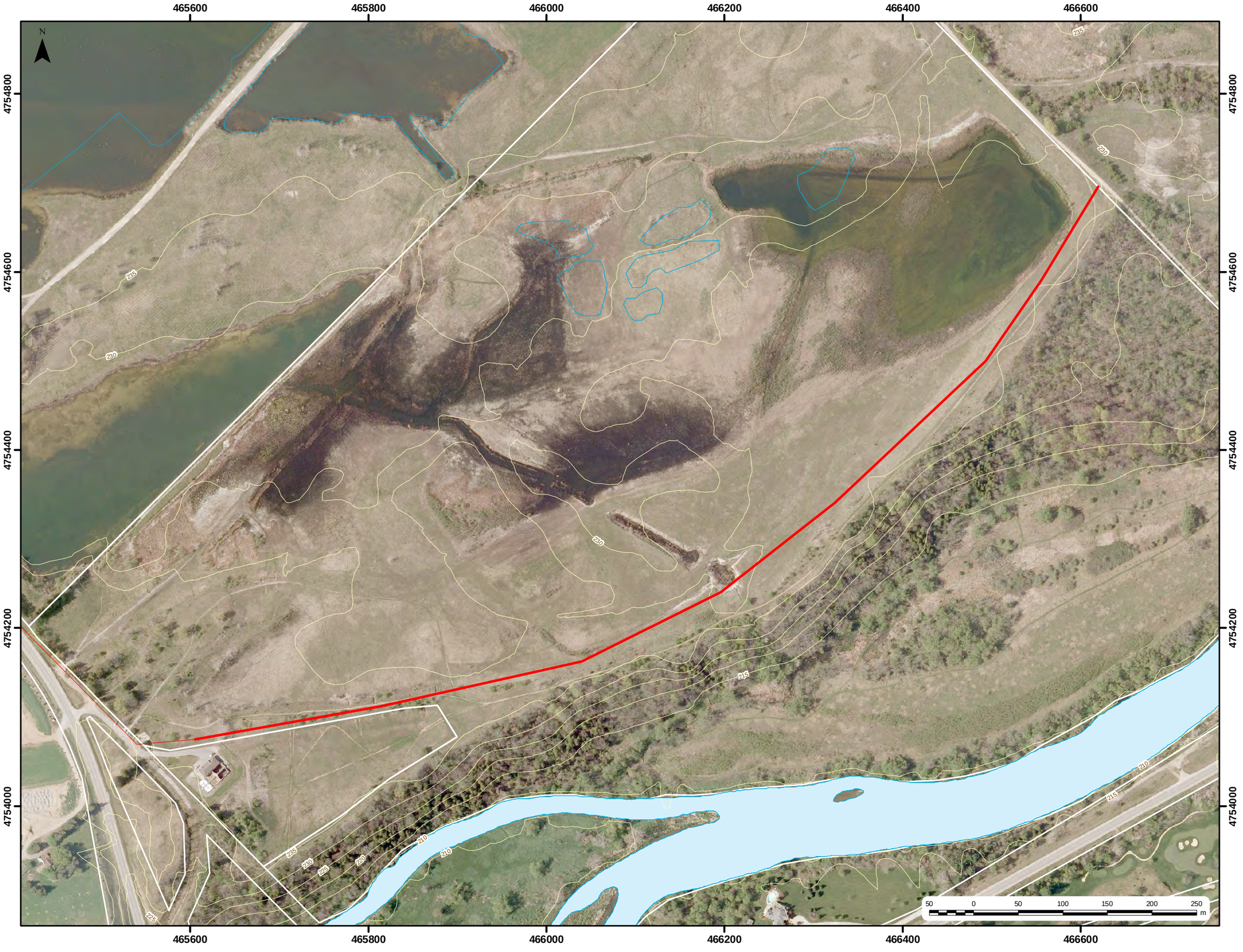
4.6 NON-SETTLEMENT AREAS

Non-settlement areas within Middlesex Centre are also referred to as Hamlets. These areas are not separated into specific land use categories. Any commercial or industrial development must be on a scale compatible with the character and size of the hamlet. Furthermore, any residential growth, in which a subdivision exceeds three new lots, is required to provide full municipal services.

In accordance with the guiding principles, non-settlement areas should continue using private sewage systems as the local health unit does not have any specific concerns against this. As well, as stated in the Official Plan, Urban and Community settlement areas are a priority for growth and development over hamlets.

4.7 BIOSOLIDS MANAGEMENT

The NMA and its regulations define how biosolids generated within wastewater treatment facilities are to be stored and disposed. All of the WWTFs within the Municipality of Middlesex Centre feature aerobic digestion, liquid biosolids storage, and land application - practices that are generally consistent with the current NMA and its regulations. Similar practices are expected for the foreseeable future given the relatively low cost and relatively large land area available for disposal.



Middlesex Centre

Stantec

Legend

- Sanitary Sewer or Forcemain
- Future Sanitary Connection
- 5 m Contour
- Watercourse

Notes

Not an official planning document. Consult appropriate agencies for policies and mapping. Data used under license with Middlesex Centre and the Ontario Ministry of Natural Resources.
Projection: UTM Zone 17N, NAD 1983

Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
4.7	**1**	**Jan. 2010**

Title

Kilworth Sanitary Connection

According to the Municipality, Middlesex Centre has been exempted from undertaking a mandatory Biosolids Management Master Plan (BMMP) by OMAFRA as required by the NMA. Therefore, with the exception of the planned expansion at Komoka WWTF, no changes to biosolids management are recommended at this time.

Septage handling is not recommended given the population serviced by the WWTFs and no apparent benefit for the Municipality.

5.0 Water

5.1 GENERAL

Refer to Appendix 5.1 for the complete water technical memorandum for further explanation of constraints, existing and future servicing, and any other relevant information pertaining to water servicing in Middlesex Centre.

5.2 ILDERTON

5.2.1 System Operations

For Ilderton, WaterCAD modeling was utilized to assess estimated current system performance as well as estimated performance twenty years from now. In both cases, there appears to be few to no issue with the operation of the system.

Ilderton receives its water directly from the LHPWSS resulting in very little need to control the quality of the water it receives as treatment has already taken place. Currently the only treatment undertaken in Ilderton involves rechlorination of the incoming and distribution water for residual microbiological protection.

5.2.2 Security

However, another aspect of water security is storage. A review of Ilderton's storage capacity was undertaken in 2008, updated in late 2009, and indicated that there was currently a deficiency which continues to grow. In 2009 the deficiency was 1,004 m^3 or 841 m^3, with these values growing to 1,992 m^3 and 2,241 m^3, based on MOE and Risk Management storage requirement approaches respectively for the 40 year design horizon (Ilderton Water Storage Assessment, 2009).

Looping and end runs are an integral part in providing quality water with an increased level of security. Looping provides alternate pathways for the water to travel through the distribution system and reach the user in the event of a break or blockage in the line. Several areas of Ilderton are served by a single pipe, leading to areas that cannot be serviced in the event of a pipe break or blockage.

The largest segment (besides a break immediately downstream of the BPS) would disrupt approximately 650 m of pipe if a break were to occur between Ilderton St and King St; King St between Ilderton Rd and George St; and George St in its entirety will disrupt service on Ilderton Rd (west of Ilderton St), King St (south of Ilderton Rd), and George St. The second largest segment, approximately 600 m in length, is situated on the Willow Ridge Rd loop. If a break occurs on Willow Ridge Rd between Blue Heron Dr and the southerly entrance portion of Willow

Ridge Rd, the remainder of the loop along with Dogwood Trail would be without service. Other breaks would disrupt segments approximately 300 m or less.

The better looped and more redundant a system is, the more reliable it is. For the most part Ilderton is well looped and provides shorter runs where fewer people will be disrupted in the event of a service interruption.

End runs have the potential to provide users with old or stale water. This tends only to be an aesthetic issue but can become a service issue if enough sediment builds up at the end points and a routine flushing program is not performed. If the pipe is properly sized and there are enough users, problems should not be encountered.

5.3 KILWORTH-KOMOKA

Kilworth and Komoka are currently undergoing upgrades to their water supply and distribution system. A new supply, to come into service in early 2010, via the Komoka – Mt. Brydges Water Supply will provide potable water from the LHPWSS. In addition to the supply, a booster pumping station, intermediate pumping station, and storage facility are also being built, entering service in early 2010. These upgrades are projected to provide services to not only Kilworth and Komoka, but also to Delaware for the next 20 years before further upgrades are required. However, servicing Delaware from the Komoka BPS will require further upgrades to the distribution system by way of a transmission main from Komoka to Delaware.

5.4 ARVA

Arva currently receives water, already treated, from the City of London. As a result, there are no issues with the quality of the water and so long as Arva continues to receive water from the City of London the only additions needed is to rechlorinate for residual disinfection. Furthermore, the connection to the City of London line ensures a high level of security for the future.

Going into the future the municipality has three options in regards to supplying water to Arva:

- Do nothing and continue with existing agreement;
- Seek to increase service area in the supply agreement; and
- Investigate for excess capacity in Komoka – Mt. Brydges transmission main.

In the future, any increases in water supplied by the City of London will have to be met equally by wastewater flows, also accepted by London, through a separate agreement. This requires careful examination of the above options regarding servicing and population growth.

The distribution system is comprised of 150 mm and 200 mm pipes and has a moderate level of looping. The diameter of the pipes is adequate and will incur only marginal increases in

resistance if flow rates are to increase in the existing network. Once the undeveloped areas on the east side of Arva start to fill in, this will provide an opportunity for further looping and increased security.

5.5 DELAWARE

Delaware receives water via a connection to the City of London distribution system. This connection is limited to 560 m^3/day. The new Komoka BPS will address the long term servicing to Delaware via a connection to the LHPWSS. As demand and population in Delaware increases, further upgrades to the system in the form of an inline booster pump station and eventually pressure zone separation will be required to service existing and new developments (Komoka - Delaware Municipal Servicing Implementation Study, 2009).

Once the new Komoka BPS is operational and a connection to the Delaware system has been established, the use of the on-ground storage reservoir at the station in Komoka can be utilized. However, some consideration should be given for the proximity of this storage in relation to Delaware. The closer and more interwoven into the distribution system the storage the greater the security and effectiveness it provides. This was also outlined in the Komoka - Delaware Municipal Servicing Implementation Study from 2009.

5.6 BIRR

The well water supplying the households in Birr has elevated levels of sodium and has had this issue consistently. As a result, the Medical Officer of Health has been notified, as required by drinking water regulations, when sodium levels are greater than 20 mg/L.

5.7 DENFIELD

Denfield is undergoing upgrades to its water distribution system. These upgrades will provide a new booster pumping station and water storage facility. This will be a change from the pre-existing setup where water was supplied directly off the LHPWSS's transmission main and into the distribution system. This new facility has been designed to meet the current ultimate build-out of the community.

Denfield has no looping in its system to provide for better flow efficiency and security in the event of a pipe break. Given the land currently designated for growth; south down Denfield Rd along the easterly side and a parcel to the south of the Brookfield St development, looping may be difficult to establish.

5.8 MELROSE

Melrose is situated close to the Komoka – Mt. Brydges Water Transmission Main with Middlesex Centre having ownership of extra capacity in the system. As the well system ages and reaches the end of its lifecycle, becoming inefficient to operate, it is anticipated that a Class EA will be undertaken to investigate future servicing options. A list could contain:

- Do Nothing and continue to operate system as is;
- Upgrade existing well supply pump house; and
- Connect to Komoka – Mt. Brydges Water Transmission Main.

6.0 Solid Waste Management

6.1 GENERAL

Refer to Appendix 6.1 for the complete solid waste management technical memorandum for further explanation of existing and future solid waste management for Middlesex Centre.

6.2 SERVICING OPTIONS

Waste management is dealt with by a third party organization, Bluewater Recycling Association, a membership of 21 separate municipalities, of which Middlesex Centre is one. With regards to future servicing of solid waste, Middlesex Centre has several options:

- Remain as a member of the Bluewater Recycling Association with the current level of service;
- Remain as a member of the Bluewater Recycling Association with a different level of service;
    - A lower level with the municipality or another third party maintaining existing level or an increased service level;
    - Higher level of service;
- Middlesex Centre to be sole service provider;
    - In full by the municipality;
    - With the assistance of another party; and
- Full service provided by a new third party.

Middlesex Centre's Servicing Principles indicate that complexity should be minimized, and as such, fragmenting the waste management collection by its components would go against this. Further, if the Municipality took over collection this would also produce startup and continued operating issues, whereas the Bluewater Recycling Association has been in operation for over 20 years and provides its service to 21 municipalities. In addition, by having the Bluewater Recycling Association as the service provider any risk to the municipality has become the responsibility of the Association.

Another principle is the notion of network servicing versus linear servicing. Normally this concept revolves around the thought that a network is easier and more efficient to service than an equivalent length linearly. Applying this to Bluewater Recycling Association's collection

system, both solid waste and recyclables are collected in a single truck and sorted at their facility as opposed to separate trucks for each stream.

Finally, as part of the Bluewater Recycling Association, the municipality is subject to any threats to that organization; however, the threat is spread amongst 21 municipalities. Additionally, the municipality is also subject to any opportunities that the Bluewater Recycling Association may encounter. It is unlikely that a similar format could be found with a new third party collector. However, regular audits of the current system should be completed at the municipality's convenience.

7.0 Stormwater Management

7.1 GENERAL

Refer to Appendix 7.1 for the complete stormwater management policy document for further explanation of existing and future stormwater management for Middlesex Centre. Appendix 7.2 illustrates the stormwater network within Middlesex Centre.

It was decided through discussions between the Steering Committee and Stantec that a policy document would better serve the municipality with regards to stormwater management. Currently, stormwater management has been specific to individual developments as detailed in subdivision/site plan agreements. Therefore, it is recommended that a policy or framework be developed for the municipality. This would allow for a municipal approach to stormwater management, as determining where growth will occur within the municipality can be unpredictable.

7.2 OVERVIEW

In Ontario, SWM is required when a rural area is urbanized and its intent is to mitigate impacts on the environment. Therefore, three aspects of SWM that need to be addressed in development and these are:

- Quantity Control, which is the name given to managing the amount of runoff generated by a drainage area and generally attempts to limit the maximum run off flow of the developed area to the rate of flow that occurred prior to development;

- Quality Control, which is the name given to managing the quality of the runoff generated from a drainage area and generally attempts to allow for an extended period of detention of storm water in order to encourage the settling out of pollutants within a facility for most frequent rainfall events; and

- Enhanced Protection, which is to provide for the protection of receiving streams from excessive erosion or to changes in stream morphology (structure of the channel).

Quantity impacts result from an increase of runoff as the urban development will have more impervious surface. This increase includes the total volume, flow rate and duration of runoff from a rainfall event. This can cause serious erosion problems in creeks, rivers and outfalls into the water bodies. Quality impacts are the result of “non-point” sources of pollution, which can discharge from the result of human activity. Both rural and urban areas can contribute to non-point source pollution. Stormwater contaminants may include suspended solids, microbiological contamination, organic matter, oils and greases, nutrients, and pesticides. Enhanced protection is typically mandated by agencies having jurisdiction over the receiving stream which in the

case of Middlesex Centre is taken to be the Conservation Authority in whose area the SWM facility and outlet is located.

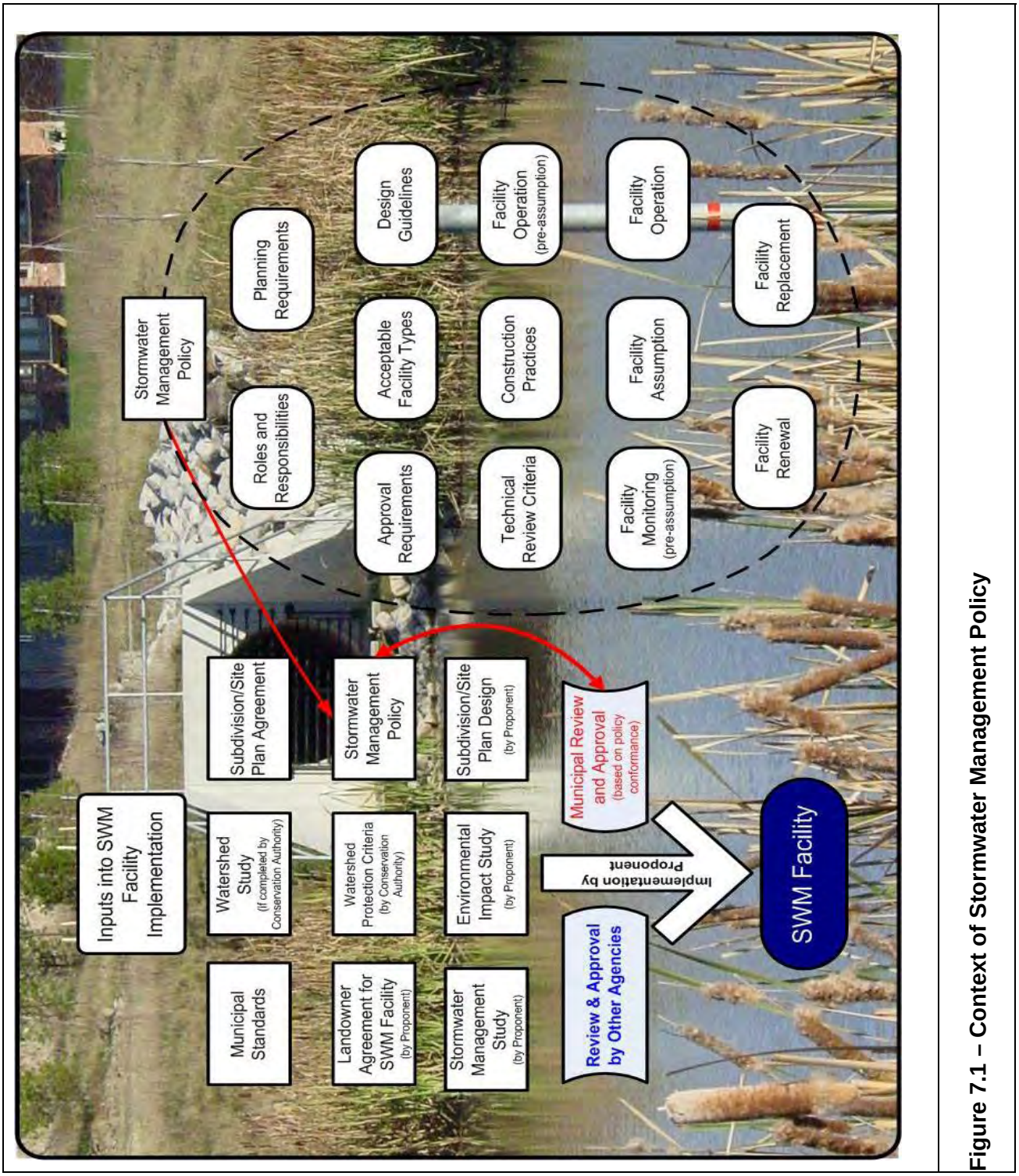


Figure 7.1 – Context of Stormwater Management Policy

7.3 INTENT OF STORMWATER MANAGEMENT IN MIDDLESEX CENTRE

When an area within the Municipality changes from rural to urban land use, stormwater management (SWM) techniques are to be used to mitigate any negative impacts due to changes in the quality and quantity of run off and excessive physical impacts on the receiving streams. This is to be accomplished through the application of current SWM practices within Ontario that rely on engineered, non-mechanical means of treatment. In addition, a net enhancement to the urban environment through the application of these standards must be achieved.

7.4 CONTEXT OF STORMWATER MANAGEMENT POLICY

The Municipality's SWM policy is one component in the process for a proponent to have approval to build and operate a stormwater management facility. Figure 7.1 summarizes some but not necessarily all of the inputs that are required for implementation of a SWM facility.

7.5 RISK MANAGEMENT

While SWM facilities are designed to reduce the risk of flooding and environmental impact, this is not the type of risk discussed in this section. This section is intended to address the issue of managing risk associated with the operation of a SWM facility.

Due to the nature and function of SWM facilities, there is an inherent risk in their operation. This risk is assumed by the Municipality on assumption of ownership of a SWM facility. SWM facilities will typically contain a permanent pool of water as well as areas which will have temporarily ponded water of various depths from time to time. Ponded water does pose risks to the public especially children.

Potential incidents which may result in death, injury or property damage associated with SWM facilities include but are not limited to:

1. Drowning/submergence in water;
2. Falling from height;
3. Human/wildlife encounters;
4. Transmission of water borne diseases such as West Nile Virus;
5. Malfunction of facility due to vandalism or improper use;
6. Encroachment of private structures into facility; and
7. Odour and or flooding complaints.

The Municipality must determine the level of risk that it wishes to assume in the operation of SWM facilities based on balancing the following factors:

1. The requirement to maintain the core function of SWM facilities as engineered treatment facilities for stormwater;

2. The need to provide for public safety;

3. The integration of SWM facilities into open spaces and the natural environment which provides in general a net benefit to the community;

4. The climate of legal liability and the standard of care required by the Municipality to maintain a defendable level of due diligence; and

5. The cost associated to maintain the SWM facility based on balancing of risk factors.

The above factors must be reviewed and evaluated on a periodic basis to ensure that the Municipality's risk control strategies meet its corporate risk tolerance. Based on this review, the risk control strategies employed can be adjusted.

The general strategies to control risk that are available to the Municipality are:

1. To take measures to reduce the frequency of incident occurrence; and

2. To take measures to reduce the severity of an incident.

These risk control strategies should be used as incorporated into the Municipality's SWM policy.

Safety features are intended to restrain access to deep standing water through a series of spatial, physical, natural and aesthetic barriers or through alternatives to direct access. This is not intended as a replacement for adult supervision but rather as a deterrent to casual accidents. The intent is to replace fencing with an appropriate alternative, while maintaining SWM function and public safety.

8.0 Transportation

8.1 OVERVIEW

Refer to Appendix 8.1 for the complete transportation technical memorandum for further explanation of existing and future transportation servicing for Middlesex Centre.

The purpose of the transportation component of the Master Servicing Plan (MSP) is to determine the long-term (20-year) needs of the transportation network, including roads and bridges. The study will examine the financial implications and strategies to accommodate anticipated growth.

The study components include:

- Network Analysis;
- Transportation Master Plan (including Needs Analysis, Transportation Recommendations, Alternative Modes); and
- Policy Development (including traffic management measures, noise, accessibility, integration of capital planning).

The Transportation Assessment is a comprehensive, long-range planning review that will guide transportation system decision-making over the next 20-years to meet the objectives of the long term community vision while supporting local municipal growth management strategies and Official Plans.

It will help set the direction for transportation infrastructure capital programs and provide a basis for budget planning. The plan will provide a balance between current and future transportation standards and needs, as well as between public safety, the environment, business needs and aesthetic considerations.

8.2 EXISTING NETWORK

One of the elements in achieving a strategic transportation direction for the Municipality is to balance all modes of transportation within designated corridors and right-of-ways. Roads have a variety of functions, ranging from the provision of direct access to adjoining properties to the provision of facilities for long distance trips.

Roadways within the Municipality can be classified based not only on the amount of traffic they carry but more importantly the role and function or service they provide. There are typically three primary roadway classifications: local, collector, and arterial.

- Local Roads – The primary function of these roads is to provide direct access to adjacent lands and provide for on-street parking. Through vehicular movements are discouraged by the design and traffic control measures.

- Collector Roads – These roads are intended to serve both through and land-access functions in relatively equal proportions. Collector roads are subdivided into urban and rural categories.

- Arterial Roads – These roads primarily provide service for through-traffic movement. Although some land-access service may be accommodated off arterial roads, it is clearly a minor function. Roadway design and traffic controls are intended to provide efficient through movement. Arterial roads are subdivided into urban and rural categories.

This road network must be managed to effectively balance the needs of auto and truck traffic (including agricultural vehicles) and pedestrian and cycle traffic in consideration of the facility's role and function in the community.

8.3 EXISTING TRANSPORTATION NETWORK PERFORMANCE

A strategic assessment of the corridor and facility performance was conducted by assessing critical screenline locations throughout the municipality to identify capacity deficiencies. Based on this transportation analysis the following conclusions were reached with respect to the operation of the transportation network for the existing condition:

- Municipal screenlines operating well within accepted levels of service;

- Richmond Street (Highway 4) operating at threshold of capacity north of Middlesex Centre/City of London Boundary; and

- Highbury Avenue operating under unstable conditions.

The following local areas of concern were noted:

- Richmond Street in communities of Birr and Arva;

- Ilderton Road and Hyde Park Road in community of Ilderton (Hyde Park Road under Middlesex Centre jurisdiction north of Ilderton Road);

- Ilderton Road and Egremont Drive in community of Coldstream-Poplar Hill; and

- Egremont Drive in communities of Lobo and Melrose.

8.4 FUNCTIONALITY

The functionality of roads (boulevard size, lane width, presence of sidewalks, etc.) are often based on classifying it as a rural or urban road and the volume of vehicle traffic. Within

Middlesex Centre some roads may be required to collect and convey vehicles, bicycle and pedestrian traffic similar to the roads in larger municipalities which experience larger traffic volumes.

9.0 Summary of Findings and Recommendations (by Community)

9.1 ILDERTON

9.1.1 Wastewater

As Ilderton has five municipal and two private pumping stations, it is recommended that if a future pumping station is necessary, that an existing pumping station be eliminated. Additional pumping stations add complexity in both operation and cost for the Municipality. If at all possible, the number of pumping stations should be reduced. Gravity servicing is the preferred method for Ilderton.

Most of the Ilderton WWTF capacity has been committed to proposed development, however, actual flow rates are much less than the rated WWTF capacity, subject to this development proceeding. The Ilderton Water and Wastewater Servicing Class EA is currently underway to allow for future development to proceed based on the provision of wastewater treatment capacity.

9.1.2 Water

As previously identified in a report, Ilderton is deficient in storage. In late 2009 a Class EA will begin to explore options for types and location of a new storage facility. Currently Ilderton's storage is located directly beneath the booster pumping station with a capacity of 455 m^3, a deficiency of over 700 m^3.

For the most part, Ilderton is well looped, providing redundancy and pumping efficiency in the distribution system. There are a few spots where a pipe break will leave an area without service; the largest being situated at the west end of the community. Further development in this area could lead looping and a reduction in those affected in the event of a break in the supply line.

9.2 ARVA

9.2.1 Wastewater

There are three sanitary servicing options to be considered by Middlesex Centre for Arva. The options are as follows:

- Do nothing;
- Amend City of London agreement; or
- Construct a new municipal wastewater treatment facility for Arva.

After review, the do nothing option will not be carried forward as the lack of sanitary capacity in Arva would not be solved. However, if Middlesex Centre chooses to carry out a Schedule B Class EA to evaluate the planning options, the do nothing option would be brought back.

Amending the City of London Sanitary Agreement appears to be the preferred option. The Municipality would be responsible for negotiating the terms of an amended agreement. If a revised agreement cannot be achieved, then the Municipality may need to proceed with a Class EA as soon as possible to evaluate the above options.

9.2.2 Water

Arva currently has no storage, however, due to its close proximity to the Arva Reservoir and its direct connection to a City of London transmission main, emanating from their BPS and fed by the Arva Reservoir. As such the community is dependent on the City of London to provide it with water. Middlesex Centre will need to investigate the water servicing options through a Class EA process for future servicing needs.

9.3 DELAWARE

9.3.1 Wastewater

The Komoka-Delaware Municipal Servicing Implementation Study Class EA addressed the potential for implementation of full wastewater servicing in Delaware. If a communal wastewater system was to be constructed, sanitary flows would travel from a pumping station in Delaware via forcemain along Gideon Drive to the expanded Komoka WWTF.

9.3.2 Water

Delaware currently has a storage capacity of 664 m^3 and by the year 2029 will require approximately 1600 m^3 further storage, while by the year 2049 the requirement will have increased to approximately 2500 m^3. In the short term Delaware could utilize the storage at the Komoka BPS, however this would require the construction of a transmission main to connect the two distribution systems. This interconnection of the systems is part of the long term servicing solution as described in the Class EA conducted for the Komoka – Delaware Municipal Servicing Implementation Study. Delaware would be better served by situating a storage facility closer to its own distribution system so as to reduce the chances of it being unavailable in the event of a main break.

9.4 KILWORTH-KOMOKA

9.4.1 Wastewater

The Komoka-Delaware Municipal Servicing Implementation Study Class EA identified the need to expand the Komoka WWTF. The expansion to treatment capacity is necessary to service

future development, and to accommodate future flows for Kilworth and Delaware, if a communal municipal system is eventually constructed.

It has been previously identified that areas within the growth boundary west of the Kilworth WWTF service area are to be serviced by the Komoka WWTF. Items which should be reviewed in the Terms of Reference for the Kilworth West Sanitary Trunk Connection to Komoka WWTF are as follows:

Terms of Reference

1. Must be in accordance with the Municipal Engineers Association Class Environmental Assessment (MEA Class EA) and the Class Environmental Assessment for Provincial Parks and Conservation Reserves as set by the Ministry of Natural Resources (MNR).
2. In accordance with the MEA Class EA, this project could be considered a Schedule B project as it falls under the following category:
    1. Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not in an existing road allowance or an existing utility corridor. *[Utility Corridor: Means land or rights to land utilized for locating utilities, including sewage, stormwater management and/or water services and/or appurtenances thereto, railways, street-cars, light rapid rail systems and transit ways. In this document, "existing utility corridor" means a developed utility corridor.]*
3. In accordance with the MNR Class EA, this project would be considered a Category A project as it falls under the following category. However, the proponent shall liaise with the MNR, prior to commencing the EA to verify the screen mechanisms and category of which this project falls in.
    1. Amend a boundary to enable disposition of a portion of a park or reserve for a corridor (normally only applies to major, exclusive use projects such as provincial highways). *Notes: Category A if the proponent certifies compliance with a relevant provincial and/or federal EA process.*
4. The proponent should ensure that any conditions or policies outlined within either the MEA Class EA or MNR Class EA, the most stringent will apply to this EA.
5. The study area must incorporate the effective sewershed.
6. In accordance with the MSP Guiding Principles, one sanitary pumping station should be used for the trunk sewer system.
7. Conveyance as well as all wet wells and structures should be sized for ultimate flow conditions.
8. The width of the easement through the Provincial Park will in all likelihood, restrict the depth of a sewer or forcemain installed by open cut.
9. The location of the termination of the easement into the Komoka WWTF does not permit either deep sewer or wet well for a pumping station.

The timing of the implementation of the Kilworth Sanitary Connection to Komoka WWTF Class EA is based on development. It is recommended that the Class EA and implementation schedule be tied to its requirement for development.

The Komoka PS is rated for a peak flow of approximately 3,000 m^3/d. Once sanitary flows at the WWTF exceed 800 m^3/d average flow, upgrades may need to occur at the pumping station.

Wet well capacity and pump sizes increases will be addressed, as well as any other upgrades necessary to bring the pumping station up to current standards.

There appears to be sanitary sewer deficiencies along Komoka Road, north and south of the pumping station that could inhibit future development from outside the current sanitary sewershed boundary. Any land that falls outside this boundary would have to be examined to determine if the existing trunk sewers can support the proposed future development. This would be done on a case-by-case basis.

9.4.2 Water

Kilworth and Komoka are currently undergoing upgrades to their water supply and distribution system. There are no further recommendations.

9.5 MELROSE

9.5.1 Water

Melrose has a history of elevated sodium levels in its water supply. Once the system reaches the end of its lifecycle it is anticipated that a Class EA will be undertaken to determine an appropriate course of action for water servicing.

9.6 OTHER AREAS

No significant findings.

10.0 Summary of Findings and Recommendations (Municipal-wide)

10.1 BIOSOLIDS MANAGEMENT

At present, there are two potential known trigger points when Middlesex Centre should consider undertaking a municipal level review of biosolids management. These are as follows:

- Ilderton WWTF Class EA – This may identify when and if the biosolids storage capacity at this site will be used up by process changes and if additional storage on site is not a practical option; and
- The construction of a communal wastewater system for Delaware will require expanded biosolids storage facilities at the Komoka WWTF.

A Municipal Biosolids Management Review would review the following over a 20-year horizon.

1. Trends regarding biosolids regulations;
2. Biosolids and septage generation rates for Middlesex Centre;
3. Review of current biosolids management (responsibilities of Middlesex Centre, Contract Operator, Others; treatment and storage systems and capacity);
4. For reference, typical minimum threshold for effective dewatering of 10,000 m^3/day which is not met at individual WWTFs or as a combined total within the current 20-year horizon. Individual dewatering at WWTFs with less flow is generally too costly. Similarly, a centralized facility could be considered in the future if costs change substantially, there is a regulatory change, or septage is received into the WWTFs; and
5. Review and determine a cost effective management strategy in terms of use of existing assets, development, new facilities, operation and use of third party services.

10.2 SOLID WASTE MANAGEMENT

Going forward, solid waste will continue to be a key component of municipal servicing. It is key for the municipality to have a dynamic collection system that will be able to develop and evolve with changes in policy and environmental trends. It is also important to be able to provide input and direction in shaping future policies and solutions. As a member municipality in the Bluewater Recycling Association, Middlesex Centre will have these opportunities, as they are largest rural regional collection providers in Ontario.

Currently the Bluewater Recycling Association represents 21 municipalities servicing nearly 150,000 residents and over 63,000 households and has been in operation for over 20 years. Now in its third decade, the Association has continually adapted, changed, and been at the forefront of waste management and reduction. The current diversion rate for Bluewater Recycling Association is close to 30% which puts it in the middle of its category along with the volume of waste it collects per capita.

At this time the Municipality should continue collections with the current provider, the Bluewater Recycling Association, as it is unlikely that they will be able to find a similar provider with the abilities that the Association has. However, at the Municipality's convenience, regular assessments of the systems function could be completed.

10.3 STORMWATER MANAGEMENT

At present, most guidance documents on SWM and municipal policies in Ontario focus on the early lifecycle phases of a SWM facility those being:

1. Planning and Approvals;
2. Construction;
3. Pre-Municipal Assumption Operation;
4. Municipal Assumption; and
5. Operation.

As SWM has been introduced as a major component of urban development only in the past 25 years in Ontario the focus on these early phases is understandable to ensure its successful implementation. However, SWM facilities age and their components and overall efficacy will deteriorate over time as to that of other infrastructure types. Therefore, Middlesex Centre should look at having policies in place to proactively address the later lifecycle phases for SWM facilities namely:

6. Facility Renewal; and
7. Facility Replacement.

An issue that will face Middlesex Centre in the long term is that the design of SWM facilities tends to promote their naturalization by native plant and animal species. In SWM facilities it is not uncommon for fish or aquatic species to have been introduced either by people or through natural processes. Plant species likewise will migrate to a SWM facility if it provides suitable habitat.

Over time, within a SWM facility increased vegetation and sediment deposition will reduce storage volume available to provide quantity control for large run off events. Efforts by the Municipality to restore the required storage volumes would typically require the SWM facility to be drained and partially reconstructed following the removal of excess vegetation and sediment. With the naturalization of SWM facilities, it would be expected that the MNR would become involved in the regulation of this practice. For example fish which habitat the pond (provided

they are not an invasive species) would have to be removed in a “fish rescue” which is a specific protocol. Likewise there may be a requirement to review the SWM facility to confirm if any locally identified protected plant or animal species are resident prior to work commencing.

Therefore, it would be in the best interest of Middlesex Centre if its SWM Policy contained initiatives to minimize the long term complexity and costs associated with SWM Facility refurbishment.

10.4 TRANSPORTATION

10.4.1 Future Transportation Network Performance

Historical traffic data was reviewed in conjunction with future land use and development potential for the Municipality in order to determine future traffic volume on a system wide basis for the community. Based on an analysis of strategic screenline volume projections, the following conclusions are reached with respect to the operation of the transportation network for the future forecast condition:

- Municipal screenlines operating well within accepted levels of service with the exception of the north of Middlesex Centre/City of London Boundary (between Hyde Park Road and Clarke Road);
- Highbury Avenue and Richmond Street (Highway 4) operating at or above the threshold of capacity north of Middlesex Centre/City of London Boundary;
- Fanshawe Park Road, Oxford Street and Longwoods Road approaching capacity threshold west of City of London limits;
- Highbury Avenue at north limits of Middlesex Centre approaching capacity threshold; and
- Richmond Street operating under unstable condition

County Roads through local communities will continue to be an issue as traffic volumes increase as a result of area growth (auto and commercial vehicle).

10.4.2 Transportation Plan

The successful implementation of a transportation plan to provide a blended transportation system for Middlesex Centre will require the development and implementation of travel demand management (TDM) measures combined with strategic investments to improve the roadway network, public transit and to safely accommodate active transportation. Policies and programs are required to monitor, assess, and guide specific initiatives aimed at providing adequate transportation service to all modes of travel while at the same time protecting the environment and community.

In order facilitate the Middlesex Centre vision for the future and to address problems and opportunities several transportation strategies have been identified. These strategies are identified in Table 11.1.

10.4.3 Functionality

In addition to standard road classifications based on traffic volume, Middlesex Centre should review and confirm based on the goals and values of their Strategic Plan the functionality it desires for certain roads. For example, in order to promote safety, to allow for travel to municipal attractions, Middlesex Centre may wish that connecting roads be provided with sidewalks and bicycle paths.

10.4.4 Culverts & Bridges

A 2006 study of Middlesex Centre's existing bridges and culverts found:

- Over $1 Million was required to bring the structures up to current standards; and
- Approximately $390,000 of annual capital expenditure is required to maintain existing structures.

It is recommended that when new water, wastewater, stormwater and transportation projects are planned that:

- Consideration is given to proximate structures and the impact of new construction; and
- Refurbishment of existing structures should be considered if they are proximate to new work as economies can be realized in construction costs.

11.0 Implementation of Servicing Recommendations

Table 11.1 below gives an overview of the servicing recommendations for solid waste, transportation, water, wastewater and stormwater management, along with an approximate implementation schedule.

Table 11.1: Implementation of Servicing Recommendations

SERVICE AREA	0-1 Years	1-5 Years	5-10 Years	10 + Years
SOLID WASTE	ongoing			
TRANSPORTATION – Transportation System Management				
Access Management				
Review access policy to minimize impacts on existing and future high volume roads.		✓		
Operational Improvements				
Continue with Municipal traffic count program required to monitor traffic volumes at regular intervals. Monitoring program will assist in determining required operational improvements when level of service is approaching capacity.	✓			
Improved Safety				
Conduct municipal-wide assessment of signage, traffic control, pavement marking and roadside barriers and implement improvements on a priority basis.		✓		
Assess need for traffic management measures that effectively balance role and function of roadway with user safety.		✓		
Develop evaluation process (guidelines and criteria) for reviewing control measures on a location by location basis.		✓		
Truck Route Designations / Upgrades				
Confirm by-laws that will stipulate the load factors, axle weight, vehicle height, hazardous goods restrictions and other criteria for municipal		✓		

SERVICE AREA	0-1 Years	1-5 Years	5-10 Years	10 + Years
roadways to be conformed to by users.				
Road Rationalization				
Confirm road hierarchy (local, collector, arterial) and designate municipal roadways within hierarchy.		✓		
Identify appropriate cross section and surface standards for road classes.		✓		
TRANSPORTATION - Travel Demand Management				
Plan Land Use				
Ensure managed growth. Review traffic impact study for new development.		✓		
Public Transportation				
Support work by others for increasing use of alternative transportation modes.		✓		
Promote carpool lot use and identify spaces in existing public parking areas lots for commuter use potential.			✓	
Promote Cycling and Walking				
Construct paved shoulders on major roads.			✓	
TRANSPORTATION – Network Expansion / Improvements				
Infrastructure Improvements				
Maintain current infrastructure.	ongoing			
Support roadwork by others for development.	ongoing			
Widen roads that have reached capacity when other solutions are not sufficient.				✓
WASTEWATER				
Arva				
Middlesex Centre to negotiate the terms of an amended sanitary agreement with the City of London. If this is not possible, Middlesex Centre may need to proceed with a Class EA to evaluate recommended servicing options.	✓			
Ilderton				

SERVICE AREA	0-1 Years	1-5 Years	5-10 Years	10 + Years
Complete Ilderton Water and Wastewater Servicing Class EA to determine wastewater treatment capacity that is needed to meet future growth.	✓			
Promote gravity servicing to reduce the number of pumping stations in operation. Would result in lower complexity in both operation and cost for Middlesex Centre. If a new PS is proposed, then proponent should investigate decommissioning of an existing PS.	ongoing			
Kilworth-Komoka				
Expansion of Komoka WWTF to accommodate future flows from Kilworth and Delaware.	✓			
Commence Kilworth West Sanitary Trunk Connection to Komoka WWTF Class EA. **(10+ Years, **however**, 0-1 Years tentative upon development)*	✓*			
Upgrade Komoka PS		✓		
Address sewer deficiencies along Komoka road if capacity issues arise with development outside of current growth boundary.			✓	✓
Delaware				
Council to determine whether to construct a communal wastewater system, complete with sanitary sewers, pumping station and forcemain to Komoka WWTF.	based on Council approval			
WATER				
Ilderton				
Upgrade storage capacity to suit current and future demands.		✓		
Delaware				
Implement storage upgrades as noted in the Komoka-Delaware Municipal Servicing Implementation Study.			✓	
Implement connection to Komoka distribution system as noted in the Komoka-Delaware Municipal Servicing Implementation Study.		✓		
Arva				

SERVICE AREA	0-1 Years	1-5 Years	5-10 Years	10 + Years
Undertake Class EA process to determine servicing options.			✓	
Melrose				
Connect to Komoka-Mt. Brydges Water Supply System at the end of the current pump stations life cycle.		✓		
STORMWATER				
Implement Stormwater Management Policy document.	✓			

Appendix 1.1:
Preparation of the Master Servicing Plan Request for Proposal, Municipality of Middlesex Centre (Stantec, 2008)

Preparation of the Master Servicing Plan Request for Proposal
Municipality of Middlesex Centre









Stantec Consulting Ltd.
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London, ON N6A 5J7
Tel: 519-645-2007, Fax: 519-645-6575

October 31, 2008
File: 165589244

Stantec

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Tel: (519) 645-2007
Fax: (519) 645-6575

October 31, 2008

File: 165589244

Municipality of Middlesex Centre
10227 Ilderton Rd,
ILDERTON, ON NOM 2AO

Attention: **Maureen A. Looby, Public Works and Engineering Manager**

Reference: **Letter of Introduction for Preparation of the Master Servicing Plan Request for Proposal Municipality of Middlesex Centre**

Please find attached five (5) copies following Stantec Consulting Limited's submission for the Preparation of the Master Servicing Plan Request for Proposal Municipality of Middlesex Centre dated October 31, 2008. In our proposal we note that the senior members of Stantec's consultant team proposed for this project are:

- John Tyrrell, P. Eng. will assume the role of Project Manager for this project. He is an Associate with Stantec's London office and has undertaken many complex projects for Middlesex Centre over the past eight years. He will also be the Stormwater Management Technical Lead;
- Rob Hughes, P. Eng. will assume the role of Quality Management Lead to ensure project quality control on this project. Rob is the Managing Principal for the London office of Stantec;
- Dana Schoeley, P.Ag., will undertake the role of Public Consultation Coordinator. Dana is currently undertaking this role for two Middlesex Centre projects and works from our London office;
- Nelson Oliveira, P.Eng. will be the Water Supply Lead and works from our London office. Nelson is the technical lead on current Middlesex Centre water projects for Stantec;
- Olav Natvik, P.Eng. will be the Wastewater Lead and works from our London office. Olav is undertaking this role for the planned expansion of the Komoka WWTF;
- Paul Bumstead, BES will be the Transportation Planning Lead and works from our Markham office. Paul is has undertaken similar planning studies for many municipal clients including Oxford County; and
- John Langan, B.Sc. will be the Solid Waste Lead and works from our London office. John's experience includes developing strategies for municipal solid waste landfill operations.

Stantec's submission contains the following information for Middlesex Centre's review:

- An Introduction Section outlining our project understanding and approach;
- A Project Work Plan Section outlining the general work breakdown structure of the following tasks -

Reference: Letter of Introduction for Preparation of the Master Servicing Plan Request for Proposal Municipality of Middlesex Centre

  - Task 1 Project Management,
  - Task 2 Technical Analysis for the following services: Water Supply and Distribution, Wastewater Collection and Treatment, Stormwater Management, Transportation, and Solid Waste,
  - Task 3 Develop Planning Level Master Plan Solutions,
  - Task 4 Master Plan Consultation,
  - Task 5 Reporting;
- A Project Staff Plan Section;
- A Project Schedule and Staff Budget Section;
- A Project Quality Control Plan Section; and
- A Closing Section.

Should there be specific reference to tasks contained within the Request for Proposal and not referenced in our submission, we acknowledge them and will undertake them as part of our work plan.

If you have any questions with respect to this proposal, please do not hesitate to contact the undersigned who is the designated contact for Stantec and has the authority to bind Stantec to an engineering agreement for this project.

Sincerely,

Stantec Consulting Ltd.

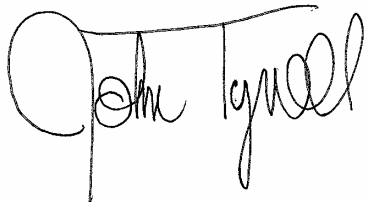

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Table of Contents

1 INTRODUCTION

1.1 Understanding

Stantec Consulting Ltd. is pleased to submit this proposal to the Municipality of Middlesex Centre in response to your request for proposal for consulting services to develop a 20-year master plan for municipal services. This is a component of Middlesex Centre's Strategic Plan being undertaken between 2006 and 2011. This initiative's goal is to "improve and maintain existing infrastructure using responsible financing and ensuring adequate reserve funds." The objective of this Master Plan project is to "implement a Long Term Servicing Master Plan which addresses municipal water, waste water, storm water, solid waste and roads."

From our understanding, this project involves undertaking the following:

1. Project coordination with the Middlesex Centre Steering Committee;
2. Technical analysis of each of the five municipal service components (municipal water, wastewater, stormwater, solid waste and roads);
3. Developing planning level master plan solutions for each of the five municipal service components;
4. Undertaking public consultation in accordance with Phases 1 and 2 of the MEA Class Environmental Assessment process; and
5. Project reporting.

This proposal fully demonstrates Stantec's technical understanding of this project and our commitment to carry out this work as per the terms and conditions in the *Terms of Reference for the Preparation of the Master Servicing Plan Phases 1 and 2 of the Class Environmental Assessment Request for Proposal* document.

1.2 Approach

A Master Servicing Plan for a municipality is a strategic document to assist in the overall planning for a period of up to 20 years. Like any master planning project that Stantec undertakes, its success will be judged by the following criteria:

- Key problems and opportunities facing the municipality with regard to municipal infrastructure are properly identified;
- Past work, current knowledge and future trends and technology are adequately analysed and identified to the municipality;
- Cost effective, sustainable and timely solutions are developed;
- For the municipality's Steering Committee to reach consensus as to the master plan strategy based on Stantec's work; and
- The Master Plan results in the implementation of the required projects on a cost effective and timely basis.

Each component system and the interaction between them are complex and there are many issues to deal with over the short, medium and long term. While Stantec brings strengths to this project that we strongly feel no other consultant can match, we realize a deep understanding of these systems resides in the municipality's staff and others which we will attempt to utilize. Likewise, we realize that at the outset of the project, discussion between the municipality's Steering Committee and Stantec is necessary to review and refine a terms of reference that best meets the needs of the municipality. Therefore, while we have examined

in detail the major issues facing the municipality and have proposed approaches based on our understanding, we remain open to developing a better work plan based on further discussions.
The intention of the master planning process is to identify major projects and to provide order of magnitude cost estimates and timelines for their implementation. Given that Middlesex Centre is a moderately sized rural community with growth predominantly centred in five settlement areas timelines, for the implementation of major servicing projects may be influenced by:

1. Service demand which is often driven by community growth;
2. Residential, commercial and industrial development;
3. Level of service issues;
4. Health and regulatory issues; and
5. Funding opportunities provided by senior levels of government.

Trigger points can be established where servicing drivers such as those listed above (individually or in combination) justify the cost of implementing a major infrastructure project. As part of this project, we will attempt to identify drivers and potential trigger points for the implementation of major projects.

2 PROJECT WORK PLAN

2.1 General Work Breakdown Structure

Our work effort is to be organized into three areas: Project Management, Public Consultation, and Technical Evaluation. Within these two areas are ten major work streams. These are shown in Table 1.

Table 1 – Work Breakdown Structure for Project

Area	Work Streams
Project Management	Project Coordination
	Client Relations
	Quality Management
Public Consultation	Public Consultation and Input
	Class Environmental Assessment Process
Technical Evaluation	Water Supply
	Wastewater Collection and Treatment
	Stormwater Management
	Transportation
	Solid Waste

The tasks which describe the above work streams are presented in the sections following Section 2.2. They are generally presented in the order in which they are to be initiated. Please refer to Section 5 for project scheduling details.

This section is intended to be an undertaking to cover off the requirements in Section 3.0 “Scope of Work”, Section 4.0 “Consultant’s Responsibilities” and Section 5.0 “Deliverables” in the Request for Proposal document as detailed herein. Should there be specific reference to tasks contained within the RFP and not referenced in our work plan, we acknowledge them and will undertake them as part of our work plan.

2.2 Task 1 Project Management

Task 1 is intended to confirm that the Project Manager is responsible for undertaking the “Scope of Work”, “Consultant Responsibilities” and “Deliverables” as described in the RFP and detailed in the overall work plan. With any project of this complexity, there will be inputs and interconnections between the work areas and the work streams. It will be the responsibility of the Project Manager to ensure coordination between the various teams. Specific project management related deliverables for this project are as follows:

1. Attendance at Project Start-up Meeting with the Steering Committee and completion of meeting notes;
2. Review and confirmation of schedule, work plan and budget with the Steering Committee which is to be reflected in meeting notes;
3. Attendance at monthly Project Steering Committee meetings and completion of meeting notes;
4. Ensuring of the proper execution of project contract;

5. Provision of monthly project updates to be included with monthly invoicing and provided at subsequent Project Steering Committee Meeting; and
6. Control of scope, budget and schedule.

As described in Section 5 of this proposal, our quality management plan describes the tools and procedures Stantec have in place to assist the Project Manager in this responsibility.

2.3 Task 2 Technical Analysis

2.3.1 General Approach

For each of the five municipal service components (municipal water, wastewater, stormwater, solid waste and roads), Stantec will develop separate draft and final technical memorandums to address the specific requirements for each of the services' scope of work.

2.3.2 Compile and Review Background Information and Data

Through our work on projects for Middlesex Centre and the Lake Huron Primary Water Supply System, Stantec has access to a variety of information. However, in order to ensure that we have reviewed pertinent information for this project the following information subject to availability is required:

- Available planning and engineering studies;
- Digital topographic base mapping;
- Current drawings of existing infrastructure for Middlesex Centre;
- Current development and servicing agreements;
- Planning, servicing or environmental studies submitted to the Municipality by developers (provided they are in the public domain) for site plan approval, subdivision approval, building permits, or other documents which may influence current planning population numbers;
- Information available from the County;
- MOE orders or other instructions;
- Assimilative Capacity Studies for Middlesex Centre and others (if public); and
- Requests by individuals, developers or other parties for servicing outside of current servicing and growth boundaries.

We will also attempt to gather pertinent background information from agencies, other levels of government and other sources.

2.3.3 Inventory of the Environment

As described in the technical analysis work scope for each municipal service, Stantec will scope its inventory of the natural, physical, social and economic environment to meet the strategic level required to develop and assess appropriate Master Planning solutions.

2.3.4 Water Supply and Distribution

2.3.4.1 General Approach

Detailed design of a new water supply connection to the Lake Huron Primary Water Supply System (LHPWSS) from the Arva Reservoir is underway to service the communities of Kilworth and Komoka. Additionally, both the Denfield and Delaware water supply systems are undergoing Class EAs to address expected 20-year demands. Therefore, while Stantec intends to incorporate information from this ongoing

work, Task 2 will be dedicated almost entirely to address those communities not included within these other projects. Accordingly, the major focus of our efforts will be to determine the following:

1. Update the existing WaterCad V.8 water distribution system models developed by Stantec through past and present project work within Delaware and the Kilworth-Komoka service area to ensure findings from these ongoing studies include the most up to date information provided by the Municipality;
2. Develop a water distribution model for the Ilderton service area using WaterCad V.8;
3. Water supply and distribution issues for Ilderton, including assessment of treatment/pumping stations, watermains, and storage facilities;
4. Water supply and distribution issues for Arva including assessment of treatment/pumping stations, watermains, and storage facilities ;
5. Summarize the water supply and distribution systems for the other urban settlement areas and community settlement areas identified through the ongoing work;
6. Review the existing water supply systems within the smaller Hamlets, including assessing the adequacy of existing private, communal, City of London, or LHPWSS supply; and
7. Identify existing and future water conservation measures.

2.3.4.2 20-year Demand Forecast

Based upon a review of existing and future population data and the 20-year growth and occupancy projections provided by the Municipality, we will determine:

1. Existing and future water demands for Ilderton;
2. Existing and future water demands for Arva;
3. Existing and future water demands for the smaller Hamlets;
4. Anticipated growth zones within each service area based on future growth, extension of services to currently unserviced areas, or infill development.

2.3.4.3 Existing Infrastructure Capacity

Based upon the 20-year demand review, within both the urban and community growth areas and hamlets fully or partially serviced, we will review the existing water supply infrastructure to confirm whether the supply, treatment, storage, pumping, and conveyance capacities are sufficient to meet the projected 20-year demands. For the Urban Settlement Areas, we will also utilize the water distribution system hydraulic models developed to identify key system components that may limit future servicing up to the study limit.

With the exception of private water well systems, the existing infrastructure review will also reference the required capacity of the water supply and distribution system to the age of the infrastructure and what stage within its lifecycle.

2.3.4.4 Policy Review

As part of this sub-task, Stantec will review any existing Middlesex Centre policies along with pertinent regulations made under the *Safe Drinking Water Act* (SDWA), the MOE's "Guidelines for the Design of Water Distribution Systems, July 1984", "Guidelines for the Design of Water Storage Facilities, July 1984", "Design Guidelines for Drinking-Water Systems, Draft, 2007", the Ten State Standards, as well as other planning guidance documents within the region.

Through the Master Plan Consultation phase of this project, Stantec will also look at meeting with the local MOE office and the Health Unit to understand specific issues and concerns that these authorities may have toward water supply issues within Middlesex Centre.

2.3.4.5 Technical Standards Review

Stantec is highly familiar with the various design standards for water treatment facilities, booster pumping stations, storage facilities, distribution systems, as well as private well water systems in the province of Ontario. We continue to update our knowledge in these areas as both regulations and practices evolve. With regards to the water supply options, in addition to the "Do Nothing" option, the following water servicing alternatives will be reviewed:

1. Connection to the regional water supply (LHPWSS);
2. Connection to adjacent municipalities (City of London);
3. Municipal wells;
4. Communal wells; and
5. Private wells.

2.3.4.6 Community Level Review of Issues and Opportunities

Stantec will compile and review community level issues and opportunities at a planning level for the following:

1. Water supply issues for Ilderton;
2. Water supply issues for Arva;
3. Water supply issues within the smaller Hamlets; and
4. Deficiencies for major distribution network mains and treatment/pumping stations (where present) in all service areas;

2.3.4.7 Municipal Level Review of Issues and Opportunities

Stantec will compile and review municipal level issues and opportunities at a planning level for the following:

1. Review extension of distribution systems to service either currently un-serviced areas or future growth areas within each community. For Urban Settlement Areas, complete hydraulic modeling analysis to identify potential future network mains;
2. Review opportunities to extend servicing from one service area to another;
3. Review opportunities for communities along the proposed Arva Pipeline to connect to the regional water system (LHPWSS) via blind flange connections to be provided for future servicing;
4. Review level of security to be provided for all areas;
5. Review the adequacy of private water systems to non-growth areas of the municipality; and
6. Review opportunities to implement water conservation measures within all serviced areas.

2.3.4.8 Water Supply and Distribution Deliverables

The following are the deliverables for this component of the project:

1. Final Water Supply and Distribution scope of work.

2.3.5 Wastewater Collection and Treatment

2.3.5.1 General Approach

The Kilworth Wastewater Treatment Facility (WWTF) is undergoing an expansion to meet its 20-year capacity requirement for development within its service area. The Komoka WWTF is undergoing a Class EA to meet expected 20-year flows from Komoka, portions of Kilworth and Delaware with consideration to post-20 year flows from the remainder of Kilworth upon decommissioning of the Kilworth WWTF. Therefore, it would be Stantec's approach to be informed by this work but to deal with collection within these communities not

addressed by these projects under this master plan. Therefore, the major focus of our efforts will be to address the following:

1. Wastewater collection and treatment issues for Ilderton;
2. Wastewater collection and treatment issues for Arva;
3. Undertake a conceptual biosolids management strategy for all WWTFs;
4. Deficiencies for major trunk sewers and pumping stations associated with all WWTFs; and
5. Review the adequacy of private sewage disposal systems to non-growth areas of the municipality.

2.3.5.2 20-year Demand Forecast

We will review the 20-year growth forecasts for the municipality in order to determine the following:

1. Wastewater flows for Ilderton;
2. Wastewater flows for Arva;
3. Biosolids generation amongst all WWTFs as well as the production of septage and other hauled waste; and
4. Review the potential for infilling in existing hamlets and severances.

2.3.5.3 Existing Infrastructure Capacity

Based upon the 20-year demand review, within urban and community growth areas we will review the existing infrastructure to confirm the treatment, collection, pumping capacities present. We will also reference the required capacity to the age of the infrastructure and where it is within its lifecycle. We will assess the current biosolids storage capacity available at each WWTF.

2.3.5.4 Policy Review

As part of Task 4, Master Plan Consultation, Stantec will look at undertaking a meeting with the local MOE office and the Health Unit to understand specific issues and concerns that these authorities may have toward sanitary servicing issues within Middlesex Centre. In addition to reviewing any Middlesex Centre policies, we will review the MOE's "Guideline D-5, Planning for Sewage & Water Services, August 1996" as well as other planning guidance documents within the region The intent is to produce a long list of best management planning options for Middlesex Centre's consideration.

2.3.5.5 Technical Standards Review

Stantec is fully cognizant of the design standards for WWTF, collection systems and private sewage disposal systems in the province of Ontario and we continue to update our knowledge in this area as regulation and practices evolve. We will look at an appropriate range of technologies to address issues that could be expected to emerge.

2.3.5.6 Community Level Review of Issues and Opportunities

Stantec will compile and review community level issues and opportunities at a planning level for the following:

1. Wastewater collection and treatment issues for Ilderton;
2. Wastewater collection and treatment issues for Arva; and

3. Deficiencies for major trunk sewers and pumping stations associated with all WWTFs.

2.3.5.7 Municipal Level Review of Issues and Opportunities

Stantec will compile and review municipal level issues and opportunities at a planning level for the following:

1. Undertake a conceptual biosolids management strategy for all WWTFs; and
2. Review the adequacy of private sewage disposal systems to non-growth areas of the municipality.

2.3.5.8 Wastewater Collection and Treatment Deliverables

The following are the deliverables for this component of the project:

1. Final Wastewater Collection and Treatment scope of work.

2.3.6 Stormwater Management

2.3.6.1 Purpose

The purpose of the stormwater component is to provide a strategic level assessment of the options for providing stormwater management for new development. In Ontario, stormwater management (SWM) is required when a rural area is urbanized and its intent is to mitigate impacts of run off quantity and quality. Quantity impacts result from an increase of runoff as the urban development will have more impervious surface. This increase includes the total volume, flow rate and duration of run off from a rainfall event. This can cause serious erosion problems in creeks, rivers and outfalls into the water bodies. Quality impacts are the result of “non-point” sources of pollution, which can discharge from the result of human activity. Both rural and urban areas can contribute to non-point source pollution. Stormwater contaminants may include suspended solids, microbiological contamination, organic matter, oils and greases, nutrients, and pesticides.

Therefore, two aspects of SWM that need to be addressed in development of the study area are:

- Quantity Control, which is the name given to managing the amount of runoff generated by a drainage area and generally attempts to limit the maximum run off flow of the developed area to the rate of flow that occurred prior to development; and
- Quality Control, which is the name given to managing the quality of the runoff generated from a drainage area and generally attempts to allow for an extended period of detention of storm water in order to encourage the settling out of pollutants within a facility for most frequent rainfall events.

2.3.6.2 20-year Development Forecast

Based upon the undeveloped available area within urban and community growth areas we will estimate the potential size of the SWM facilities required based upon the MOE Stormwater Management Planning and Design Manual 2003 as well as those areas which would be treated by lot level controls if there was not an opportunity for more centralized treatment.

2.3.6.3 Existing Infrastructure Capacity and Effectiveness

Through records review, site reconnaissance and discussions with Middlesex Centre staff we will review the capacity and effectiveness of currently installed SWM facilities within the municipality. The criteria for effectiveness will include but not necessarily be limited to reviewing any performance data available, the current state of each facility given where it should be within its lifecycle and the amount of maintenance required to keep the facility functioning.

2.3.6.4 Policy Review

In addition to reviewing any Middlesex Centre policies, we will review the current MOE SWM planning guidelines Stormwater Management Planning and Design Manual 2003 as well as other planning guidance documents within the region such as those from the City of London. The intent is to produce a long list of best management planning options for Middlesex Centre's consideration.

We will also contact the conservation authority (CA) having jurisdiction and review the status of receiving streams (warm water or cold water) and any other issues identified in the CA's watershed and/or subwatershed studies. We will confirm what if any development could trigger the requirement for studies of greater magnitude than a stormwater management report by the developer's engineer.

2.3.6.5 Technical Standards Review

In addition to the "Do nothing" option, there are five options with regard to the type of SWM facilities that are available for use in Ontario. These are:

1. Lot level controls (including oil and grit separators);
2. Extended Detention Ponds for each drainage area;
3. Wet Ponds for each drainage area;
4. Constructed Wetlands for each drainage area;
5. Combined facilities serving multiple drainage areas.

2.3.6.6 Review Issues and Opportunities - Per Community/Development

Within each of the undeveloped available area within urban and community growth areas we will review what would appear to be the most suitable SWM facility (or combination) alternatives based upon the planning and technical review undertaken to date. This would include order of magnitude cost estimates for construction costs and maintenance and liability issues for the municipality.

2.3.6.7 Review Issues and Opportunities - Per Subwatershed

If feasible, we will look at regional and/or subwatershed solutions (which could involve more than one community) for each of the urban and community growth areas. Our analysis would include alternatives based upon the planning and technical review undertaken to date. This would include order of magnitude cost estimates for construction costs and maintenance and liability issues for the municipality.

2.3.6.8 Stormwater Deliverables

The following are the deliverables for this component of the project:

1. Final SWM scope of work.

2.3.7 Transportation

2.3.7.1 Purpose

The purpose of the transportation component of the Master Plan is to provide a strategic level assessment of the existing and potential future transportation conditions in order to understand the transportation infrastructure and service required to meet the short and long term needs of the community.

The approach to the transportation assessment will be consistent with the Municipal Class EA process, Phases 1 and 2. The first task will be to assess the existing and future demand conditions to identify network problems and opportunities. These opportunities will be further refined to generate alternative solutions, which will then be reviewed in consideration of their effectiveness in addressing the identified problems and in consideration of potential constraints.

While Stantec has produced the 2004 Roads Needs Study for Middlesex Centre, we feel that this component of our work will require somewhat more effort than other components. This is due to the requirement to assess impacts to municipal roads given the pattern of Middlesex Centre's and Middlesex County's road network, the proximity of London which is a regional attraction and therefore generates extra-municipal trips through Middlesex Centre.

2.3.7.2 Project Initiation

This task will include finalizing the Study Work Plan, assembling and reviewing all relevant existing information and reports and determining exact scope of work in consultation with Municipal staff. Existing and historical traffic data will be reviewed to determine additional traffic counts that may be required to support the identification of existing and future transportation issues. A traffic data collection plan can be developed as required to ensure that the necessary data is available. For the Proposal a nominal fee for new traffic counts has been assumed. The need for this additional data collection can be confirmed following review of available information.

2.3.7.3 Issue Scoping

This task will review and identify network options and objectives in the context of the intrinsic relationship between land use and transportation planning. Consideration of the Municipal aspirations for growth within Official Plan framework (demographic, economic and transportation service goals) will be key in the identification of a transportation strategy for the Municipality.

Mobility within a region is primarily influenced by land use patterns and urban form. Where individuals live, work, shop and play dictates when and how they travel. Input from the project team will be required to identify the range of probable land use planning scenarios to be considered, recognizing that land use planning and transportation planning are cyclical and ongoing processes that must continually respond to and influence community values, needs and environments.

The transportation scope will also include a strategic review of both the demand and supply sides of mobility services and goods movement in and through the community, recognizing the role of various modes including roads, transit, active transportation (walk and cycle), trucking, and railways. The Municipality is traversed by several key transportation corridors (provincial highways, arterial county roads and rail corridors). The role, connectivity, and efficiency of these elements of the system will be reviewed and qualified/quantified, including the importance of existing and future linkages with the City of London.

2.3.7.4 Strategic System Analysis

The purpose of this activity is to identify the problem areas in the transportation system resulting from the travel demands generated by specific land use/growth scenarios, assuming certain network and demand strategies are in effect. The forecasts of future travel growth by mode and area will dictate the extent and nature of future transportation needs. The demand forecasts reflect projected urban growth in the Municipality and growth in "people movement", both of which are based on future population and employment estimates. Fundamental to the forecasting of future growth, is the development of a reliable, flexible and traceable demand forecasting process.

The demand forecasting process is represented by four major tasks:

- Trip Generation
- Trip Distribution
- Mode Split
- Traffic Assignment

There are several means by which to facilitate this process, ranging from very strategic to very detailed. A description of the two methods that could be considered for this analysis is as follows.

1. The first alternative forecasting approach is referred to as a strategic, first principles review. Socio-economic and demographic inputs, combined with historical traffic patterns, are used to establish the trip generation, trip distribution and mode split characteristics of existing and future travel within the municipality. Aggregate travel flows are reviewed in consideration of existing facility use and available system capacity, to determine likely and reasonable flows between communities and land uses within communities. This method requires sound base data with respect to land use and existing and future travel behaviour. Database and spreadsheet software are used to perform required mathematical calculations.

2. The second alternative forecasting approach would be the development and use of a dynamic model to simulate traffic flows on the municipal road network. The development of a detailed demand forecasting model can be useful for assessing network performance in consideration prevailing traffic conditions (congestion) and in consideration of new infrastructure/service. The City of London currently maintains a strategic forecasting model using state of the art GIS software (TransCAD). The model could be expanded to include the Municipality of Middlesex Centre and then applied in the assessment of need and the testing of alternative strategies. The inputs to the model require significant effort in terms of development and consensus between economic, socio-economic and transportation environments/disciplines, requiring additional effort (time) and cost for this component of the study.

The approaches require the same socio-economic and demographic inputs but at different levels of detail. The approaches also differ in the assignment process, with the first principles review requiring more professional judgment at the beginning of the process. The detailed model provides added flexibility in testing alternative demand and network scenarios and providing the ability to look at any specific points within the network (whereas the strategic review will look primarily at critical locations) but at a cost in terms of effort and time. Both are equally defensible within the EA process.

Stantec will proceed with Method 1 but will provide Middlesex Centre with the option of undertaking Method 2 for an additional fee. Using the resultant demand forecasts, strategic transportation service options (*i.e*. roads, transit, and other modes) will be assessed in the context of both intra and inter-regional transportation issues and needs. The analysis will allow for the determination of specific network impacts of major developments.

2.3.7.5 Transportation Master Plan Development

Existing and anticipated transportation deficiencies and opportunities will be identified at a strategic level. A listing of short, medium, and long-term solutions to current and anticipated transportation problems within the study area will be developed. The existing and future network components will be reviewed and evaluated to identify and confirm the role and function of the network links. From this review a road classification system will be developed and operational/design guidelines and standards for each class of road identified. The prioritization of improvements will be based on an assessment of a range of criteria, including cost, benefit, strategic importance, fiscal limitations, impact and ease of implementation. The various improvement plans developed will be assessed to confirm their adequacy in addressing identified needs, and if the initiatives

meet the study objectives. These recommended improvements and practices will form the foundation of a strategic transportation plan.

2.3.7.6 Strategic Plan Confirmation and Documentation

The recommendations of the Transportation Assessment will be presented to the Municipality for endorsement. Materials will be prepared as required for public consultation.

2.3.7.7 Transportation Deliverables

The following are the deliverables for this component of the project:

1. Final Transportation scope of work;
2. Attendance of Stantec's Transportation Lead at up to three steering committee meetings;
3. Attendance of Stantec's Transportation Lead at up to 2 Public Information Centres; and
4. Attendance of Stantec's Transportation Lead at Council Meeting Presentation.

2.3.8 Solid Waste

2.3.8.1 20-year Waste Generation Forecasting

Based upon population data from Middlesex Centre, information provided by Middlesex Centre's solid waste management contractor, the Bluewater Recycling Association, as well as other industry measures Stantec will generate an estimate of the 20-year waste generation forecast. We will also attempt to ascertain the municipality's trends in terms of waste diversion and disposal.

2.3.8.2 Existing Solid Waste Management Review

Currently, Middlesex Centre's solid waste collection and removal is provided by the Bluewater Recycling Association which is a not for profit organization which undertakes waste management for 21 member municipalities in Southwestern Ontario. As part of this assignment we will review the existing agreement with the Bluewater Recycling Association and also catalogue existing municipal waste management programs, procedures, systems and facilities.

2.3.8.3 Policy Review

We will review current federal and provincial regulations and guidelines as it pertains to waste management and also future trends. Based upon information provided by the Bluewater Recycling Association, members and other municipalities, we will attempt to ascertain the range of management, incentive and education options available for solid waste. The intent is to produce a long list of best management planning options for Middlesex Centre's consideration.

2.3.8.4 Technical Standards Review

With regard to the components of the waste management system which Middlesex Centre operates or has some measure of control, we will review current federal, provincial and industry best practice guidelines. With regard to the waste management general alternatives: diversion and disposal, we will look at a strategic level of the technical options for major sub elements based upon the expected waste generation of the municipality.

2.3.8.5 Review Issues and Opportunities

While third party waste management provides many advantages to Middlesex Centre in that the municipality is one of 21 municipal members (akin to the water supply being part of the LHPWSS for all major water systems), there may be identifiable challenges to Middlesex Centre in the master plan time frame. On a strategic level and with regard to current and future policy and technical trends, this arrangement could be evaluated against such options as:

1. Remain as a member of the Bluewater Recycling Association with the current level of service;
2. Remain as a member of the Bluewater Recycling Association with a different level of service
    a. Level of services reduced with either municipality or another entity providing input to maintain or enhance overall service,
    b. Increase level of service;
3. Middlesex Centre to be primarily responsible to undertake waste management
    a. Entirely by Middlesex Centre
    b. With assistance from another party; and
4. Another party to provide Middlesex Centre with waste management services.

As part of this task, we will look at which options would be feasible for Middlesex Centre.

2.3.8.6 Solid Waste Deliverables

The following is the deliverable for this component of the project:

1. Final Solid Waste scope of work.

2.4 Task 3 Develop Planning Level Master Plan Solutions

2.4.1 Planning Level Alternative Solutions Development

2.4.1.1 Water Supply and Distribution

Water planning level solutions developed for each community and municipal level issue as detailed in task 2.3 will be evaluated based upon a criteria prepared by Stantec with input from the Steering Committee. These criteria will generally include:

1. Impact on the Natural-Social-Economic environment;
2. Acceptability to the MOE and the regulators having jurisdiction;
3. Capital and maintenance costs of the system; and
4. Future expandability based upon the growth scenarios.

These planning solutions will be ranked and shortlisted for further review. The following is the deliverable for this component of the project:

1. Draft Technical memo outlining the waste supply and distribution planning level analysis to date and the long listed and short listed solutions.

2.4.1.2 Wastewater Collection and Treatment

Wastewater planning level solutions developed for each community and municipal level issue as detailed in task 2.3 will be evaluated based upon a criteria prepared by Stantec with input from the Steering Committee. These criteria will generally include:

1. Impact on the Natural-Social-Economic environment;
2. Acceptability by the MOE and the regulators having jurisdiction;
3. Capital and maintenance costs of the system; and
4. Future expandability based upon the growth scenarios.

These planning solutions will be ranked and shortlisted for further review. The following is the deliverable for this component of the project:

1. Draft Technical memo outlining the wastewater planning level analysis to date and the long listed and short listed solutions.

2.4.1.3 Stormwater Management

SWM planning level solutions developed for each urban and community growth area in Task 2.3 will be evaluated based upon a criteria prepared by Stantec with input from the Steering Committee. These planning solutions will be ranked and shortlisted for further review. We will assess the applicability of solutions based upon the following criteria:

1. Minimum and maximum drainage area served;
2. Effectiveness in controlling water quantity and quality;
3. Land requirements;
4. Capital cost;
5. Maintenance costs;
6. Safety and liability;
7. Impacts on municipal drainage; and
8. Public versus private ownership and responsibility.

The following is the deliverable for this component of the project:

1. Draft Technical memo outlining the SWM analysis to date and the long listed and short listed solutions.

2.4.1.4 Transportation Master Plan Development

Existing and anticipated transportation deficiencies and opportunities will be identified at a strategic level. A listing of short, medium, and long-term solutions to current and anticipated transportation problems within the study area will be developed. The existing and future network components will be reviewed and evaluated to identify and confirm the role and function of the network links. From this review a road classification system will be developed and operational/design guidelines and standards for each class of road identified. The prioritization of improvements will be based on an assessment of a range of criteria, including cost, benefit,

strategic importance, fiscal limitations, impact and ease of implementation. The following is the deliverable for this component of the project:

1. Draft Technical memo outlining transportation context analysis inputs and results and alternative solutions.

2.4.1.5 Solid Waste

The strategic options identified in Section 2.3 will be evaluated based upon a criteria prepared by Stantec with input from the Steering Committee. These criteria will generally include:

1. Impact on the environment;
2. Acceptability to the public;
3. Acceptability to regulators;
4. Capital and maintenance costs of the system (for required diversion and disposal options);
5. System security; and
6. Future expandability.

These planning solutions will be ranked and shortlisted for further review. The following is the deliverable for this component of the project:

1. Draft Technical memo outlining the solid waste planning level analysis to date and the long listed and short listed solutions.

2.4.2 Recommended Planning Level Solutions

2.4.2.1 Water Supply and Distribution

Based upon a finer level of scrutiny, a planning level solution for each community and municipal level issue will be derived based on Stantec's review, the Steering Committee's review and public input. The following is the deliverable for this component of the project:

1. Final Technical Memo – Water Supply and Distribution report.

2.4.2.2 Wastewater Collection and Treatment

Based upon a finer level of scrutiny, a planning level solution for each community and municipal level issue will be derived based on Stantec's review, the Steering Committee's review and public input. The following is the deliverable for this component of the project:

2. Final Technical Memo – Wastewater Collection and Treatment Master Plan report.

2.4.2.3 Stormwater Management

Based upon a finer level of scrutiny, a planning level solution for SWM for each urban and community growth area will be derived based on Stantec's review, the Steering Committee's review and public input. The following is the deliverable for this component of the project:

1. Final Technical Memo – Stormwater Management Master Plan report.

2.4.2.4 Transportation Master Plan Development

The various improvement plans developed will be assessed to confirm their adequacy in addressing identified needs, and if the initiatives meet the study objectives. These recommended improvements and practices will form the foundation of a strategic transportation plan. The following is the deliverable for this component of the project:

1. Final Technical Memo - Transportation Master Plan report.

2.4.2.5 Solid Waste

Based upon a finer level of scrutiny, a planning level solution for solid waste will be derived based on Stantec's review, the Steering Committee's review and public input. The following is the deliverable for this component of the project:

1. Final Technical Memo – Solid Waste Master Plan report.

2.5 Task 4 Master Plan Consultation

The scope of work for Master Plan Consultation which will be undertaken in conformance with Phases 1 and 2 of the MEA Class EA. Undertaking the Class EA requirements will generally consist of the following steps:

1. Develop Master Plan Consultation Plan with Steering Committee Input;
2. Notify agencies, concerned public and local residents of the Class EA process and upcoming public meeting;
3. Undertake three (3) public meetings at strategic points in the master planning process (early in Master Plan project, following draft technical study preparation and following selection of the preferred planning alternatives);
4. Review public comments and agency comments;
5. Optional fourth public meeting;
6. Council presentation of the Master Plan;
7. Prepare documentation of consultation within the Master Plan document; and
8. Publish Notice of Master Plan Process Completion; and
9. Address comments and issues from the 30-day Review Period; and
10. Complete final documentation.

Master planning processes can be controversial and if some difficult issues arise, the scope of work and schedule may need to be adjusted. It is also difficult to gauge the level of involvement of local and regional aboriginal groups at the outset of this project. These adjustments could require additional effort to respond to review agencies and the public. Our scope of work assumes that the Class EA process will be completed subject to no requests from the public or agencies for a Minister's Order (Part II Order). Should any issue become controversial or more complicated than could reasonably be anticipated at the time of the submission of the present scope, we would respectfully request the opportunity to provide an additional scope of work, schedule and budget to Middlesex Centre.

The deliverables for this phase of the project will be as follows:

1. Master Plan Consultation Plan;
2. Preparation of a notice for Middlesex Centre to publish for Master Plan process and the date/location of public meeting;
3. Provision of notice of the Class EA Master Plan by letter to agencies and concerned public;
4. Provision of records of contacts made with agencies, concerned public and local residents (to be in the Consultation Component of the Master Plan document);
5. Undertake three public meetings to be held on a week night either as a drop in or a more formal presentation (Middlesex Centre to provide meeting location);
6. Review public comments and agency comments and respond on behalf of Middlesex Centre as appropriate (records to be in the Consultation Component of the Master Plan document);
7. Prepare notice for Middlesex Centre to publish Notice of Project Completion; and
8. Address comments and issues from the 30-day Review Period (records to be in the Consultation Component of the Master Plan document).

2.6 Task 5 Reporting

Stantec will prepare and submit the following key reporting deliverables for this project:

1. Master Project Schedule (electronic copy in pdf format and copies for Steering Committee);
2. Project Steering Committee Meeting Notes (electronic copy in pdf format and copies for Steering Committee at following meeting);
3. Master Plan Consultation Plan (electronic copy in pdf format and copies for Steering Committee);
4. Draft Technical Memoranda for Water, Wastewater, SWM, Transportation and Solid Waste (electronic submission);
5. Draft Master Plan Report Submission including final service technical memoranda and documentation of public consultation (6 copies and electronic copies with associated CAD files if any);
6. Final Master Plan Report Submission (15 copies and electronic copy in pdf format with associated CAD files if any); and
7. Report to Council (Power point presentation with handouts for council and electronic copy in pdf format).

3 PROJECT STAFF PLAN

3.1 Introduction

Stantec will ensure that this project is sufficiently staffed by highly qualified personnel to provide the project management, environmental planning and engineering services to complete this project in accordance with your terms of reference and our work program. We estimate that Stantec's London office will undertake approximately 90% of the total project work as we have a large staff that is skilled in the delivery of complex planning and engineering projects. Additional Stantec staff for this assignment will be drawn from Stantec's Windsor office (building services) and from our Markham Office (assimilative capacity study). In addition, we propose to engage highly qualified local consultant, Golder Associates Ltd. who are the premier geotechnical consultant in the London area.

3.2 Project Team Organization

The project team is led by John Tyrrell, P.Eng. Our effort is organized into three areas; Project Management, Environmental Planning, and Engineering with 9 major work streams, each being led by an experienced staff member. Figure 1 details our project team organization. Unless otherwise noted in this section all of our staff works out of our London office. *Curricula Vitae* of staff are included in Appendix 1.

3.3 Project Management and Team Leaders

John Tyrrell, P. Eng. will assume the role of **Project Manager** for this project. John is an **Associate** with Stantec and has twenty years of engineering and management experience. He is particularly well versed in the recent regulatory changes involving drinking water treatment compliance. Recent Middlesex Centre experience includes Project Manager for the Initial Conditions Survey Report Municipality of Middlesex Centre's Water and Wastewater Systems, and the Kilworth Komoka Potable Water Supply Project. John has assisted Middlesex Centre in upgrades of their water systems to meet the requirements of O.Reg. 459/00 and present O.Reg. 170/03, the 2004 Roads Needs Study and the 2005 Development Charges Appeal of aspects of the Roads Needs Study, the Kilworth-Komoka Water Supply Upgrade Project and the Komoka-Delaware Municipal Servicing Plan. Regional work includes being the Project Manager for the 2003 Master Plan Updates for the Lake Huron and Elgin Area Primary Water Supply Systems, the Arva-Komoka-Mt.Brydges Water Supply. Other major infrastructure experience includes the Oxford County Biosolids Management Master Plan Implementation, and the North Tillsonburg Servicing Strategy and Water Treatment Facility Detailed Design Study. John also acts as the Program Manager for 9 Source Water Protection projects involving over 50 water treatment plants operating out of four Stantec offices in Ontario, and the Project Quality Control Lead on several complex infrastructure projects carried out by Stantec. John will also be the **Stormwater Management Technical Lead**. He has considerable experience with SWM from master's project work in the early 1990's to implementing large facilities such as the Strathroy Multi-Use Facility and planning of regional SWM facilities for the North Tillsonburg area. Assisting John with this role will be:

- **Cameron Gorrie, EIT** is an Environmental Engineer-in-Training and a recent University of Western Ontario graduate. He is currently working on the Komoka-Delaware Municipal Servicing Implementation Study, assessing expansion alternatives for the Komoka WWTF and providing service population projection scenarios.

Rob Hughes, P. Eng. will assume the role of **Quality Management Lead** to ensure project quality control on this project. Rob is the Managing Principal for the London office of Stantec. Rob has been involved in project planning including Class EA work, and the design and contract administration of a broad range of projects throughout southwestern Ontario. Those projects have included flood control facilities, sewage and water treatment works, pumping facilities, road reconstruction, trunk and distribution watermains, sanitary and storm

sewers and landfill sites. Rob has represented a number of municipalities providing technical advice on subdivision developments and infrastructure requirements. His duties require frequent contact with municipal staff and politicians, contractors, other consultants, government officials and the public. He has also worked for a Conservation Authority and was responsible for the implementation of a major flood control project in southwestern Ontario. That experience involved co-ordination of consulting engineers and construction projects on behalf of the Authority.

Dana Schoeley, P.Ag., will undertake the role of **Public Consultation Coordinator**. Dana's experience includes conducting field investigations, liaising with government agencies and regulators, synthesizing data and producing reports. Specific areas of expertise gained from her work include environmental assessments, environmental impact studies, agricultural impact assessments, construction monitoring, stream assessments and compliance reporting. She has assessed potential impacts to aquatic and terrestrial habitats and vegetation communities at a number of sites. These include highway construction projects, pipeline projects, aggregate pits and development projects. Dana has conducted fisheries habitat assessments, benthic macroinvertebrate surveys and fisheries inventories. Assisting Dana will be:

- **Nina Sampson, CEPIT.,** is an Environmental Technician whose experience includes analyzing data, producing reports and conducting field sampling and review work. She is currently working on Source Water Protection projects.

Nelson Oliveira, P.Eng. will be the **Water Supply Lead**. Nelson is a Project Manager and has over 10 years of engineering experience in the field of environmental infrastructure and management. He has been involved in a wide variety of complex projects in Ontario in the areas of infrastructure planning, advanced water hydraulic analysis, design and contract administration of water treatment facilities, flood control structures, erosion control structures, detailed design of roadways and parking lot areas, sewage collection systems, pumping stations and stormwater management facility monitoring. Since 2003, he has assisted various public and private sector clients upgrade their water treatment systems and adapt their operations to maintain compliance with the new water treatment regulations that have emerged in Ontario since the Walkerton Tragedy in May 2000. In addition to providing detailed design, he has completed bench scale testing related to health and aesthetic related treatment processes and has presented training programs to clients in order to meet Trained Person certification status. He is currently managing the lead testing program for over 240 school facilities. Nelson is well versed in assessing characteristics of water supply systems having completed numerous hydraulic modeling assignments for primary water systems including work on the Lake Huron and Elgin Area Primary transmission mains, the Tri-County (West Elgin) system as well as other primary and secondary mains for both systems. He has also undertaken similar work for Kilworth-Komoka, Delaware, Melrose, Dorchester, Thorndale, and Tillsonburg. Assisting Nelson will be

- **Simon Jeater, C.Tech.** is a **Senior Design Technician** with our London office responsible for preliminary design work for the Kilworth-Komoka water transmission main. He has over eight years of civil engineering experience and he has worked on over forty civil engineering projects for Stantec including site servicing design, parking lot design and sanitary sewers and watermain design. Prior to joining Stantec, Simon worked for several years with a geotechnical consultant. In 2003 and 2004, he was the principal field technician carrying out site review of the watermain crossing of the Fanshawe Dam. He is currently the resident inspector for the Oxford PCP expansion which involves the coordination of complex works. He is currently undertaking design coordination for the Kilworth-Komoka Water Supply project.

- **Chris McIntosh, EIT** has been involved in a wide range of potable water, wastewater, and infrastructure projects, both small and large, where he is responsible for design, analysis, and contract documents. He has participated on projects involving Environmental Assessments and Approvals from both Federal and Provincial Ministries. He has undertaken research, hydraulic

analysis and modeling on Middlesex Centre projects including the Ilderton Water Storage project, the Denfield Water Storage project and the Kilworth-Komoka Water Supply project.

Olav Natvik, P.Eng. will be the **Wastewater Lead for** this project. Olav is a Process Engineer with a Masters degree in advanced wastewater treatment. He is an expert in a range of wastewater technologies including Biological Nutrient Removal (BNR), Biological Active Filtration (BAF), and Membrane Bioreactors (MBR). He has been involved in numerous wastewater projects throughout North America including: Bonnybrook; Gold bar; Red Deer; Kalispell, Montana; Brunswick, Georgia; Lulu and Annacis Island; Ashbridges Bay; Lou Romano; Elmira; Brantford; and Galt. He has been involved in the preliminary design for the expansion of the Oxford PCP and was the principal author of the feasibility study on the expansion of Greenway PCC. Olav provides process expertise for many of Stantec's high profile wastewater treatment projects wherever they may arise. His experience includes master servicing planning, process modeling using wastewater simulators, class environmental assessments, process audits and optimizations, plant re-ratings, pilot studies for advanced level treatment, peer reviews, expert witness and detailed design services. He has been actively involved in local and international water quality organizations, presenting to the Water Environment Association of Ontario (WEAO) and Water Environment Federation (WEF). He is currently the technical lead for the treatment options for the expansion of the Komoka WWTF. Assisting Olav will be:

- **Mike Manning** is a **Senior Process Designer** in our London office. He has over twenty-five years experience in the design and construction of large complex water and wastewater infrastructure projects throughout Ontario. During the past fifteen years, he has held key design and project coordination roles for numerous projects in the London area (examples include: Springbank Water PS, Bulk Water Filling Station, Greenway PCC, Pottersburg PCP, Vauxhall PCP, Oxford PCP, Elgin Area WTP, Lambton WTP, and Mannheim WTP). Mike offers valuable insight into what clients expect for design, SCADA, construction administration, and start-up/commissioning. He is thoroughly familiar with the Joint Board's SCADA and Instrumentation Standards. For this project, Mike would hold a lead role in the process and I&C design, as well as Contract Administration. Mike is a resident of Middlesex Centre.
- **Simon Jeater, C.Tech.** (role and experience previously described).

Paul Bumstead, BES will be the **Transportation Planning Lead**. Paul is a Senior Transportation Planner with 18 years of professional experience specializing in long-range demand forecasting and modeling. He has a wide range of transportation planning and engineering experience, having worked on long-range strategic planning studies, toll and revenue studies, area transportation planning studies, urban development studies, environmental assessment/design studies, and traffic impact, site access and parking studies. Paul's specific area of expertise is travel demand forecasting and modeling. He is well versed in all aspects of strategic forecasting models, having employed numerous macro and micro simulation models, including EMME/2&3, TransCAD, Paramics and VISSIM. Assisting Paul will be:

- **Steven Kwan, EIT** is a Transportation Engineer-in-Training with two years of professional experience. Steven's experience spans a wide range of transportation planning and engineering studies including traffic impact, traffic operations, traffic calming, parking, peer review, and environmental assessment.

John Langan, B.Sc. will be the **Solid Waste Lead**. John has more than 25 years of experience in studies and design relating to environmental management, the natural environment, and municipal infrastructure. Highlights of his experience include committee work to develop technical guidance for Source Protection Vulnerability Assessment Technical Studies at municipal drinking water treatment plants in Ontario, applying UV disinfection to municipal and residential drinking water supplies and undertaking municipal class environmental assessment for water and wastewater infrastructure projects. With regard to solid waste management he has provided hazardous waste management services for by-products of integrated steel

making and finishing, industrial chemicals formulation and automobile manufacturing industries, developed leachate treatment and odour control strategies and he has developed strategies for municipal solid waste landfill operations. Assisting John will be:

- **Cameron Gorrie, EIT** (role and experience previously described).

3.4 References and Project Experience

Stantec's London staff brings together intimate knowledge of Middlesex Centre's municipal infrastructure system with extensive experience in assisting municipal clients with the planning, design and operation of complex water and wastewater systems. Table 2 provides clients who may be contacted for reference and the projects that these clients have worked on with Stantec.

Table 2 – Client References and Project Experience

Client	Contact and Telephone #	Project(s)
City of London	Tom Copeland, P.Eng., Manager Wastewater & Drainage Engineering 519-661-2500 ext 4662	Initial Oxford PCP expansion, Byron PS upgrade, Wonderland PS, West London Dyke Replacement Phase 1, Sanitary PS Forecast Review
Oxford County	Shahab Shafai, P.Eng., Manager of Wastewater Services, 519-539-9800 ext 3127	Biosolids Management Master Plan (BMMP) Preliminary Engineering, Woodstock WWTP dewatering building, Tillsonburg WWTP dewatering building, tank covers and Odour Control, Tavistock WWTP lagoon aerators
Lake Huron and Elgin Area Primary Water Supply Systems	Andrew Henry, P.Eng., Manager, 519 661-2500 ext.1355	Arva-Komoka-Mt. Brydges Water Supply, 2003 Master Plan Update, Strathroy-Caradoc Pipeline Preliminary Engineering Report, Lake Huron and Elgin Area WTPs Backup Generator Project (Planning, EA, Civil and Building subconsultant) various hydraulic and treatment system modeling assignments.
Ontario Clean Water Agency Engineering Services	Andy Valickis, P.Eng., Senior Project Engineer, 416-314-5551	Lake Ontario Cooperative Source Water Protection Program Intake Protection Studies (20 WTPs), West Elgin Primary Water Supply System New West Elgin Water Treatment Plant and transmission mains.
Municipality of Middlesex Centre	Maureen Looby, P.Eng., Manager, Public Works and Engineering, 519-666-0190	Engineers Report for 8 water systems, DWPR and SDWA upgrades to Arva, Ballymote, Birr, Denfield, Melrose, Kilworth-Komoka, Kilworth-Komoka Water Supply project, Initial Condition Survey, 2004 Roads Needs Assessment, 2005 DC Appeal (Roads related), Komoka-Delaware Municipal Servicing Implementation Study, Ilderton Water Storage, Denfield Water Storage Class EA and Implementation

4 PROJECT SCHEDULE AND STAFF BUDGET

4.1 Project Schedule

Our proposed work program and schedule to complete this assignment is detailed in Figure 2. Our intention is to undertake and complete this assignment within a year of the project start up meeting and assignment by Middlesex Centre. As per the schedule, the Master Servicing Plan would be completed and in the 30-day review period following Notice of Study Completion. Key completion dates are scheduled below. It should be noted that in our scheduling, we have included the possibility for a fourth public meeting in the event that the Steering Committee deems this necessary to ensure full public participation. This additional meeting would extend the project completion time by approximately one month.

Table 3 – Summary Project Schedule

Activity	Expected Completion Date
Project Start-up Meeting	December 1, 2008
Project Contract Signed	December 17, 2008
Develop Master Plan Consultation Plan with Steering Committee Input	December 29, 2008
Gather Background Information	January 26, 2009
PIC # 1 Introductory Meeting	January 27, 2009
Monthly Project Steering Committee Meeting	February 3, 2009
Monthly Project Steering Committee Meeting	March 3, 2009
Monthly Project Steering Committee Meeting	April 7, 2009
Solid Waste Assessment	April 20, 2009
Stormwater Management Assessment	April 20, 2009
Transportation Master Plan	April 20, 2009
Wastewater Collection and Treatment Assessment	April 20, 2009
Water Supply & Distribution Assessment	April 20, 2009
Monthly Project Steering Committee Meeting	May 5, 2009
Monthly Project Steering Committee Meeting	June 2, 2009
Develop Alternate Solutions	June 8, 2009
PIC # 2 for Review of Alternate Solutions	June 11, 2009
Monthly Project Steering Committee Meeting	July 7, 2009
Monthly Project Steering Committee Meeting	August 4, 2009
Develop Preferred Solutions	August 13, 2009
Draft Report Submission (including final Technical Memoranda)	August 13, 2009
Monthly Project Steering Committee Meeting	September 1, 2009
PIC # 3 for Preferred Solutions (Recommendations to Council)	September 8, 2009

Table 3 – Summary Project Schedule	
Activity	**Expected Completion Date**
Monthly Project Steering Committee Meeting	October 6, 2009
PIC # 4 (optional delays completion by +/- month)	October 30, 2009
Final Report Submission	November 3, 2009
Monthly Project Steering Committee Meeting	November 3, 2009
Report to Council	November 11, 2009
Notice of Master Plan Completion	November 23, 2009
Monthly Project Steering Committee Meeting	December 1, 2009
30-day EA Review Period	December 23, 2009
Master Plan Complete	December 23, 2009

It should be noted that our proposed study schedule depends on the cooperation of various third party agencies for the provision of information that will be required to complete the work as well as the timeliness of the assignment of this project and the provision of data and input from Middlesex Centre. Public consultation for master plans can be controversial. The master plan schedule may need to be adjusted if additional effort is required to respond to review agencies and the general public, should any issue become controversial or more complicated than could reasonably be anticipated at the time of this proposal submission. In order to provide a firm consulting fee, we assume that the master plan/Class EA process will be completed subject to no requests from the public or agencies for a Part II Order and as described in our work plan. Should a Part II Order request occur or negotiations or additional work be required in an attempt to further address issues to avoid a Part II Order request, we would request that Middlesex Centre make appropriate adjustments to the project with Stantec's assistance.

4.2 Fee Estimate

4.2.1 Project Fee

Based upon our understanding of the RFP requirements as presented in our work plan, we estimate our fee to be [redacted] excluding GST. Table 4 summarizes the estimated fees to complete our scope of work and Table 5 attached provides a detailed breakdown of staff time and associated costs.

Table 4 – Summary of Estimated Fees (not including GST)

Task	Description	Staff Costs	Expenses	Total
1	**Project Initiation and Review of Existing Information**			
1.1	Monthly Project Steering Committee Meetings	[redacted]	[redacted]	[redacted]
2	**Technical Analysis**			
2.1	Gather Background Information	[redacted]	[redacted]	[redacted]
2.2	Water Supply & Distribution Assessment	[redacted]	[redacted]	[redacted]
2.3	Wastewater Collection and Treatment	[redacted]	[redacted]	[redacted]
2.4	Stormwater Management	[redacted]	[redacted]	[redacted]
2.5	Transportation	[redacted]	[redacted]	[redacted]
2.6	Solid Waste	[redacted]	[redacted]	[redacted]
3	**Develop Planning Level Master Plan Solutions**			
3.1	Develop Alternate Solutions	[redacted]	[redacted]	[redacted]
3.2	Develop Preferred Solutions	[redacted]	[redacted]	[redacted]
4	**Master Plan Consultation**			
4.1	Master Planning Consultation	[redacted]	[redacted]	[redacted]
4.2	Public Information Centre # 1	[redacted]	[redacted]	[redacted]
4.3	Public Information Centre # 2	[redacted]	[redacted]	[redacted]
4.4	Public Information Centre # 3	[redacted]	[redacted]	[redacted]
4.2	Finalize Master Plan	[redacted]	[redacted]	[redacted]
4.3	Complete Class EA Process (Assuming No Part II Order)	[redacted]	[redacted]	[redacted]
5	**Reporting**			
5.1	Draft Technical Memoranda	[redacted]	[redacted]	[redacted]
5.2	Draft Report Submission	[redacted]	[redacted]	[redacted]
5.3	Final Report Submission	[redacted]	[redacted]	[redacted]
5.4	Report to Council	[redacted]	[redacted]	[redacted]
	TOTAL FEE	[redacted]	[redacted]	[redacted]

Please note that our fees should be considered an upset limit for Stantec's work based upon our work plan, however the following costs are excluded:

1. Costs associated with advertising the Master Plan Consultation process in local newspapers or other media outlets;
2. Costs associated with the rental of meeting rooms for public information meetings;
3. Costs associated with assisting Middlesex Centre address Part II Orders should they occur;

4. Costs associated with information retrieval from Middlesex Centre or third party sources;
5. Costs of conducting additional meetings with interested parties outside of the three PICs scheduled;
6. Field work to survey or measure infrastructure components; and
7. Traffic counting.

4.2.2 Additional Work Items

The following are optional additional work items for Middlesex Centre to consider enhancing aspects of the Master Planning Process.

4.2.2.1 Dynamic Traffic Modeling

Section 2.3.7 details our technical analysis for transportation services and our base fee includes using a first principles approach (Method 1 in section 2.3.7.4) to identify the problem areas in the transportation system resulting from the travel demands generated by specific land use/growth scenarios, assuming certain network and demand strategies are in effect. The forecasts of future travel growth by mode and area will dictate the extent and nature of future transportation needs.

An optional method (Method 2 in section 2.3.7.4) would be the development and use of a dynamic model to simulate traffic flows on the municipal road network. The development of a detailed demand forecasting model can be a useful tool for assessing network performance in consideration of prevailing traffic conditions (congestion) and in consideration of new infrastructure/service. The City of London currently maintains a strategic forecasting model using state of the art GIS software (TransCAD). The model could be expanded to include the Municipality of Middlesex Centre and then applied in the assessment of need and the testing of alternative strategies. The inputs to the model require significant effort in terms of development and consensus between economic, socio-economic and transportation environments/disciplines, requiring additional effort (time) and cost for this component of the study.

We would estimate that an additional fee of $22,000 would be required to undertake this effort.

4.2.2.2 Undertaking an additional Public Information Centre

In undertaking a detailed scoping of our work plan and the project schedule, we have allowed in our plan for a contingent Public Information Centre, PIC # 4 which would minimally impact the completion date of the project. The intent of providing this additional PIC would be to provide Middlesex Centre with an additional opportunity address any aspects of the master planning process that may have raised concerns with some member of the public. We would assume that there would be two components to this activity: undertaking additional research or analysis to present at the PIC and the conduct of the PIC.

We would estimate that an additional fee of $9,000 would be required for this work which would be broken down as follows: an allowance of $6,000 for additional technical work and $3,000 to undertake the PIC.

5 PROJECT QUALITY CONTROL PLAN

5.1 Introduction

Stantec has evolved a process to ensure overall quality control for this project and other medium sized projects. The intention is to ensure a consistent and uniformly high quality of service delivery to clients while ensuring that appropriate internal procedures are adhered to, the final design product meets the stated client objectives, the client is provided with sufficient information to make informed decisions on scope and budget issues and that regulatory requirements are properly addressed.

5.2 Project Quality Control

The following policies have been established with respect to Stantec's quality control:

- Each member of our team must be committed to provide a quality service to our clients. This commitment includes adequate communication with other members of our team to ensure that the accepted standards of the profession are met;
- At the outset of the project, Project Task Managers will be delegated quality control responsibilities for their work with oversight and final responsibility that of the Project Manager;
- Each member of our team is accountable for assigned responsibilities;
- Design calculations will be prepared in a neat and organized manner, recognizing the importance of accuracy and format;
- Plans, specifications, and reports will be clear and concise and follow the accepted standards of the profession;
- Established checking procedures will be followed to ensure the accepted standards of the profession are met (Appendix A contains a Stantec standard form – Checklist for Approvals as an example);
- Correspondence will be prepared following established procedure to ensure adequate documentation and communication of all aspects of our services;
- Established office practice shall be followed in keeping proper project files; and
- The Project Quality Control Coordinator will spot check for compliance to the quality control plan.

In general, contract plans and specifications will be checked by an independent checker (someone other than the originator), and marked to identify any area of concern. The originator will then back-check the checker's comments. Changes or modifications will be made as mutually agreed upon.

5.3 Scope, Budget and Schedule Control

On a monthly basis, the Project Manager will review the status of the project and the state of completion of Project Tasks. Based on this review, the Project Manager will make adjustments to the work plan as required to correct with regard to scope creep or overages in the engineering budget. The monthly review described above will also indicate impacts to the project budgets as determined by the information obtained. The Project Manager will then have the information required to adjust the work plan to ensure conformance to the schedule or to communicate with the Client on the impacts on the schedule due to issues that have arisen, and to suggest either schedule changes or means to resolve scheduling problems.

5.4 External Controls

5.4.1 Project Implementation

At the project kick-off meeting, the Stantec Project Manager will meet to confirm project goals, scope and schedule, outline a general communications/reporting structure for the project, define stakeholders and establish a general communications strategy with them. The meeting notes from the kick off meeting will include the following items:

- Confirmation of the scope of the project work;
- Confirmation of the budget to undertake the scope of work;
- Confirmation of the project schedule complete with key deliverable and deadline dates;
- The communications procedure between the client and Stantec;
- Project plan change control and for work authorization (*i.e*. procedure to revise the scope of the project work including the approvals for the adjustment of schedule, engineering budget and overall budget);
- Health and Safety Procedures; and
- Other items of importance to the project.

5.4.2 Scope/Budget Control

Contemplated changes in scope for a project tend to impact on the overall cost of the project in several ways. The Project Manager will review the impact for each requested scope of work change by the Client. For small scope changes, this report may be very brief and consist of an email with a simple spreadsheet. For extensive contemplated changes, it may involve the production of a technical memorandum (which itself may have to be authorized by the Client).

5.4.3 Schedule Control

The project schedule may be impacted by a variety of internal and external circumstances. Typically, the Client wishes a project to be completed by a specified date in order that the improvement can be utilized for its intended purpose. Schedule delays can be frustrating and have negative social, environmental and economic impacts. The Project Manager will attempt to discern any trends which may impact the schedule.

The Project Manager will then have the information required to adjust the work plan to ensure conformance with the schedule or communicate with the Client on the impacts and to suggest changes to the schedule or means to resolving internal (Stantec/Client) scheduling issues or dealing with external scheduling difficulties. By this means, it is intended to minimize delays in the implementation of the project schedule.

5.4.4 Regulatory Compliance

Stantec is cognizant of the design standards for undertaking this type of project in the province of Ontario and we continue to update our knowledge in this area as regulation and practices evolve. Within their area of responsibility, design leads and senior staff are responsible for ensuring that all standards applicable to this project are incorporated into the design process, the final design documents, and the tender package. The Project Manager is responsible for ensuring that compliance with DFO, MOE, MNR, local conservation authority requirements, OBC, NFPA, ESA and any other agencies with jurisdiction over this project are obtained either as part of the design assignment or else obtained by the Client or the general contractor as

appropriate. The Project Quality Control Coordinator will assist the Project Manager in developing a checklist for approvals and compliance including which party is to take responsibility for which aspects.

5.4.5 Senior Review

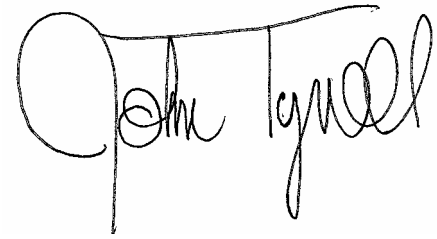
From time to time, as appropriate and depending upon the complexity of the project, the Project Manager may engage senior Stantec staff not directly engaged in the project to provide internal review and comment to the Project Manager and the project team staff to ensure that the project maintains its technical focus and that Stantec delivers a high quality project focused on the agreed to deliverables.

6 CLOSING

Thank you for inviting Stantec to submit this proposal. We look forward to continuing to work with the Municipality of Middlesex Centre on this important project. If you have any questions with respect to this proposal, please do not hesitate to contact the undersigned who is the designated contact for Stantec and has the authority to bind Stantec to an engineering agreement for this project.

Sincerely,

Stantec Consulting Ltd.



John Tyrrell, M.Sc.(Eng.),P. Eng.
Associate, Environmental Infrastructure
Senior Environmental Engineer
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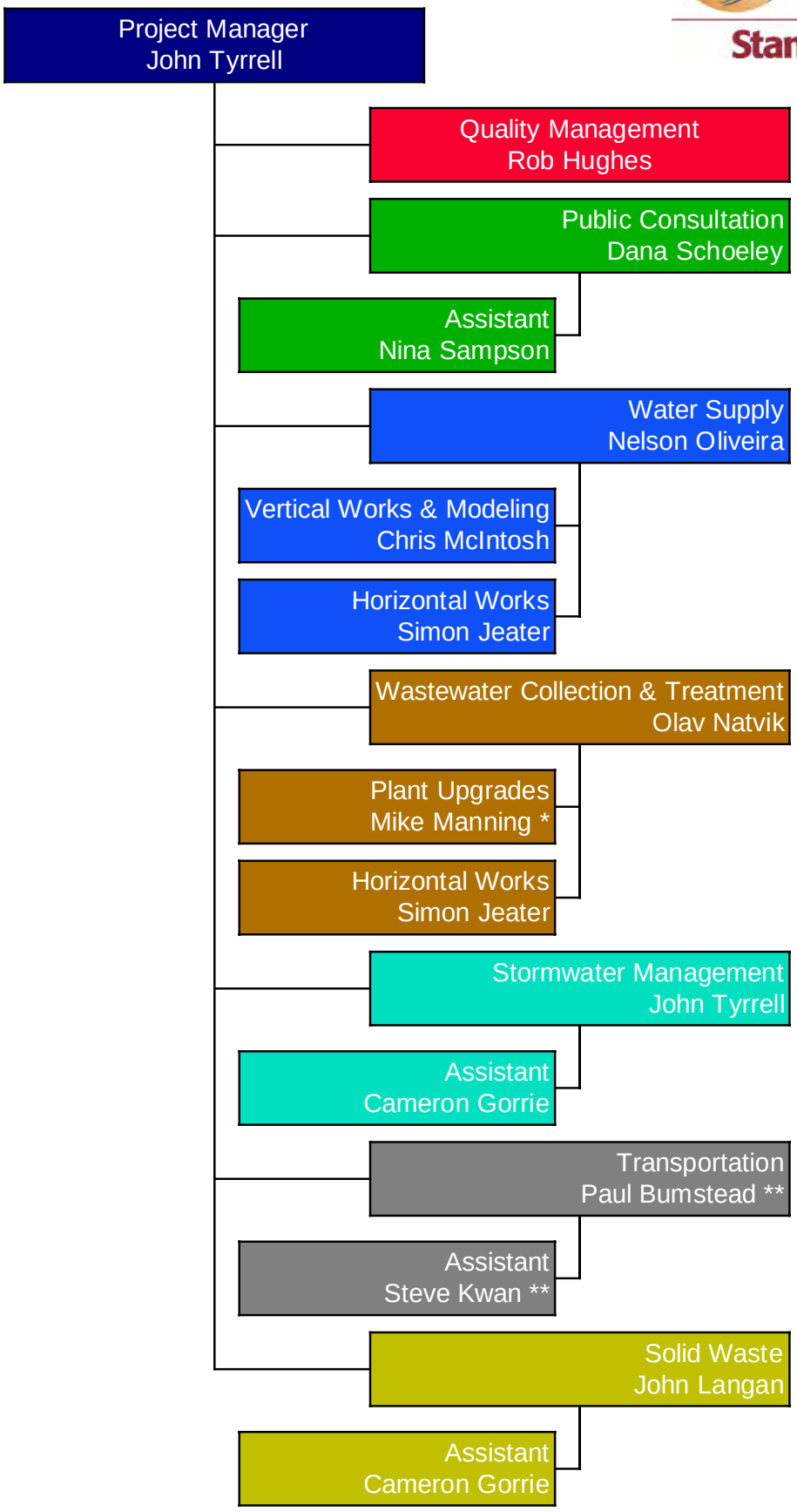
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com

Figure 1 - Municipality of Middlesex Centre Master Servicing Plan
Stantec Project Organization

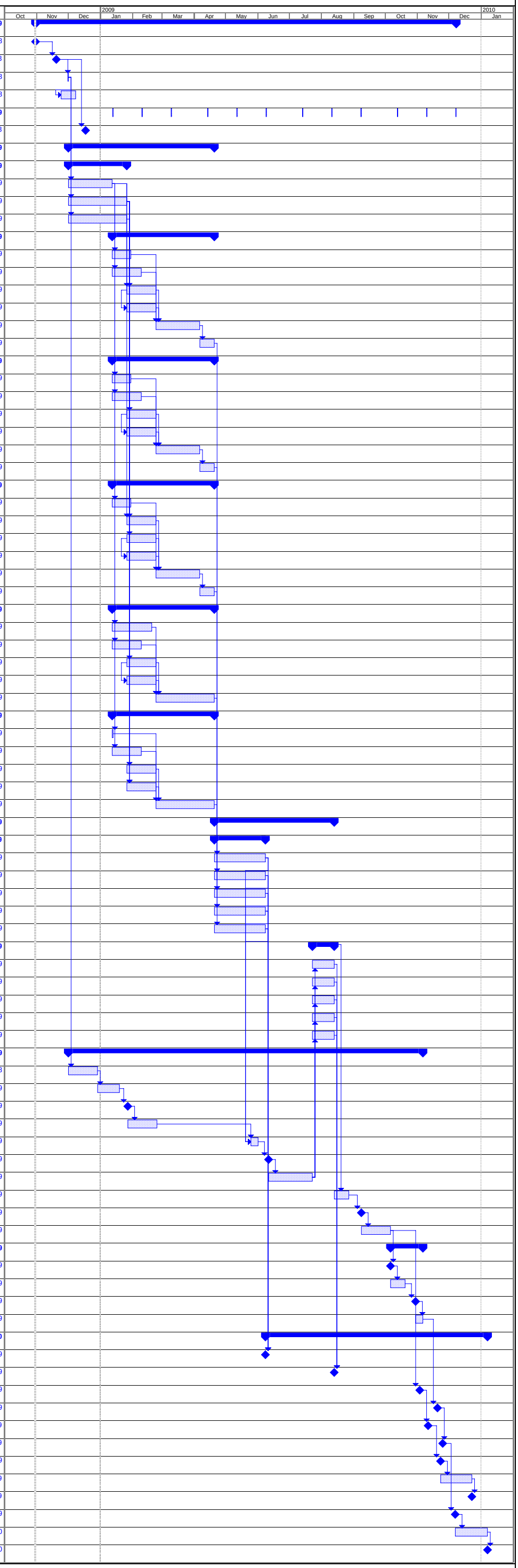


*- Denotes Middlesex Centre Resident, ** - Denotes Non-London Stantec Staff

Middlesex Centre Master Servicing Plan
Figure 2 - Project Schedule

Stantec

ID	Task Name	Start	Finish
1	**Task 1 Project Management**	**Fri 10/31/08**	**Tue 12/8/09**
2	Proposal Submission	Fri 10/31/08	Fri 10/31/08
3	Proposal Accepted	Wed 11/19/08	Wed 11/19/08
4	Project Start-up Meeting	Mon 12/1/08	Mon 12/1/08
5	Review and Confirm Schedule, Work Plan and Budget	Mon 11/24/08	Mon 12/8/08
6	**Monthly Project Steering Committee Meetings**	**Tue 1/13/09**	**Tue 12/8/09**
19	Project Contract Signed	Wed 12/17/08	Wed 12/17/08
20	**Task 2 Technical Analysis**	**Mon 12/1/08**	**Mon 4/20/09**
21	**Task 2.1 Gather Background Information**	**Mon 12/1/08**	**Mon 1/26/09**
22	From Municipality	Mon 12/1/08	Mon 1/12/09
23	From Agencies and Regulators	Mon 12/1/08	Mon 1/26/09
24	From Other Sources	Mon 12/1/08	Mon 1/26/09
25	**Task 2.2 Water Supply & Distribution Assessment**	**Mon 1/12/09**	**Mon 4/20/09**
26	20-year Demand Forecast	Mon 1/12/09	Fri 1/30/09
27	Existing Infrastructure Capacity	Mon 1/12/09	Mon 2/9/09
28	Policy Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
29	Technical Standards Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
30	Review Issues and Opportunities- Per Community	Mon 2/23/09	Mon 4/6/09
31	Review Issues and Opportunities- Entire Municipality	Mon 4/6/09	Mon 4/20/09
32	**Task 2.3 Wastewater Collection and Treatment**	**Mon 1/12/09**	**Mon 4/20/09**
33	20-year Demand Forecast	Mon 1/12/09	Fri 1/30/09
34	Existing Infrastructure Capacity	Mon 1/12/09	Mon 2/9/09
35	Policy Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
36	Technical Standards Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
37	Review Issues and Opportunities- Per Community	Mon 2/23/09	Mon 4/6/09
38	Review Issues and Opportunities- Entire Municipality	Mon 4/6/09	Mon 4/20/09
39	**Task 2.4 Stormwater Management**	**Mon 1/12/09**	**Mon 4/20/09**
40	20-year Development Forecast	Mon 1/12/09	Fri 1/30/09
41	Existing Infrastructure Capacity and Effectiveness	Mon 1/26/09	Mon 2/23/09
42	Policy Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
43	Technical Standards Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
44	Review Issues and Opportunities- Per Community/Development	Mon 2/23/09	Mon 4/6/09
45	Review Issues and Opportunities- Per Subwatershed	Mon 4/6/09	Mon 4/20/09
46	**Task 2.5 Transportation**	**Mon 1/12/09**	**Mon 4/20/09**
47	20-year Travel Demand Forecasting	Mon 1/12/09	Thu 2/19/09
48	Existing Infrastructure Capacity	Mon 1/12/09	Mon 2/9/09
49	Policy Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
50	Technical Standards Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
51	Review Issues and Opportunities	Mon 2/23/09	Mon 4/20/09
52	**Task 2.6 Solid Waste**	**Mon 1/12/09**	**Mon 4/20/09**
53	20-year Waste Generation Forecasting	Mon 1/12/09	Tue 1/13/09
54	Existing Solid Waste Management Review	Mon 1/12/09	Mon 2/9/09
55	Policy Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
56	Technical Standards Review - Fed/Prov/Mun/Current Best Practices	Mon 1/26/09	Mon 2/23/09
57	Review Issues and Opportunities	Mon 2/23/09	Mon 4/20/09
58	**Task 3 Develop Planning Level Master Plan Solutions**	**Mon 4/20/09**	**Thu 8/13/09**
59	**Task 3.1 Develop Alternate Solutions**	**Mon 4/20/09**	**Mon 6/8/09**
60	Water Supply & Distribution Assessment	Mon 4/20/09	Mon 6/8/09
61	Wastewater Collection and Treatment	Mon 4/20/09	Mon 6/8/09
62	Stormwater Management	Mon 4/20/09	Mon 6/8/09
63	Transportation	Mon 4/20/09	Mon 6/8/09
64	Solid Waste	Mon 4/20/09	Mon 6/8/09
65	**Task 3.2 Develop Preferred Solutions**	**Thu 7/23/09**	**Thu 8/13/09**
66	Water Supply & Distribution Assessment	Thu 7/23/09	Thu 8/13/09
67	Wastewater Collection and Treatment	Thu 7/23/09	Thu 8/13/09
68	Stormwater Management	Thu 7/23/09	Thu 8/13/09
69	Transportation	Thu 7/23/09	Thu 8/13/09
70	Solid Waste	Thu 7/23/09	Thu 8/13/09
71	**Task 4 Master Plan Consultation**	**Mon 12/1/08**	**Fri 11/6/09**
72	Develop Master Plan Consultation Plan with Steering Committee Input	Mon 12/1/08	Mon 12/29/08
73	Notify Agencies, Stakeholders, etc. of Master Plan in accordance with Consultation Plan and of PIC # 1	Mon 12/29/08	Mon 1/19/09
74	PIC # 1 Introductory Meeting	Tue 1/27/09	Tue 1/27/09
75	Review Feedback from PIC # 1 and Notices	Tue 1/27/09	Tue 2/24/09
76	Prepare and Notify Public, Interested Agencies and Stakeholders of Upcoming PIC # 2	Mon 5/25/09	Mon 6/1/09
77	PIC # 2 for Review of Alternate Solutions	Thu 6/11/09	Thu 6/11/09
78	Review Feedback from PIC # 2	Thu 6/11/09	Thu 7/23/09
79	Prepare and Notify Public, Interested Agencies and Stakeholders of Upcoming PIC # 3	Thu 8/13/09	Thu 8/27/09
80	PIC # 3 for Preferred Solutions (Recommendations to Council)	Tue 9/8/09	Tue 9/8/09
81	Review Feedback from PIC # 3	Tue 9/8/09	Tue 10/6/09
82	**Optional Public Meeting (PIC # 4)**	**Tue 10/6/09**	**Fri 11/6/09**
83	Confirm if Steering Committee Wishes PIC # 4	Tue 10/6/09	Tue 10/6/09
84	Prepare and Notify Public, Interested Agencies and Stakeholders of Upcoming PIC # 4	Tue 10/6/09	Tue 10/20/09
85	PIC # 4 for Presentation of Preferred Solutions (Final Recommendations to Council)	Fri 10/30/09	Fri 10/30/09
86	Review Feedback from PIC # 4	Fri 10/30/09	Fri 11/6/09
87	**Task 5 Reporting**	**Mon 6/8/09**	**Thu 1/7/10**
88	Draft Technical Memoranda Submission	Mon 6/8/09	Mon 6/8/09
89	Draft Report Submission (including final Technical Memoranda)	Thu 8/13/09	Thu 8/13/09
90	Final Report Submission (if no PIC # 4)	Tue 11/3/09	Tue 11/3/09
91	Final Report Submission (if PIC # 4)	Fri 11/20/09	Fri 11/20/09
92	Report to Council (if no PIC # 4)	Wed 11/11/09	Wed 11/11/09
93	Report to Council (if PIC # 4)	Wed 11/25/09	Wed 11/25/09
94	Notice of Master Plan Completion (if no PIC # 4)	Mon 11/23/09	Mon 11/23/09
95	30-day EA Review Period (if no PIC # 4)	Mon 11/23/09	Wed 12/23/09
96	Master Plan Complete (if no PIC # 4)	Wed 12/23/09	Wed 12/23/09
97	Notice of Master Plan Completion (if PIC # 4)	Mon 12/7/09	Mon 12/7/09
98	30-day EA Review Period (if PIC # 4)	Mon 12/7/09	Thu 1/7/10
99	Master Plan Complete (if PIC # 4)	Thu 1/7/10	Thu 1/7/10



As of October 30, 2008

Middlesex Centre Master Servicing Plan

Table 5 - Detailed Breakdown of Staff Time and Associated Costs

		Project Manager/QM Reviewer/Snr Traffic Planner		Senior Professional/Technical Staff		Senior Professional/Technical Staff		Project Engineer		Senior Technician		Intermediate Technician/Project Engineer		Project Technician		Admin Support		Expenses	STANTEC TOTAL		TOTAL FEE
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Appendix 1.2:
Middlesex Centre Master Servicing Plan Class EA Consultation Plan

Middlesex Centre Master Servicing Plan Class EA Consultation Plan

March 2009

Table of Contents

Table of Contents

List of Tables

List of Appendices

1.0 Introduction

1.1 INTRODUCTION

Stantec Consulting Ltd. (Stantec) has been retained by the Municipality of Middlesex Centre (Middlesex Centre) to undertake a Master Servicing Plan (MSP) to a 20-year design horizon and address future requirements for:

- Water supply and distribution;
- Wastewater collection and treatment;
- Stormwater Management;
- Transportation; and
- Solid Waste.

This MSP will be undertaken in accordance with the Municipal Engineers Association's (MEA) Class Environmental Assessment (EA) 2007 update, and will address the requirements a Master Plan.

1.2 PROBLEM STATEMENT

The following problem statement has been developed for the Municipality of Middlesex Centre's MSP:

> *The Municipality of Middlesex Centre is a 588km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required.*

1.3 CONSULTATION INTRODUCTION

Public and stakeholder consultation are important parts of the MEA Class EA planning process. Stantec has prepared this consultation plan, in consultation with Middlesex Centre's project Steering Committee (Steering Committee), in order to provide the Municipality of Middlesex Centre with a list of identified stakeholders and agencies that may have an interest in the study, the methods of contact, and the timing of contact for this MSP.

2.0 Master Plan Approaches

The following descriptions of Master Plan approaches have been paraphrased from the MEA Class EA 2007 update.

2.1 MEA CLASS EA APPROACH #1

This approach involves the preparation of a Master Plan document at the conclusion of Phases 1 and 2 of the Class EA process. This approach provides a broad level of assessment and would require specific projects to undergo investigations that are more detailed.

The Master Plan generated using this approach becomes the basis for, and is used in support of, future investigations for the specific Schedule B and C projects identified within the Master Plan. Specific Schedule B and C projects would have to fulfill the documentation requirements of each Schedule.

2.2 MEA CLASS EA APPROACH #2

This approach involves the preparation of a Master Plan document at the conclusion of Phase 1 and 2 of the Class EA process where the level of investigation, consultation, and documentation are sufficient to fulfill the requirements for Schedule B projects identified within the Master Plan document.

The final public notice for the Master Plan could be considered the Notice of Completion for the Schedule B projects identified within the Master Plan. Schedule C projects would have to fulfill Phases 3 and 4 prior to filing an Environmental Study Report for public review.

2.3 MEA CLASS EA APPROACH #3

This approach involves the preparation of a Master Plan document at the conclusion of Phase 4 of the Class EA process. Under this approach, one document is prepared, documenting Phases 1 to 4 for Schedule B and/or Schedule C projects. The final public notice for the Master Plan could be considered the Notice of Completion for the Schedule B and C projects identified.

This approach would require extensive documentation, depending on the number of Schedule C projects identified in the Master Plan.

2.4 MEA CLASS EA APPROACH #4

This approach integrates the Master Plan with the Planning Act. The preparation of a new official plan or a comprehensive official plan amendment could be accompanied by a Master Plan. When these planning documents are prepared simultaneously, alternatives can be assessed, taking into account land use and servicing issues, while addressing a preferred alternative which minimizes, to the extent possible, the impact on the community, natural

environment, and the economy. The range of alternatives that can be assessed through this approach is potentially greater as land use plans have not been finalized.

This approach would satisfy Phases 1 and 2 for Schedule B projects, and may satisfy, Phases 3 and 4 for Schedule C projects.

This approach is best suited when the Master Plan addresses a significant geographical area in the long term where interdependent decisions, which impact servicing and land use are being made and the range of servicing alternatives needs to be addresses in an integrated fashion in order to recommend the overall best solution for the community.

2.5 APPROACH SELECTION

Based upon the Terms of Reference and our proposal (see Appendix A), Stantec will be undertaking this MSP based on MEA Class EA Approach #1.

3.0 Public Information Centres

Public Information Centres (PIC) are a method to communicate with the general public, interested parties and review agencies. For the Middlesex Centre MSP three PICs will be held.

3.1 PIC 1

The first PIC will be held Wednesday May 13, 2009. This PIC is to be held in order to notify the public of the project, review the identified problem/opportunity, and review alternative solutions. The first PIC allows the public the opportunity to provide input, and assist in the selection of a preferred planning alternative for each component of the MSP. The goal of this PIC is for the public to understand the scope and purpose of the project.

3.2 PIC 2

This PIC will be held Thursday September 17, 2009, following the preparation of the draft technical study. At this PIC, an evaluation of the alternatives identified at the first PIC will be presented and the *preliminary* preferred planning alternative will be identified. The public will have an opportunity to provide further input, and assist in the selection of a preferred planning alternative for each component of the MSP.

3.3 PIC 3

The third PIC will be held Thursday November 19, 2009 and will address the selection of the preferred planning alternative for each component of the MSP. The public will have the opportunity to comment on the preferred planning alternative for each component of the MSP.

3.4 TIMELINE

Table 3.1 identifies the anticipated date of each of the PICs.

Table 3.1: Public Information Centres

	Date of PIC*
PIC 1	Thursday May 14, 2009
PIC 2	Thursday September 17, 2009
PIC 3	Thursday November 19, 2009

*Subject to change

4.0 Review Agency Consultation

4.1 METHOD OF CONTACT

Review agencies will be notified via formal letters at each relevant point of contact.

The first letter will indicate that the MSP is commencing and will identify the problem statement and the purpose of the MSP.

The second letter will identify the alternatives for each of the components of the MSP, as well as identify the *preliminary* preferred planning alternative for each of the components.

The third letter will identify the preferred planning alternative for each of the MSP components the relevant review agencies.

The fourth letter will notify the relevant review agencies that the MSP is complete and is available for review.

4.2 TIMING OF CONTACT

Table 4.1 identifies the timing of each point of agency contact.

Table 4.1: Timing of Agency Consultation

	Dates of Notifications
Letter 1: Notice of study commencement, including the problem statement, and an invitation to PIC 1	April 24, 2009 Letters will be mailed three weeks prior to PIC 1
Letter 2: Based on response, notification of PIC 2	August 27, 2009 Letters will be mailed three weeks prior to PIC 2
Letter 3: Based on response, notification of PIC 3	October 29, 2009 Letters will be mailed three weeks prior to PIC 3
Letter 4: Notice of Completion	January 20, 2010

Note: The Ontario Ministry of the Environment will be notified at each stage of consultation regardless of response received. In addition, the Notice of Completion will be sent electronically to the Environmental Assessment and Approvals Branch.

4.3 LIST OF REVIEW AGENCIES

Relevant review agency's contact information will be compiled in a database. This database will be kept up-to-date with regards to changes of address, responses received, and action items required as per responses. The following sections list federal, provincial, local, and other agencies that will be notified as part of the MSP. Agencies indicated in *italics* will be included based on direction from the Steering Committee.

4.3.1 Federal Agencies

The following is a list of federal agencies that will be contacted as part of the Master Servicing Plan Class EA process.

- Department of Indian and Northern Affairs,
    - Specific Claims Branch; and
    - Litigation Management and Resolution Branch.
- Fisheries and Oceans Canada, Southern Ontario District;
- Environment Canada;
- Transport Canada;
    - Navigable Waters; and
- Member of Parliament; and
    - Lambton-Kent-Middlesex – Bev Shipley
- Association of Iroquois and Allied Indians.

4.3.2 Provincial Agencies

The following is a list of provincial agencies that will be contacted as part of the Master Servicing Plan Class EA process.

- Ontario Realty Corporation;
- Ministry of Aboriginal Affairs, Aboriginal and Ministry Relationships Branch;

- Ontario Secretariat of Aboriginal Affairs, Policy and Relationships Branch;
- Ministry of Natural Resource, Aylmer District;
- Ministry of the Environment, Southwestern Region;
- Ministry of Municipal Affairs and Housing;
- Ministry of Agriculture, Food and Rural Affairs, Southwestern Ontario;
- Ministry of Transportation, Planning and Design;
- Ministry of Tourism, Regional Services Branch – West Region;
- Ministry of Energy;
- Ministry of Energy and Infrastructure, Strategic Policy Branch;
- Ministry of Culture, Citizenship and Immigration and Culture Services Unit;
- Ministry of Public Infrastructure Renewal, Infrastructure – Policy and Planning;
- Ministry of Citizenship, Culture and Recreation, Archaeology and Heritage Planning;
- Southern First Nations Secretariat;
- Chiefs of Ontario;
- Member of Provincial Parliament;
    - Lambton-Kent-Middlesex – Maria VanBommel
- Ministry of the Attorney General; and
- Ministry of Health.

4.3.3 Local Agencies

The following is a list of local agencies that will be contacted as part of the Master Servicing Plan Class EA process.

- Upper Thames River Conservation Authority;
- Lower Thames Valley Conservation Authority;
- St. Clair Region Conservation Authority;

- Kettle Creek Conservation Authority;
- Ausable Bayfield Conservation Authority;
- Middlesex-London Health Unit;
- County of Middlesex;
    - Administrative Clerk;
    - County Engineers Office;
- Municipality of Middlesex Centre;
    - CAO Clerk
- City of London;
    - Directors;
        - Water Environment and Customer Relations
        - Wastewater and Treatment
        - Roads and Transportation
        - Environmental Programs and Solid Waste
        - City Engineer
        - Development Approvals
    - General Manager of Finance & Corporate Services & Acting City Treasurer;
    - Chief Administrative Officer; and
    - City Clerk.
- Municipality of Strathroy-Caradoc;
- Municipality of North Middlesex;
- Municipality of Thames Centre;
- Township of Lucan-Biddulph;
- Township of Southwold;

- County of Elgin;
- Township of Adelaide Metcalfe;
- Ontario Provincial Police;
- Lake Huron Primary Water Supply;
- Thames Valley District School Board;
- London Catholic School Board;
- Chippewa's of the Thames;
- Oneida Nation of the Thames;
- Munsee-Delaware Nation;
- Moravian of the Thames;
- Caldwell First Nation; and
- London District Chiefs Council.

4.3.4 Other

The following is a list of other review agencies that will be contacted as part of the Master Servicing Plan Class EA process.

- CN Rail;
- Canadian Pacific Railway;
- Bell Canada;
- Rogers;
- Sun Canadian;
- Imperial Oil;
- Union Gas;
- Blue Water Recycling;
- London Hydro; and

- Hydro One

4.4 TASK SPECIFIC CONSULTATION

Stantec will look at meeting with the local MOE office and the Middlesex-London Health Unit in order to understand specific issues and concerns that these authorities may have in regards to water supply issues and sanitary servicing issues within Middlesex Centre.

This meeting will occur after the first PIC in early June.

5.0 Public Consultation

5.1 METHOD OF CONTACT

5.1.1 Notices

The general public will be notified via newspaper notices placed in the London Free Press and via notices placed on the Municipality of Middlesex Centre's website. Each notice is required to be published twice, in separate issues of the same newspaper, in this case, the London Free Press, as it has the highest circulation in the municipality. Notices will be posted a minimum of three weeks before the PIC on a Saturday and Wednesday.

A minimum of four contact points have been identified for the MSP. These contact points include:

1. Notice of Commencement and Notice of PIC 1;
2. Notice of PIC 2;
3. Notice of PIC 3; and
4. Notice of Completion.

Published notices for the MSP will invite interested parties to add their names to a mailing list, via e-mail, if they would like to be kept informed.

5.1.2 Letters to Interested Parties

Interested parties may include property owners, business owners, developers, and residents. Letters will be mailed to interested parties who either;

a) Attend a PIC; or

b) Indicate their interest via e-mail.

5.2 TIMING OF CONTACT

Table 5.1 identifies the timing of each point of public consultation.

Table 5.1: Timing of Public Consultation	
	Dates of Notifications
Notice of Commencement and PIC 1	April 25 and 29, 2009
Notice of PIC 2	August 29 and September 2, 2009
Mail Notice of PIC 2 to Interested Parties	August 27, 2009
Notice of PIC 3	October 31 and November 4, 2009
Mail Notice of PIC 3 to Interested Parties	October 29, 2009
Notice of Completion (begins 30 day review period)	January 23 and 27, 2010
Mail Notice of Completion to Interested Parties	January 20, 2010

Note: Stantec will provide each Notice to Middlesex Centre approximately 10 days before publication in order for Middlesex Centre to arrange for publication of the Notices in the London Free Press and on the Middlesex Centre website.

6.0 Reporting

6.1 INTRODUCTION

The following items were identified in Stantec's Proposal as key reporting deliverables for this project:

1. Master Project Schedule;
2. Project Steering Committee meeting notes;
3. Master Consultation Plan;
4. Draft Technical Memoranda for each of the five components of the MSP;
5. Draft Master Plan Report (including final Technical Memoranda and public consultation documentation);
6. Final Master Plan Report; and
7. Report to Council.

6.2 REPORT TO COUNCIL

The Report to Council is expected to be on January 20, 2010. A power point presentation will be given addressing the identified preferred planning alternatives for each of the five components of the MSP. The preferred planning alternatives will be presented for Council's review and endorsement prior to the finalization of the MSP and the commencement of the 30-day review period.

6.3 FINALIZATION OF MSP

The MSP report will be finalized in January 2010 after Council has reviewed and endorsed the preferred planning alternatives. The final report will detail the alternatives identified for each of the five components of the MSP and will identify the preferred planning alternative.

6.4 NOTICE OF COMPLETION

A Notice of Completion will be published on January 23 and 27, 2010, signaling the beginning of the 30-day review period. The final day of the 30-day review period is February 24, 2010.

6.5 FILING OF MASTER PLAN WITH THE MOE

The MOE's Environmental Assessment and Approvals Branch (EAAB) has recently created an e-mail (MEA.NOTICES.EAAB@ontario.ca) to which all Notices of Completion are to be submitted in order to better track the submission of these Notices. Stantec will continue to provide the local MOE Regional EA coordinator with a copy of the Notice of Completion in addition to submitting the Notice directly to the MOE's EAAB e-mail.

6.6 PART II ORDERS

Part II Orders cannot be issued for a Master Plan. However, individual projects identified in the Master Servicing Plan may be subject to a Part II Order during their specific undertaking.

APPENDIX A-1:
MIDDLESEX CENTRE TERMS OF REFERENCE – SEPTEMBER 2008

Municipality of Middlesex Centre

Public Works and Engineering Department

TERMS OF REFERENCE FOR THE PREPARATION OF THE MASTER SERVICING PLAN

PHASES I AND 2 OF MUNICIPAL CLASS ENVIROMENTAL ASSESSMENT

REQUEST FOR PROPOSAL

SEPTEMBER 2008

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT'D)

1.0 GENERAL INSTRUCTIONS

1.1 Purpose

The Municipality of Middlesex Centre requires the services of a qualified and competent Consulting Firm or Team to provide timely and accurate development of a comprehensive Master Servicing Plan following the planning and decision making process for Phases 1 and 2 under a Municipal Class Environmental Assessment. The Municipality requests responses from firms in a formal detailed proposal indicating interest, qualifications, relevant team experience, approach and methodology and cost to successfully undertake this project.

1.2 Submission Address

Proposals must be labelled "Proposal: Municipality of Middlesex Centre RFP – Master Servicing Plan" and must be submitted to:

Municipality of Middlesex Centre
10227 Ilderton Road
ILDERTON, ON N0M 2A0.

Attn: Maureen A. Looby, M.Eng., P.Eng.
Public Works and Engineering Manager

Tel: 519-666-0190 Fax: 519-666-0271

1.3 Closing Date

To be considered, the Proposals must be received at the submission address before **Friday, October 31, 2008, 10:00 a.m. local time.**

1.4 Municipality's Rights

The Municipality reserves the right to reject any or all Proposals or to accept any Proposal should it be deemed in the interest of the Municipality to do so.

In particular, the Municipality reserves the right to reject a Proposal from any person or corporation with whom the Municipality is in litigation or where only one (1) proposal is received.

By submitting a Proposal, the Consultant acknowledges that it shall have no claim against or entitlement to damages, from the Municipality by reason of the Municipality's rejection of its Proposal or all Proposals.

1.5 Cost of Proposal Submissions

The Consultant is responsible for all and any costs associated with the preparation and submission of the Proposal. The Municipality will not be liable to pay any such costs or reimburse the Bidders in the event the Municipality decides to reject all Proposals.

1.6 Late Submissions

Any submissions made after the date and time that has been set herein for submission will be rejected and returned to the Consultant unopened.

1.7 Information Indicative Only

The information that is provided in this Request for Proposal (RFP) is indicative only. Through the review of the proposals and subsequent finalization of an agreement with the successful Consultant, the Municipality reserves the right to request further information or clarification of information.

The Municipality reserves the right to request new or additional information regarding a Consultant and any other individuals associated with a response.

1.8 Confidentiality

Consultants should be aware that the Municipality is subject to the provision of the Municipal Freedom of Information and Privacy Protection Act (MFIPPA) as amended. If the Consultant does not want the documents that are submitted in response to this RFP to be made available to the public, the Consultant must indicate that the documents are submitted in confidence. The documents contain trade secrets, technical, commercial, financial or labour relations information that disclosure of the documents could reasonably be expected to result in harm, as specified in Section 10 of the MFIPPA.

1.9 Conditions – Other

The proposal is also subject to the following conditions:

- The Municipality will not accept responsibility for any delays or costs associated with any reviews or approval processes or with the implementation of any mitigating measures;

- Consultants are responsible for obtaining their own independent financial, legal, accounting, engineering, technical and other expert advice;

- Any written information received by the Municipality from a Consultant pursuant to a request from the Municipality as part of this RFP process shall be considered as an integral part of the proposal;

- Submissions that are incomplete or illegible or contain reservations or irregularities of any kind may be rejected;

- If any Consultant is incorporated, the company must properly execute the response by authorized signature(s) under corporate seal. In the absence of a corporate seal, an affidavit or other evidence as to the authority of the signatory or the statement "I/We have authority to bind the corporation" under the authorized signature(s) may be accepted, if satisfactory to staff of the Municipality ("Municipal Staff"). In all cases the name and office of the signatory must be indicated under the signature. If the Consultant is an individual, the signature must be duly witnessed.

- The data, information and assumptions provided herein have been compiled from sources believed to be reliable and accurate. The Municipality, however, specifically disclaims any responsibility or liability for the accuracy or completeness of such data, information or assumptions or any data or information that the Municipality may provide in the future. A Consultant, prior to submitting its proposal, shall be solely responsible for making any enquiries necessary to satisfy itself and verify all information upon which reliance shall be made.

- Subsequent to the selection of the successful Consultant, municipal staff, in its sole and absolute discretion, may discuss or negotiate the terms and conditions of its proposal without any obligation to other Consultants and without giving rise to any rights of other Consultants to amend or negotiate their proposal.

- Neither the Municipality nor Municipal staff shall have any obligation to notify any of the Consultants of discussions or negotiations with any other Consultant, to invite amended proposals from any other bidders, to disseminate other information

disclosed to any one Consultant, or to approve a further submission made as a result of such information.

- In the event of any discrepancies appearing, or differences of opinion, misunderstanding or dispute arising between the Bidder and the Municipality respecting the intent or meaning of this RFP, or accompanying documents, or as to any omission or misstatements therein, the decision and interpretation of the Municipality shall be final and binding upon all parties. There shall be no review or appeal of such decision.

- Consultants shall not claim at any time after submitting their Proposal that there was any misunderstanding in regards to conditions of these Terms of Reference or of conditions to be imposed pursuant to any documents to be entered into by the successful Consultant(s).

1.10 Bidders Meeting

- A bidders meeting is scheduled for 2:00 p.m. local time, October 21' 2008 at the Middlesex Centre municipal offices in Coldstream, ON. The bidders meeting will consist of a brief presentation by municipal staff with an opportunity for questions and answer follow-up.

- Attendance at the bidder's meeting is mandatory and all attendees will be required to sign the meeting register. After that point, questions will only be afforded to those parties that have signed the meeting register, and only those parties will be forward further clarifications, notices or addenda regarding the call for proposals.

- Proposals submitted by parties not on the meeting register will not be opened.

1.11 Clarifications

All questions related to this RFP shall be directed in writing, no later than 72 hours of closing, to:

Municipality of Middlesex Centre
10227 Ilderton Road,
ILDERTON, ON N0M 2A0

Attn: Maureen A. Looby, M.Eng., P. Eng.
Public Works and Engineering Manager

Tel: 519-666-0190 Fax: 519-666- 027l

The Municipality will make every effort to issue all addenda not later than two (2) days before closing date for the receipt of proposals.

Any oral statements, instructions, or representation made by Municipality's Staff and Agents shall not be binding on the Municipality.

1.12 Term

This agreement commences upon selection of the successful consultant. It is intended that this project be completed within 12 months from the commencement date.

1.13 Bankruptcy

In the event that during the duration of the agreement, the Consultant makes an assignment for the benefit of creditors, or becomes bankrupt or insolvent, or makes a proposal of its creditors, this agreement shall immediately be terminated, and the Municipality shall be entitled to enter into an agreement with another party without the consent of the Consultant.

1.14 Assignment

The Bidder shall not assign this agreement, or any of the rights hereby granted, without prior written approval of the Municipality.

1.15 W.S.I.B

Certificate of good standing from the Workplace Safety and Insurance Board will be required before commencement of work and before final payment is made.

1.16 Insurance

The Consultant shall provide the Municipality, upon execution of this agreement by the Consultant, with a Certificate of Insurance indicating proof of Comprehensive General Liability Coverage in the amount of not less than $1,000,000 (One Million Dollars). The Certificate shall state that the policy contains a clause adding the Municipality as an Additional Insured, with a waiver for a cross-liability. The Certificate shall indicate that the policy will not be cancelled or changed without first giving the Municipality thirty (30) days prior written notice. The Consultant shall also maintain such fire and theft insurance or self-insure as well provide adequate coverage for the loss by burglary, fire or theft

of any stock or equipment of the Consultant upon Municipal premises. In addition, the Consultant must include insurance against liability for bodily injury and property damage caused by vehicles owned by the Consultant and used in conjunction with the work either within or outside the proposal's limits, and in addition, shall include insurance against liability for bodily injury and property damage caused by vehicles not owned by the Consultant and used on the work. Each such insurance shall have a limit of liability of not less than $1,000,000 inclusive for any one occurrence.

2.0 BACKGROUND

2.1 General

The Municipality of Middlesex Centre was formed on January 1, 1998 with the amalgamation of the former Townships of Delaware, Lobo, and London. The municipality is predominantly rural in character with a population of over 15,000 people over an area of 588 square kilometres. The municipality is situated at the north, northwest and westerly limits of the City of London and it is experiencing considerable growth within its largely residential Urban Settlement Areas and to a lesser extent in smaller Community Settlement Areas and Hamlets.

The purpose of the proposed Master Servicing Plan is to provide an environmentally sensitive and sustainable framework for the provision of municipal services for both existing and future development within the municipality. Specifically, the Master Servicing Plan is to address the provision of water, sanitary, storm, transportation and solid waste management for existing and future growth areas defined within the Municipality's Official Plan. The Master Plan is to: identify which services are to be provided and where; the level or nature of the services that would be appropriate for each area and circumstance; and the mechanism or strategy for the provision or extension of services.

This Master Servicing Plan is to be undertaken in accordance with the requirements for Phases I and II of the Municipal Class Environmental Assessment process as presented in the Amended 2007 Class EA document prepared by the Municipal Engineers Association.

2.2 Study Area

The Study Area is to include the entire municipal boundary, however the focus for municipal water, storm and sanitary servicing will be on the existing Urban Settlement Areas, Community Settlement Areas and Hamlets.

2.3 Overview

.1 WATER, STORM AND SANITARY

In accordance with the Municipality's Official Plan, the majority of growth is to be directed to the existing *Urban Settlement Areas* with any new development to be on full municipal services. More limited growth is to be permitted within Community Settlement Areas, subject to the availability of servicing and other policies within the Official Plan. Finally, the smaller Hamlets within the municipality are to serve as local service centres for the surrounding agricultural areas with minor in-fill type development being permitted. The following provides a summary of the existing Urban Settlement Areas, Community Settlement Areas and Hamlets along with a description of the level of municipal servicing currently provided within each area.

Community	Approx Population	Water Supply	Water Distribution	Wastewater Treatment	Sanitary Sewerage
URBAN SETTLEMENT AREAS					
Ilderton	2266	Lake Huron Primary Water Supply System	Fully serviced	Ilderton WWTP	Fully serviced
Kilworth	2000	Kilworth Water Supply System (municipal wells) future Lake Huron Primary Water Supply	Majority of area serviced	Kilworth WWTP	Partially serviced
Komoka	2000	Komoka Water Supply System (municipal wells) future Lake Huron Primary Water Supply	Majority of area serviced	Komoka WWTP	Partially serviced
COMMUNITY SETTLEMENT AREAS					
Arva	533	City of London	Fully serviced	P.S. to City of London	Partially serviced
Delaware	1597	Supplier via City of London; Future connection to Lake Huron Primary Water Supply via Kilworth/Komoka	Majority of area serviced	No municipal WWT facility; individual on-site septic system	No municipal sewers
HAMLETS					
Ballymote	102	City of London	Area partially serviced	No municipal WWT facility; individual on-site septic system	No municipal sewers
Birr	242	Communal water supply Municipal well	Area partially serviced	No municipal WWT facility; individual on-site septic system	No municipal sewers
Bryanston	164	Individual wells	No municipal services	No municipal WWT facility; individual on-site septic system	No municipal sewers
Denfield	239	Lake Huron Primary Water Supply System	Area partially serviced	No municipal WWT facility; individual on-site septic	No municipal sewers

Community	Approx Population	Water Supply	Water Distribution	Wastewater Treatment	Sanitary Sewerage
				system	
Lobo	53	Individual wells	No municipal services	No municipal WWT facility; individual on-site septic system	No municipal sewers
Melrose	279	Communal water supply Municipal wells	Area partially serviced	No municipal WWT facility; individual on-site septic system	No municipal sewers
Poplar Hill - Coldstream	772	Individual well	No municipal services	No municipal WWT facility; individual on-site septic system	No municipal sewers

The servicing solutions for each area will be unique and will be dependant on a number of internal as well as external factors.

Community water servicing alternatives could consist of: do nothing; communal wells; municipal wells; connection to adjacent municipalities through agreements (City of London); or connection to regional water supply system (Lake Huron Primary Water Supply System). Currently there are plans for the installation of a new supply main from the Lake Huron Primary Water Supply System to service the communities of Kilworth/Komoka, with a future connection to Melrose and extension to Delaware.

Community wastewater treatment options could consist of do nothing; limited in-fill development based on on-site treatment; conveyance to adjacent municipalities with treatment through agreements; new or expansion of wastewater treatment facilities; regional municipal treatment system (Kilworth, Komoka, Delaware) or any combination of these alternatives.

Stormwater management options will identify area stormwater treatment objectives and goals based on outlets, identify the appropriate application of municipal drains and storm sewers, and identify appropriate options for providing stormwater management for new developments including lot level controls; conveyance controls and centralized "regional" end of collection treatment and system controls.

Each area will have its own unique strategy for the provision of servicing to service both existing and future development within the municipality identifying opportunities and constraints based on the local physical, social, natural and economic environment.

.2 TRANSPORTATION

The Transportation Master Plan (TMP) component is intended to identify existing and future levels of travel demand throughout the Municipality, and to determine the transportation infrastructure required to ensure the safe and efficient movement of people, goods and services and to

encourage economic growth and prosperity. The TMP in conjunction with and in accordance with the Municipality of Middlesex Centre Official Plan, will also develop policies and guidelines for all modes of travel including road by auto and commercial vehicles, public transit, cycling, walking and rail transportation. It is the intent that part of the TMP may be implemented by the Municipal Official Plan through amendment.

As a Master Plan prepared following the requirements of the Municipal Class EA process, the intent of the TMP is to provide the need and justification for the future undertaking of transportation infrastructure improvements identified through this undertaking.

.3 SOLID WASTE MANAGEMENT

The Waste Management Plan (WMP) study is to provide a status report of how much waste is currently being generated within the municipality now and what is being done with it – both by the municipality and the private sector, in terms of diversion and disposal. The study will provide an overview of relevant statutes, regulations, policies and guidelines that impact on how the municipality manages its waste both now and in the near future. The plan will also establish projections of waste generation based on population / growth projections and will provide projection goals of future waste diversion and disposal along with a range of alternative strategies to accomplish those goals. The WMP will identify technically and economically feasible systems, facilities and equipment that are required to implement the WMP.

The WMP itself is not subject to Provincial approval, however it can and often is deemed to be part of an Environmental Assessment process depending on the waste disposal alternative selected. It is the intent of the municipality to include the WMP in the public consultation process associated with the other elements of the overall Municipal Master Servicing Plan.

3.0 SCOPE OF WORK

3.1 Class Environmental Assessment Process

The proposed Master Servicing Plan is being conducted to follow the guidelines and requirements of a Municipal Class Environmental Assessment as presented in the October (revised) 2007 document. The proposed Master Servicing Plan is to complete Phases 1 and 2 of the Class EA process. Accordingly, the work undertaken in the preparation of the Master Servicing Plan should recognize the Planning and Design Process of a Class EA and should incorporate the key principles of successful environmental assessment planning. It is imperative that public and agency consultation take place during each phase of the study process, specifically at the initiation of the Master Servicing Plan study so that the scope and purpose of the study is clearly understood and at the selection of the preferred alternative stage to ensure stakeholder buy-in and acceptance.

A key component of the proposal is to be the preparation of a public consultation plan which is to be prepared in consultation with the project Steering Committee. The plan is to identify all stakeholders and agencies having an interest in the study, methods of contact and timing for the contact. The plan is to be presented within two weeks of the project initiation meeting and submitted to the Steering Committee for final review prior to implementation.

3.2 Assessment of Existing Servicing Components

.1 WATER SUPPLY AND DISTRIBUTION

- Compile consumption data on existing systems; review unit design criteria based on five year average, review general municipal and provincial criteria and provide recommendations for criteria to be used in Master Servicing Studies; compare and comment on water usage wastewater generation;

- Identify water supply capacities and distribution system servicing capabilities and limitations within existing systems;

- Identify existing and future water conservation measures and potential impact on future water demands;

- Prepare water distribution system models for Delaware, Kilworth-Komoka, and Ilderton using Water CAD V.8. Calibrate model based on field data compiled by the municipality. Model to include all mains 100 mm and greater with outputs to be in both Water CAD V.8 and EPA Net formats.

.2 WASTEWATER COLLECTION AND TREATMENT

- Compile wastewater generation data for each existing system; review unit design criteria based on five year average; review general municipal and provincial criteria and provide recommendations for criteria to be used in Master Servicing Studies; compare and comment on wastewater generation versus water demands;

- Identify capacity of existing treatment facilities and identify excess capacity and/or limitations;

- Review and provide comment on the expandability of existing treatment facilities; comment on potential limiting factors including assimilative capacities of existing receiving water courses;

- Identify areas which are currently serviced on private septic systems; review with input from the London Middlesex Health Unit and the municipal records, as to the adequacy of private systems in those areas; identify areas where private septic

systems should not be allowed due to lot sizing, soil conditions or elevated water tables;

- Provide recommendations as to areas and/or conditions where limited servicing on private systems could be contemplated.

.3 STORMWATER MANAGEMENT

- Identify major stormwater outlets within the Urban Growth and Community Growth Areas of the municipality;
- Review with input from the relevant Conservation Authority major watershed objectives in these areas;
- Identify areas where further watershed studies may be required or desired to establish stormwater management criteria and triggers for such initiations.

.4 TRANSPORTATION

- Complete a preliminary assessment of key transportation issues within the municipality;
- Develop and apply industry-accepted travel demand forecasting techniques to assist in the identification of existing travel demands and associated existing roadway infrastructure deficiencies (including structures);
- Using standard trip generation and travel pattern data available for the municipality determine existing demands including:
    - prominent travel patterns;
    - peak hours;
    - link deficiencies;
- Identification of the level of development that can be accommodated with no major roadway infrastructure capacity enhancements or improvements;
- Prepare evaluation criteria to qualitatively and quantatively assess the role and function of transportation infrastructure through the municipality; develop a municipal road classification system and prepare a standard for each;
- Complete a review of the existing rail, road, commercial goods route, transit, cycling and pedestrian infrastructure that does or has the capability to serve the municipality and the role of each in reducing automobile travel demands in the municipality;
- In the completion of the above tasks, the consultant is to have regard for the following;

- recognition that the municipality, due to its location and roadway infrastructure adjacent to the City of London, is heavily used as a transportation link and through route between neighbouring London and settlements to the north, west and beyond;
- recognition of the jurisdictional hierarchy (both current and potential future) of the roadway network.

.5 SOLID WASTE MANAGEMENT

- Complete an inventory of existing municipal waste management programs, policies, procedures, systems and facilities;
- Determine current waste quantities and identify and compile a summary of what is being done in terms of diversion and disposal;
- Provide an overview of statutes, regulations, policies and guidelines that currently affect how the municipality manages its waste and identify relevant trends in waste management.

3.3 Assessment of Growth Potential and Areas for Growth

- Meet with municipal planning staff to obtain existing and future population data and 20 year growth and occupancy projections;
- Liaise with municipal planning staff regarding the current official plan to confirm future growth areas and growth management policies;
- Compile growth statistics for the entire municipality with individual projections for each settlement area based on the level of servicing anticipated for each area.

3.4 Assessment of Servicing Component Alternative Solutions

.1 WATER SUPPLY AND DISTRIBUTION

- Provide estimate of projected water demands for each growth area over 20 year planning horizon;
- Comment on the adequacy of existing water supply facilities to meet projected 20 year population;

- Develop water supply alternatives including "do nothing" and/or "limit community growth";

- Complete assessment of alternatives and selection of preferred alternative for water supply;

- Identify logical extensions of distribution systems based on system demands to service both currently un-serviced areas within each community as well as future growth and development areas; complete system model to identify major distribution network mains (greater than 200 dia.). Proposed network extensions are to be included in the evaluation of water system alternatives;

- Prepare preliminary cost estimates for each alternative;

- Prepare implementation strategies (ie role of existing community and development; identify potential funding alternatives – ie capital, user fees, development charges.)

.2 WASTEWATER COLLECTION AND TREATMENT

- Provide estimate of projected wastewater demands for each growth area over 20 year planning horizon;

- Comment on the adequacy of existing treatment facilities to meet projected 20 year population;

- Develop treatment alternatives including "do nothing" and/or "limit community growth";

- Develop bio-solids management alternatives;

- Complete assessment of alternatives and selection of preferred alternative for wastewater treatment;

- Identify logical extensions of wastewater collection systems and/or new sewerage network based on project wastewater flows to service both currently un-serviced areas within each community as well as future growth and development areas; identify location and approximate sizing of pumping stations. Proposed collection system networks are to be included in the evaluation of wastewater system alternatives;

- Prepare preliminary cost estimates for each alternative;

- Prepare implementation strategies (ie role of existing community and development; identify potential funding alternatives – ie capital, user fees, development charges.)

.3 STORMWATER MANAGEMENT

- Identify appropriate options for providing stormwater management for new developments including lot level controls; conveyance controls and centralized "regional" end of collection treatment and system controls;

- Provide commentary on the appropriate application of oil and grit separators for the purposes of water quality control;

- Identify logical areas for the implementation of regional treatment and control facilities for new development including identification of approximate drainage areas and functional sizing in order to provide approximate area requirements;

- Complete assessment of stormwater management alternatives and identify a preferred strategy for the future implementation of stormwater management within growth areas;

- Prepare preliminary cost estimates for each alternative and include first order estimate for the long-term maintenance of end of pipe alternatives;

- Prepare implementation strategies (ie role of existing community and development; potential funding alternatives - ie capital, use fees, development charges)

.4 TRANSPORTATION

- Utilize travel demand forecasting techniques to assist in the identification of future travel demands within the 20 year planning horizon and identify associated existing roadway system deficiencies;

- Using standard trip generation and travel pattern data analysis determine impact of future demands on:

    - prominent travel patterns;
    - peak hours;
    - link deficiencies;
    - need for roadway capacity enhancements or improvements;

- Identify opportunities to address transportation deficiencies at a strategic level;

- Complete an assessment of transportation service options in the context of both urban and rural transportation requirements;

- Develop a short, medium and long-term solution to current and anticipated transportation deficiencies within the municipality and provide an optimum growth staging strategy that balances transportation infrastructure needs with funding and availability.

.5 SOLID WASTE MANAGEMENT

- Determine total future waste generation and complete an analysis of future waste diversion and disposal quantities having regard for both municipal and private sector;

- Identify feasible waste management alternatives including facilities and equipment that might be utilized by the municipality having regard for the following elements:
    - Diversion
        - domestic waste
        - industrial, commercial and institutional waste
        - waste re-use programs
        - source separation recycling
        - material recovery recycling
        - composting
        - wet/dry recycling
    - Disposal
        - thermal technologies
        - export of waste
        - landfill
        - bin/transfer/drop-off depot
- Identify preferred waste management system, feasibility, costs and implementation strategy;

- Prepare education and communication program.

3.5 Master Servicing Plan (Preferred Solution)

Upon completion of the evaluation of alternatives for each servicing component, the preferred alternative is to be identified and compiled under the appropriate heading for each service. As previously noted each community area identified may have its own unique strategy for the provision of servicing – particularly water supply and wastewater treatment to service both existing and future development. The preferred solution is to provide appropriate details for each service area.

4.0 CONSULTANT'S RESPONSIBILITIES

- Review all relevant background documents including Middlesex Centre Official Plan policies; Certificates of Approval for existing facilities and services; infrastructure mapping; previously planning and servicing studies; facility operations records and flow data;

- Consult with municipal planning staff to obtain population data and growth projections;

- Meeting with Steering Committee on a monthly basis for the duration of the project; prepare all meeting minutes;
- Prepare and implement extensive public and agency consultation plan;
- Complete inventory of the relevant natural, physical, social and economic environment to assist in the evaluation of alternatives and the development of appropriate mitigation;
- Complete evaluation of alternatives and the selection of a preferred alternative in accordance with the planning and decision making processes identified in the Municipal Class EA document;
- Develop a final Master Servicing Plan identifying the servicing strategies for each component within each community area.

5.0 DELIVERABLES

- Public and agency consultation plan;
- Project schedule by task;
- Attend monthly Steering Committee Meetings and prepare minutes which will include a summary of work completed to date and work to be completed;
- Attend public and agency consultation meetings and provide all necessary charts, maps and handouts for public meetings; provide summary for each meeting or point of contact;
- Water system models for Delaware, Kilworth-Komoka and Ilderton in Water CAD V. 8 /EPA Net format;
- Schematics of proposed facility expansions, wastewater collection system extension, proposed pumping facilities, SWM facility locations and sizing and transportation system improvements;
- Master Servicing Plan document: six (6) draft copies for municipal review; fifteen (15) copies of final document; digital versions of document and figures in "PDF" format and all major drawings in AutoCad 2007 format;
- Preparation of Power Point and presentation to Council.

6.0 CONSULTING TEAM'S PROPOSAL

The Consulting Team's proposal must contain the following:

- An outline of the proposed "work plan" format, which will include the work plan requirements described under the Consultant's Responsibilities;

- A resume of all staff involved in the project, inclusive of subject matter experts and research staff, outlining the individual's expertise, relevant experience with similar projects and estimated percentage of time and per diem rate each staff individual will contribute to each step in the work plan. The Consulting Team's proposal must include examples of recent projects that have been completed or which are in progress for other clients. All consulting firms must submit a list of all sub-consultants to be utilized as part of the Consulting Team, including any local firms, individuals, etc.

- The Consulting Team must prepare a complete cost breakdown for the Master Servicing Plan and the steps in the work plan including total salaried and hourly staff wages, mileage, total project hours, long-distance phone calls, computer programming costs, reproduction costs, research material costs and related disbursements. The projected costing for the project must be presented in a tabulated format in cumulative hours with a total upset cost for the study to the point of completion and presentation of the final report.

- The completion date for the study will be twelve (12) months from the date of the project initiation meeting. The Consulting Team's proposal must include projected timing for each step of the work plan, to be presented in a calendar-style format based on the timelines. (Gantt Chart)

- The Consulting Team must provide a monthly project status report to the Municipality and the Steering Committee.

- The Consulting Team must meet all "work plan" commitments, timing and completion dates as agreed upon by the Steering Committee, the Municipality and the Consulting Team unless all parties agree to appropriate revisions to the agreement due to unforeseen circumstances. Any projected overruns in timing or cost must be pre-approved by the Municipality of Middlesex Centre in advance of their occurrence or such responsibility will not belong to Middlesex Centre at the completion of the Master Plan.

- All project materials including: research materials, computer programs and computer data files, schedule, maps, results from interview data sheets, and data compilation tables shall become the property of the Municipality of Middlesex Centre at the completion of the study.

- The Master Servicing Plan and all reports are to be made available in Microsoft Word, HTML and PDF format on CD; all accompanying maps, schedules and tables are to be provided in a reproducible format, as well as in Auto CAD drawing format acceptable to the Municipality.

7.0 INVOICING

The Consultant is to provide monthly invoices together with their monthly project status reports.

8.0 SUB-CONTRACTORS

Consultants shall submit a list of sub-contractors in the appropriate section of the form. If no sub-contractors are to be used, it shall be so indicated.

9.0 QUALIFICATIONS

The proposal shall be completed by a firm of recognized standing having at least five (5) years experience in this type of work and having the necessary equipment and skilled personnel to carry out the work satisfactorily. Consultants shall include references that are comparable in scope and size and state these on the form.

10.0 DISPUTES

In cases of a dispute as to whether or not a product or service proposed or delivered meets the conditions in the accepted bid, the decision of the Municipality shall be final and binding to all parties.

11.0 PROPOSAL SUBMISSION FORMAT

The submission by the Consultant must include:

- A letter of introduction identifying the Consultant Team and relevant information related to your application. The letter must also include an acknowledgment and agreement with the terms and conditions outlined in this RFP and be signed by a party having authority to bind the Consultant.

11.1 Proposal Format

The proposal document must include five (5) copies of the proposal including the following:

- Cover page including Title of Proposal;
- The Consultant's name, address, telephone and fax number, e-mail address, and primary contact person;
- Date of Submission;
- Consultant Team with Project Manager profile;
- Relevant experience;
- Preliminary Work Program;
- References;
- Sub-Contractors used

12.0 EVALUATION PROCESS

All proposals will be reviewed using a common set of criteria as provided below:

Criteria

Project Understanding, Implementation Strategy

Approach, methodology and work program

Schedule and timelines

Project Management and Delivery

Project Management with Project Manager responsibilities, key staff, utilization

Project support and technical staff

Experience and Qualifications

Firm experience

Consultant Team experience

Price

The Municipality will prepare a short list of top candidates for interviews to assist in the selection of the successful Consultant Team. The successful Consultant will be contacted to initiate discussions with respect to proceeding with the project and the execution of a contract. Should a contract not be reached between the parties, the next runner up in the selection process will be contacted and so on. The Municipality's decision shall be final and binding.

The Municipality will make every effort to evaluate all proposals in a timely manner and respond to all who have made submissions within two weeks of closing.

Reference Material for Review

- Middlesex Centre Official Plan, December 2001
- Middlesex Centre GIS Infrastructure Mapping in Arc GIS format for the Communities of Ilderton, Kilworth, Komoka, Delaware and Arva
- Middlesex Centre Road Needs Study, Stantec, December 2004
- Middlesex Centre Structures Inspection and Assessment Report, Spriet Associates, February 2006
- Middlesex Centre Development Charge Background Study, Ilderton Sanitary Sewer and Water Area-Specific Development Charge, C.N. Watson, November 21, 2005
- Middlesex Centre, Development Charge Background Study, Township Wide, Ilderton Water and Sanitary Sewer Area-Specific Komoka/Kilworth Water and Sanitary Sewer Area-Specific Development Charge By-Laws, May 11, 2004
- Area Sanitary Servicing Study – Southwest Corner of Ilderton, Development Engineering, Development Engineering, February 2005
- Middlesex Centre, Local Servicing Guidelines, CCL/IBI, January 2005
- Delaware Water and Wastewater Servicing Study Master Plan, Dillon, May 31, 2005
- Delaware Village Servicing Feasibility Study, Delcan, December 1993
- Kilworth-Komoka Water Supply, Class Environmental Assessment, Cumming Cockburn Limited, March 2005
- Kilworth-Komoka Water Supply, Class Environmental Assessment, Addendum, Stantec, March 2007
- Community Surface Water Management Plan – Komoka, Aquafor Beech Limited, September 1999
- Community Surface Water Management Plan – Komoka, Implementation Strategy, Cumming Cockburn Limited (letter report), March 26, 2001
- Ilderton Wastewater Treatment Plant Upgrade, Environmental Study Report, MIG/MacViro, May 2002
- Kilworth Water Pollution Control Plant Environmental Study Report, Conestoga-Rovers & Associates, November 2006

MASTER SERVICING PLAN

Request For Proposals
October 21, 2008

Middlesex Centre

Public Works and Engineering Department

1

MC Strategic Plan 2006 - 2011

GOAL

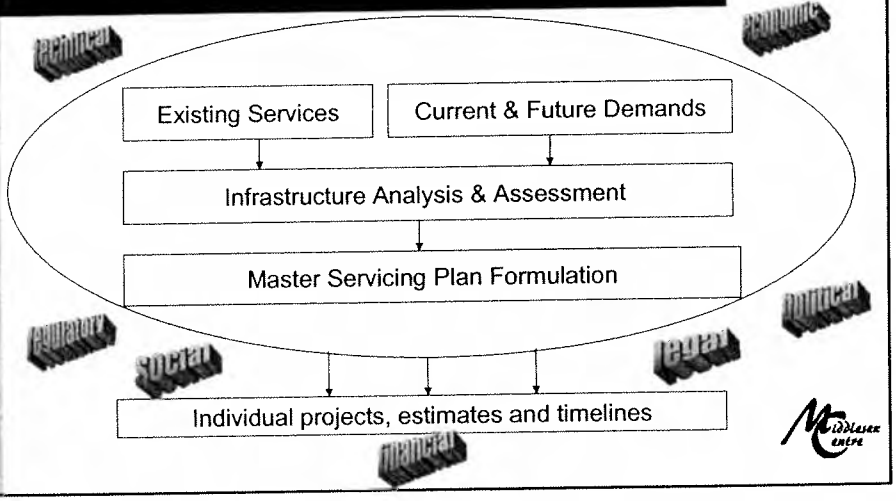
"Improve and maintain existing infrastructure using responsible financing and ensuring adequate reserve funds"

OBJECTIVE

"implement a Long Term Servicing Master Plan which addresses municipal water, waste water, storm water, solid waste and roads"

2

Master Servicing Plan Process
and Consideration Factors



3

REQUEST FOR PROPOSALS
Terms of Reference

- Instructions and procedural elements
- Project background and scope
- Consultant evaluation and selection process

4

REQUEST FOR PROPOSALS
Terms of Reference

- Selected Highlights :
  - Public Consultation Plan
  - Meet Environmental Assessment requirements
  - Policies and Guidelines development / revisions
  - Current and future growth and development needs
  - Identify & evaluate usage of applicable new technologies
  - Engineering feasibilities of servicing plans/projects
  - Meet general municipal and provincial criteria
  - 20 Year timeframe
  - Preliminary cost estimates for each and all alternatives
  - 12 month project term

5

WATER SUPPLY and DISTRIBUTION

- Consumption and design data
- Criteria recommendations
- Systems capabilities and limitations
- Water conservation
- Distribution models

6

WASTEWATER COLLECTION & TREATMENT

- Waste generation and design data
- Criteria recommendations
- Systems capacities, excess and limitations
- Future expansion possibilities
- Interface of communal and private systems

7

TRANSPORTATION

- Identify and assess key issues including deficiencies
- Travel demands and forecasts
- Impact of development
- Evaluation criteria re: roles and functions of roads and structures
- Review includes – existing rail, road, structures, commercial goods route, transit, cycling and pedestrian infrastructure

- *With regard for London proximity and jurisdictional hierarchy*

8

STORMWATER MANAGEMENT

- Major storm water outlets within growth areas
- Major watershed objectives
- Identify further watershed study areas

9

SOLID WASTE MANAGEMENT

- Complete inventory – *existing programs, policies, procedures, systems, facilities*
- Current waste quantities, diversion, disposal
- Overview of applicable laws, policies and guidelines

10

REQUEST FOR PROPOSALS
Bidders Meeting

Questions ???

11

Municipality of Middlesex Centre
Mandatory Bidders Meeting – Master Servicing Plan
Meeting Notes

Tuesday October 21, 2008 – 2:00 p.m.

Attendance:

Project Steering Committee:
Maureen Looby, Manager, PWE, Municipality of Middlesex Centre
Cathy Saunders CAO/Clerk, Municipality of Middlesex Centre
Marc Bancroft, Senior Planner, Municipality of Middlesex Centre
Joe Heyninck, IBI Group

Bidders:
John Tyrrell, Senior Environmental Engineer, Stantec Consulting

Also in attendance:
Greg LaForge, Environmental Technologist, Municipality of Middlesex Centre
Mauro Castrilli, Transportation Coordinator, Municipality of Middlesex Centre

1. Introductions

- Maureen Looby introduced the Steering Committee and briefly described the roles of the members.

2. Presentation

- Maureen Looby presented an overview of the Middlesex Centre Master Servicing Project as detailed in the September 2008 Terms of Reference
- The numerical scoring system for the proposals will not be provided and will be a value based assessment.
- The study is a forward looking perspective with a 20 year horizon and is to include cost estimates
- The Master Servicing Study is to be completed by the end of 2009

3. Questions

1. John Tyrrell, Stantec – Should the study include only municipal roads or Provincial and County roads as well?

   Ans: The study may require integration of all road systems within Middlesex Centre with regards to the effect other jurisdictional roads have on our roads.

2. Joe Heyninck, IBI Group – Does the Solid Waste Contractor log all of the data regarding Waste Management?

   Ans: Bluewater Recycling Association is a consortium and Middlesex Centre is one of the partners as our solid waste management contractor. They provide quarterly reports on the statistics regarding our solid waste management program.

3. John Tyrrell, Stantec – Regarding Stormwater Management, how much discussion is involved with the Conservation Authorities?
   Ans: Some consultation will be required with the Conservation Authorities jurisdiction. Regarding the Conservation Authorities subwatershed report cards and plans, these are not intended to be part of this study but their need should be referenced at a minimum.

   Proponents should provide insight into potential regulatory changes. An objective of this study would be to explore and define policies regarding Storm Water Management.

   Proponents should also include their perspective on security measures and signage at stormwater management pond facilities.

   Jeff Brick of the Upper Thames River Conservation Authority is available as a resource to the Steering Committee.

4. John Tyrrell, Stantec – Is Stormwater Management included in Middlesex Centre's rate structure?

   Ans: These costs are included in Middlesex Centre's operations and maintenance budget.

5. John Tyrrell, Stantec – Regarding public consultation, if Stantec was awarded the project they would propose 3 meetings. The first meeting would be an introductory meeting after the draft reports were completed in order to get input from the public. The second meeting would provide a short list of planning alternatives. An optional third meeting would provide a final draft plan going forward.

   Notification would include advertising in the London Free Press and the Middlesex Banner along with letters to interested parties as noted in our current development charges notification list.

6. John Tyrrell, Stantec – How does the Master Servicing Study fit into the development charges work?

   Ans: The Master Servicing Study will be very closely integrated with the development charges and will work in parallel. The study should focus on Middlesex Centre growth areas as defined in our Official Plan.

APPENDIX A-2:
STANTEC CONSULTING LTD.
PROPOSAL – OCTOBER 31, 2008

Refer to Appendix 1.1

APPENDIX B-1:
DRAFT AGENCY LETTER

Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Tel: (519) 645-2007
Fax: (519) 645-6575

April 24, 2009
File: 165500584

[Click here and type recipients address. Use Shift+Enter to break between lines.]

Attention: **[Click here and type an attention line]**

Dear :

Reference: **Middlesex Centre Master Servicing Plan Class EA**

The Municipality of Middlesex Centre has retained Stantec Consulting Ltd. to undertake a Master Servicing Plan for the Municipality. This project is being implemented as a Master Plan under the Municipal Engineers Association Class Environmental Assessment 2007 update. This Master Servicing Plan will address planning for the Municipality of Middlesex Centre (refer to Figure 1) related to water and water distribution, wastewater collection and treatment, storm water management, transportation, and solid waste based on 20-year population projections.

The following problem statement has been developed for this project:

> *The Municipality of Middlesex Centre is a 588km^2 municipality with over 15,000 residents. In order to provide an environmentally sensitive and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required.*

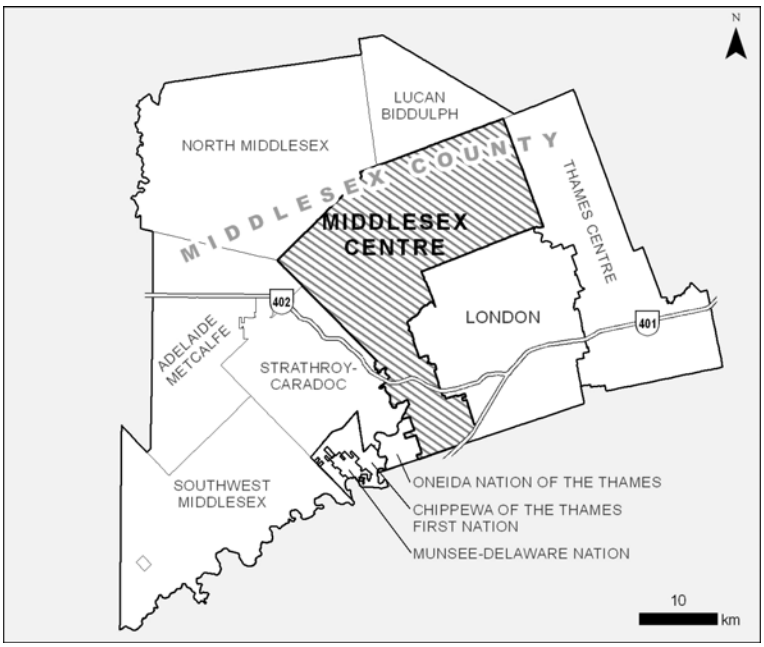


Figure 1: Middlesex Centre

Reference: Middlesex Centre Master Servicing Plan Class EA

The Class EA planning process for this Master Servicing Plan involves three Public Information Centres (PIC). The first PIC will be held Wednesday May 13, 2009. For information regarding the location of the PIC please contact the undersigned.

We would appreciate receiving your comments regarding the Middlesex Centre Master Servicing Plan. Kindly provide your comments in writing to the undersigned on or before May 8, 2009 so that they may be considered as part of this Class EA planning process. Please also circulate this notice to any parties within your agency who may have an interest in this project.

If you have any questions or require further information, please contact the undersigned.

Sincerely,

STANTEC CONSULTING LTD.

Nina Sampson, HBES, CEPIT
Environmental Technician
Tel: (519) 645-2007
Fax: (519) 645-6575
Nina.Sampson@stantec.com

c. Middlesex Centre
File

APPENDIX B-2:
DRAFT NOTICE OF COMMENCEMENT

NOTICE OF COMMENCEMENT AND PUBLIC INFORMATION CENTRE #1

MUNICIPALITY OF MIDDLESEX CENTRE MASTER SERVICING PLAN

The Municipality of Middlesex Centre is carrying out a study to determine servicing requirements for water supply and distribution, wastewater collection and treatment, stormwater management, transportation, and solid waste for the Municipality to service forecasted 20-year growth and occupancy populations. This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act.

Public consultation is a key component of this study. The proposed consultation plan provides for public information centres at three points in the study. The first public information centre will be held Wednesday May 13, 2009. The objective of this information centre is to review the problem/opportunity and alternative solutions for each of the five components and received input from the public. The remaining two public information centres will be advertised in advance of their occurrence.

Date: Wednesday May 13, 2009

Time: 7:00pm

Location:

All of those interested in the Master Servicing Plan study are urged to attend.

If you have any questions or wish to be added to the study mailing list, please contact by letter, fax, or e-mail:

Municipality of Middlesex Centre
Maureen Looby
Manager – Public Works and Engineering
10227 Ilderton Road RR2
Ilderton, ON N0M 2A0
Fax: (519) 666.0271
Email: loobym@middlesexcentre.on.ca

Stantec Consulting Ltd.
John Tyrrell
Senior Environmental Engineer
800-171 Queens Ave.
London, ON N6A 5J7
Fax: (519) 645-6575
Email: john.tyrrell@stantec.com

APPENDIX B-3:
AGENCY CONTACT LIST

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email	Comments
Federal	Department of Indian and Northern Affairs	Mr.	Don	Boswell	Specific Claims Branch	Senior Claims Analyst	10 Wellington St. Room 1310	Gatineau	QC	K1A 0H4			
Federal	Department of Indian and Northern Affairs	Mr.	Franklin	Roy	Litigation Management and Resolution Branch	Director	25 Eddy St. 14th Floor, Rm 1496	Gatineau	QC	K1A 0H4	T:819.997.3582 F:819.997.1679	royf@inac.gc.ca	Only need to send map and legal description.
Federal	Environment Canada						4905 Dufferin St	Toronto	ON	M3H 5T4	T: 416.739.4826 F: 416.739.4776		
Federal	Fisheries and Oceans Canada	Mr.	Dave	Balint	Southern Ontario District - London Office	Fish Habitat Biologist	73 Meg Dr.	London	ON	N6E 2V2	T: 519.668.2132 F: 519.668.1772	dave.balint@dfo-mpo.gc.ca	
Federal	Transport Canada	Ms.	Suzanne	Shea	Navigable Waters Protection Program - Marine Safety	Navigable Waters Protection Officer	100 Front Street South	Sarnia	ON	N7T 2M4	T:519.383.1866 F:519.383.1989	sheas@tc.gc.ca	
Federal	Transport Canada				Environmental Management Programs								
Federal	Federal MP	Hon.	Bev	Shipley	MP Lambton-Kent-Middlesex		3-380 Albert St.	Strathroy	ON	N7G 3J1	T:519.245.6561 F:519.245.6736	bev@bevshipley.com	
Federal	Association of Iroquois and Allied Indians	Grand Chief	Denise	Stonefish			387 Princess Ave	London	ON	N6B 2A7			From discharge strategy
Federal	CP Rail	Mr.	Jack	Carello	Canadian Pacific Railway	Area Manager, Support	1290 Central Pkwy West Suite 800	Mississauga	ON	L5C 4R3			
Federal	CN Rail	Mr.	John	McTaggart	CN Rail	Technical Services Engineer	4 Welding Way P.O. Box 1000	Concord	ON	L4K 1B9	T:905.669.3155		
Provincial	Ministry of the Attorney General	Ms.	Ria	Tzimas	Aboriginal Legal Issues Office	Crown Law Office - Civil	720 Bay Street. 8th Floor	Toronto	ON	M5G 2K1			
Provincial	Ministry of Economic Development and Trade												
Provincial	Ministry of Health and Long Term Care	Mr.	Ron	Sapsford		Deputy Minister	80 Grosvenor St. Hepburn Block, 10th Floor	Toronto	ON	M7A 1R3	T: 416.327.4300 F: 416.326.1570		
Provincial	Ontario Realty Corporation	Mr.	Julius	Lindsay	Professional Services	Reporting Specialist	1 Dundas St.W. Suite 2000	Toronto	ON	M5G 2L5	T:416.327.2768 F:416.212.1131	julius.lindsay@ontariorealty.ca	Spoke to Brian Agensky at ORC, if no known properties owned by ORC within study area, Julius is contact. If known ORC property, Brian is contact.
Provincial	Ministry of Aboriginal Affairs	Mr.	Martin	Rukavian	Aboriginal and Ministry Relationships Branch	Advisor	160 Bloor Street, East 9th Floor	Toronto	ON	M7A 2E6	T: 416.326.4754 F: 416.326.4017		from City's First Nations contact list
Provincial	Ontario Secretariat of Aboriginal Affairs	Ms	Pam	Wheaton	Policy and Relationships Branch	Director	720 Bay Street. 4th Floor	Toronto	ON	M5G 2K1	T: 416.326.4762 F: 416.326.4017		from City's First Nations contact list

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email	Comments
Provincial	Ministry of Natural Resources	Ms.	Daraleigh	Irving	Aylmer District	Acting District Planner	615 John St.N.	Aylmer	ON	N5H 2S8	T:519.773.4732 F:519.773.9014		Changed from Andrea Fleischhauer July 2008
Provincial	Ministry of Environment	Mr.	Bill	Armstrong	Southwestern Region	Regional Environmental Planner	733 Exeter Road	London	ON	N6E 1L3			
Provincial	Ministry of Municipal Affairs and Housing	Mr.	Craig	Cooper	Municipal Services Office-Southwestern	Assistant Planner	659 Exeter Road, 2nd floor	London	ON	N6E 1L3	T:519.873.4020 F: 519.873.4018	Craig.cooper@ontario.ca	
Provincial	Ministry of Agriculture, Food and Rural Affairs	Mr.	Drew	Crinklaw	Southwestern Ontario	Rural Planner	667 Exeter Road	London	ON	N6E 1L3	T:519.873.4085 F: 519.826.3109	Drew.crinklaw@ontario.ca	
Provincial	Ministry of Transportation	Ms.	Cathy	Giesbrecht	Planning and Design	Supervisor-environment	659 Exeter Rd. 3rd floor	London	ON	N6E 1L3	T:519. 873.4560 F:519.873.4600	cathy.giesbrecht@ontario.ca	
Provincial	Ministry of Transportation	Mr.	Kevin	Boudreau	Operational Services	Field Services Engineer	659 Exeter Rd. Main Floor	London	ON	N6E 1L3	T:519.873.4730 F:519.873.4228	kevin.boudreau@ontario.ca	
Provincial	Ministry of Tourism	Ms.	Nancy	Fallis	Regional Services Branch-West Region	Tourism Industry Advisor	659 Exeter Rd. 2nd Floor	London	ON	N6E 1L3	T:519.873.4482 F:519.873.4061		
Provincial	Ministry of Energy	Ms.	Betty	Morgan	Deputy Minister's Office	Executive Assistant to the Deputy Minister	Hearst Block 4th Floor 900 Bay St.	Toronto	ON	M7A 2E1	T: 416.327.6738 F:519.327-6755	betty.morgan@ontario.ca	·spoke to representative of M of Energy inquiring contact for MCEA. Recommendation was to send to Deputy Minister's Office.
Provincial	Ministry of Energy and Infrastructure	Ms.	Kelly	Shields	Strategic Policy Branch	Acting Director	Frost Building S. 7 Queen's Park Cres. 6th Floor	Toronto	ON	M7A 1Y7	T:416.325.3349 F;416.325.8851	kelly.shields@ontario.ca	Kelly is responsible for water/wastewater projects with newly named Ministry of Energy and Infrastructure.
Provincial	Ministry of Culture	Ms.	Kathy	Glaser	Citizenship and Immigration	Regional Services Coordinator-West Region	4th Floor Suite 405, 30 Duke St.W.	Kitchener	ON	N2H 3W5	T;519.571.6051 F:519.578.1632	kathy.glaser@ontario.ca	Kathy ensures that proper Min. of Culture and Citizenship and Immigration personnel are circulated
Provincial	Ministry of Culture	Mr.	Michael	Johnson	Culture Services Unit	Manager	4th Floor 400 University Ave.	Toronto	ON	M7A 2R9	T:416.314.7144 F:416.212.1802	michael.johnson1@ontario.ca	Local representative is Ms. Shari Prowse however she forwards all correspondence to Michael.
Provincial	Ministry of Public Infrastructure Renewal	Ms.	Martha	Greenberg	Infrastructure-Policy and Planning	Executive Assistant	Frost Building S. 6th Floor 7 Queen's Park Cres.	Toronto	ON	M7A 1Y7	T:416.325.6118 F:416.325.8851	martha.greenberg@ontario.ca	
Provincial	Provincial MPP	Hon.	Maria	VanBommel	MPP Lambton-Kent-Middlesex		71C Front St. W.	Strathroy	ON	N7G 1X6	T:519.245.8696 F:519.245.8697	mvanbommel.mpp.co@liberal.ola.org	
Provincial	Ministry of Citizenship, Culture and Recreation	Mr.	Neal	Ferris	Archaeology and Heritage Planning		659 Exeter Rd.	London	ON	N6E 1L3			
Provincial	Southern First Nations Secretariat	Mr.	Robert	Bakalarczyk		Technical Services Director	22361 Austin Line	Bothwell	ON	N0P 1C0			from discharge strategy
Provincial	Chiefs of Ontario	Ms.	Sue	Chiblow		Environmental Coordinator	188 Mohawk St	Brantford	ON	N3S 2X2			from discharge strategy

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email	Comments
Local	Upper Thames River Conservation Authority	Mr.	Karen	Winfield	Hydrology & Regulatory Services Unit	Land Use Regulations Officer	1424 Clarke Road	London	ON	N5V 5B9	T:519.451.2800 ex 245 F:519.451.1188	snowsellm@thamesriver.on.ca	Mark Snowsell is contact within City of London limits of UTRCA watershed. Karen Winfield is responsible for areas outside of City limits.
Local	Lower Thames Valley Conservation Authority	Ms	Valerie	Towsley		Resource Technician	100 Thames St.	Chatham	ON	N7L 2Y8	T:519.354.7310 F:519.352.3435	ltvca@mnsi.net	
Local	St. Clair Region Conservation Authority	Ms.	Heather	MacKenzie			205 Mill Pond Cres.	Strathroy	ON	N7G 3P9	T:519.245.3710 F:519.245.3348	hmackenzie@scrca.on.ca	
Local	Middlesex-London Health Unit	Mr.	Wally	Adams	Environmental Health & Chronic Disease Prevention Services	Manager-Environmental Health	Unit 50 King St.	London	ON	N6A 5L7	T:519.663.5317 ext.2316 F: 519.663.9276	Wally.adams@mlhu.on.ca	
Local	Hydro One	Mr.	Bruno	DiLullo			850 Pond Mills Rd.	London	ON	N5Z 4R2	T:519.649.3664 F:519.649.3650 C:519.475.0539		Contact at pre-design stage.
Local	County of Middlesex	Mr.	Jerry	Rychlo	County Engineer's Office	Engineering Supervisor	399 Ridout St.N.	London	ON	N6A 2P1	T:519.434.7321 F:519.434.0638		
Local	County of Middlesex	Ms.	Kathy	Bunting	Middlesex County Administrative Offices	Clerk	399 Ridout St.N.	London	ON	N6A 2P1	T:519.434.7321 F:519.434.0638		
Local	Municipality of Strathroy-Caradoc	Ms.	Angela	Toth	Clerk's/Corporate Services Department	Director of Corporate Services/Clerk	52 Frank St.	Strathroy	ON	N7G 2R4	T:519.245.1105 F:519.245.6353	atoth@strathroy-caradoc.ca	
Local	Municipality of Thames Centre	Mr.	Greg	Borduas	Administration	CAO	4305 Hamilton Road	Dorchester	ON	N0L 1G3	T: 519.268.7334 F: 519.268.3928	gborduas@thamescentre.on.ca	
Local	Township of Lucan-Biddulph	Mr.	Ron	Reymer	Administration	Clerk-Administrator	33351 Richmond Street	Lucan	ON	N0M 2J0	T: 519.227.4491 Ext. 22 F: 519.227.4998	rreymer@lucanbiddulph.on.ca	
Local	Township of Southwold	Ms.	Donna	Ethier	Administration	CAO/Clerk/ Deputy Treasurer	35663 Fingal Line	Fingal	ON	N0L 1K0	T: 519.769.2010 F: 519.769.2837	cao@twp.southwold.on.ca	
Local	Municipality of Middlesex Centre	Ms.	Cathy	Saunders		CAO/Clerk	10227 Ilderton Rd.	RR#2 Ilderton	ON	N0M 2A0	T:519.666.0190 F::519.666.0271	saunders@middlesexcentre.on.ca	
Local	Municipality of Middlesex Centre	Mr.	Marc	Bancroft	Planning and Development Services	Senior Planner	10227 Ilderton Rd.	RR#2 Ilderton	ON	N0M 2A0	T:519.666.0190 F::519.666.0271	bancroft@middlesexcentre.on.ca	
Local	City of London	Mr.	Pat	McNally	Administration	General Manager/City Engineer	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T: 519.661.2500 ext.4989 F:519.661.2354	pmcnally@london.ca	

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email	Comments
Local	City of London	Mr.	Roland	Welker	EES-Water/Water Engineering	Division Manager	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext.5593 F:519.661.2354	rwelker@london.ca	
Local	City of London	Mr.	Vic	Cote	Finance and Corporate Services/ Administration	General Manager of Finance & Corporate Services & Acting City Treasurer	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T: 519.661.2500 ext.4563 F:519.661.4892	vcote@london.ca	
Local	City of London	Mr.	Jeff	Fielding	CAO's Department/ Corporate Management	CAO	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext.4997 F:519.661.5813	jfielding@london.ca	
Local	Lake Huron Primary Water Supply System	Mr.	Andrew	Henry	Regional Water Supply Division	Division Manager Regional Water Supply	29 Kilworth Park Dr.	RR#5 Komoka	ON	N0L 1R0	T:519.661.2500 ext.1355 F:519.474.0451	ahenry@london.ca	
Local	Thames Valley District School Board	Mr.	Brian	Greene	Business Services	Executive Superintendent and Treasurer	1250 Dundas Street	London	ON	N5W 5P2	T: 519.452.2000 ext. 20222 F:519.452.2395	btucker@tvdsb.on.ca	
Local	London District Catholic School Board	Mr.	Tim	Holmes		Superintendent of Business	5200 Wellington Road South, PO Box 5474	London	ON	N6A 4X5	T: 519.663.2088 ext. 43602 F: 519.663.9250	t.holmes@ldcsb.on.ca	
Local	Chippewa's of the Thames	Chief	Kelly	Riley			RR#1	Muncey	ON	N0L 1Y0	T:519.289.5555 F:519.289.2230		
Local	Oneida Nation of the Thames	Chief	Randall	Phillips			2212 Elm Ave.	Southwold	ON	N0L 2G0	T:519.652.3244 F:519.652.9287		
Local	Munsee-Delaware Nation	Chief	Patrick	Waddilove			RR#1	Muncey	ON	N0L 1Y0	T:519.289.5396 F:519.289.5156		
Local	Moravian of the Thames	Chief	Greg	Peters			RR#3 14760 School House Line	Thamesville	ON	N0P 2K0			from discharge strategy - called Delaware Nation in Discharge Strategy
Local	Caldwell First Nation	Chief	Louise	Hillier			c/o 10297 Talbot Road	Blenheim	ON	N0P 1A0			from discharge strategy
Local	London District Chiefs Council	Mr.	Ray	Martin		Executive Director	22361 Austin Line	Bothwell	ON	N0P 1C0			
Local	London District Chiefs Council	Mr.	Martin	Powless		Lands & Estate Administer	2212 Elm Ave.	Southwold	ON	N0L 2G0			
CC Client	Municipality of Middlesex Centre	Ms.	Maureen	Looby	Engineering Services	Manager-Public Works and Engineering	10227 Ilderton Rd.	RR#2 Ilderton	ON	N0M 2A0	T:519.666.0190 F::519.666.0271	loobym@middlesexcentre.on.ca	

Appendix 2.1:
Agency Contact List

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email
Federal	Department of Indian and Northern Affairs	Mr.	Don	Boswell	Specific Claims Branch	Senior Claims Analyst	10 Wellington St. Room 1310	Gatineau	QC	K1A 0H4		
Federal	Department of Indian and Northern Affairs	Mr.	Marc-Andre	Millaire	Litigation Management and Resolution Branch	Litigation Team Leader, Eastern Litigation Directorate	10 Wellington Street	Gatineau	QC	K1A 0H4		
Federal	Fisheries and Oceans Canada	Mr.	Dave	Balint	Southern Ontario District - London Office	Fish Habitat Biologist	73 Meg Dr.	London	ON	N6E 2V2	T: 519.668.2132 F: 519.668.1772	dave.balint@dfo-mpo.gc.ca
Federal	Transport Canada	Ms.	Ingrid	Epp	Navigable Waters Protection Program - Marine Safety	Environmental Assistant	4900 Yonge Street	North York	ON	M2N 6A5	T:416-952-3379	ingrid.epp@tc.gc.ca
Federal	Federal MP	Hon.	Bev	Shipley	MP Lambton-Kent-Middlesex		3-380 Albert St.	Strathroy	ON	N7G 3J1	T:519.245.6561 F:519.245.6736	bev@bevshipley.com
Federal	Association of Iroquois and Allied Indians	Grand Chief	Denise	Stonefish			387 Princess Ave	London	ON	N6B 2A7		
Federal	CP Rail	Mr.	Jack	Carello	Canadian Pacific Railway	Area Manager, Support	1290 Central Pkwy West Suite 800	Mississauga	ON	L5C 4R3		
Federal	CN Rail	Mr.	John	McTaggart	CN Rail	Technical Services Engineer	4 Welding Way P.O. Box 1000	Concord	ON	L4K 1B9	T:905.669.3155	
Provincial	Ministry of Health and Long Term Care	Mr.	Ron	Sapsford		Deputy Minister	80 Grosvenor St. Hepburn Block, 10th Floor	Toronto	ON	M7A 1R3	T: 416.327.4300 F: 416.326.1570	
Provincial	Ontario Realty Corporation	Mr.	Julius	Lindsay	Professional Services	Reporting Specialist	1 Dundas St.W. Suite 2000	Toronto	ON	M5G 2L5	T:416.327.2768 F:416.212.1131	julius.lindsay@ontariorealty.ca
Provincial	Ministry of Aboriginal Affairs	Mr.	Martin	Rukavian	Aboriginal and Ministry Relationships Branch	Advisor	160 Bloor Street, East 9th Floor	Toronto	ON	M7A 2E6	T: 416.326.4754 F: 416.326.4017	
Provincial	Ontario Secretariat of Aboriginal Affairs	Ms.	Pam	Wheaton	Policy and Relationships Branch	Director	720 Bay Street. 4th Floor	Toronto	ON	M5G 2K1	T: 416.326.4762 F: 416.326.4017	
Provincial	Ministry of Natural Resources	Ms.	Daraleigh	Irving	Aylmer District	Acting District Planner	615 John St.N.	Aylmer	ON	N5H 2S8	T:519.773.4732 F:519.773.9014	
Provincial	Ministry of Environment	Mr.	Bill	Armstrong	Southwestern Region	Regional Environmental Planner	733 Exeter Road	London	ON	N6E 1L3		
Provincial	Ministry of Municipal Affairs and Housing	Mr.	Craig	Cooper	Municipal Services Office-Southwestern	Assistant Planner	659 Exeter Road, 2nd floor	London	ON	N6E 1L3	T:519.873.4020 F: 519.873.4018	Craig.cooper@ontario.ca
Provincial	Ministry of Agriculture, Food and Rural Affairs	Mr.	Drew	Crinklaw	Southwestern Ontario	Rural Planner	667 Exeter Road	London	ON	N6E 1L3	T:519.873.4085 F: 519.826.3109	Drew.crinklaw@ontario.ca
Provincial	Ministry of Transportation	Ms.	Cathy	Giesbrecht	Planning and Design	Supervisor-environment	659 Exeter Rd. 3rd floor	London	ON	N6E 1L3	T:519. 873.4560 F:519.873.4600	cathy.giesbrecht@ontario.ca
Provincial	Ministry of Transportation	Mr.	Kevin	Boudreau	Operational Services	Field Services Engineer	659 Exeter Rd. Main Floor	London	ON	N6E 1L3	T:519.873.4730 F:519.873.4228	kevin.boudreau@ontario.ca
Provincial	Ministry of Tourism	Ms.	Nancy	Fallis	Regional Services Branch-West Region	Tourism Industry Advisor	659 Exeter Rd. 2nd Floor	London	ON	N6E 1L3	T:519.873.4482 F:519.873.4061	
Provincial	Ministry of Energy	Ms.	Betty	Morgan	Deputy Minister's Office	Executive Assistant to the Deputy Minister	900 Bay St., Hearst Block, 4th Floor	Toronto	ON	M7A 2E1	T: 416.327.6738 F:519.327-6755	betty.morgan@ontario.ca

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email
Provincial	Ministry of Energy and Infrastructure	Ms.	Kelly	Shields	Strategic Policy Branch	Acting Director	7 Queen's Park Cres., Frost Building S., 6th Floor	Toronto	ON	M7A 1Y7	T:416.325.3349 F;416.325.8851	kelly.shields@ontario.ca
Provincial	Ministry of Culture	Ms.	Kathy	Glaser	Citizenship and Immigration	Regional Services Coordinator-West Region	30 Duke St.W., 4th Floor, Suite 405	Kitchener	ON	N2H 3W5	T;519.571.6051 F:519.578.1632	kathy.glaser@ontario.ca
Provincial	Ministry of Culture	Mr.	Michael	Johnson	Culture Services Unit	Manager	400 University Ave., 4th Floor	Toronto	ON	M7A 2R9	T:416.314.7144 F:416.212.1802	michael.johnson1@ontario.ca
Provincial	Ministry of Public Infrastructure Renewal	Ms.	Martha	Greenberg	Infrastructure-Policy and Planning	Executive Assistant	7 Queen's Park Cres., Frost Building S., 6th Floor	Toronto	ON	M7A 1Y7	T:416.325.6118 F:416.325.8851	martha.greenberg@ontario.ca
Provincial	Provincial MPP	Hon.	Maria	VanBommel	MPP Lambton-Kent-Middlesex		71C Front St. W.	Strathroy	ON	N7G 1X6	T:519.245.8696 F:519.245.8697	mvanbommel.mpp.co@liberal.ola.org
Provincial	Ministry of Citizenship, Culture and Recreation	Mr.	Neal	Ferris	Archaeology and Heritage Planning		659 Exeter Rd.	London	ON	N6E 1L3		
Provincial	Southern First Nations Secretariat	Mr.	Robert	Bakalarczyk		Technical Services Director	22361 Austin Line	Bothwell	ON	N0P 1C0		
Provincial	Chiefs of Ontario	Ms.	Sue	Chiblow		Environmental Coordinator	188 Mohawk St	Brantford	ON	N3S 2X2		
Local	Upper Thames River Conservation Authority	Ms.	Karen	Winfield	Hydrology & Regulatory Services Unit	Land Use Regulations Officer	1424 Clarke Road	London	ON	N5V 5B9	T:519.451.2800 ex 245 F:519.451.1188	snowsellm@thamesriver.on.ca
Local	Lower Thames Valley Conservation Authority	Ms.	Valerie	Towsley		Resource Technician	100 Thames St.	Chatham	ON	N7L 2Y8	T:519.354.7310 F:519.352.3435	ltvca@mnsi.net
Local	St. Clair Region Conservation Authority	Ms.	Patty	Hayman	Planning and Research	Director of Planning and Research	205 Mill Pond Cres.	Strathroy	ON	N7G 3P9	T:519.245.3710 F:519.245.3348	phayman@scrca.on.ca
Local	Kettle Creek Conservation Authority	Mr.	Joe	Gordon		Planning and Regulations Supervisor	44015 Ferguson Line	St. Thomas	ON	N5P 3T3	T:519.631.1270 F:519.631.5026	joe@kettlecreekconservation.on.ca
Local	Ausable Bayfield Conservation Authority	Mr.	Alec	Scott	Water and Planning	Water and Planning Manager	71108 Morrison Line RR#3	Exeter	ON	N0M 1S5	T:519.235.2610 ex. 234 F:519.235.1963	ascott@abca.on.ca
Local	Middlesex-London Health Unit	Mr.	Wally	Adams	Environmental Health & Chronic Disease Prevention Services	Manager-Environmental Health	Unit 50 King St.	London	ON	N6A 5L7	T:519.663.5317 ext.2316 F:519.663.9276	Wally.adams@mlhu.on.ca
Local	County of Middlesex	Mr.	Chris	Traini	County Engineer's Office	County Engineer	399 Ridout St.N.	London	ON	N6A 2P1	T:519.434.7321 F:519.434.0638	

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email
Local	County of Middlesex	Ms.	Kathy	Bunting	Middlesex County Administrative Offices	Clerk	399 Ridout St.N.	London	ON	N6A 2P1	T:519.434.7321 F:519.434.0638	
Local	County of Elgin	Mr.	Mark	McDonald	Administration	CAO	450 Sunset Drive	St. Thomas	ON	N5R 5V1	T:519.631.1460	
Local	Municipality of Middlesex Centre	Ms.	Cathy	Saunders		CAO/Clerk	10227 Ilderton Rd.	RR#2 Ilderton	ON	N0M 2A0	T:519.666.0190 F:519.666.0271	saunders@middlesexcentre.on.ca
Local	Municipality of Strathroy-Caradoc	Ms.	Angela	Toth	Clerk's/Corporate Services Department	Director of Corporate Services/Clerk	52 Frank St.	Strathroy	ON	N7G 2R4	T:519.245.1105 F:519.245.6353	atoth@strathroy-caradoc.ca
Local	Municipality of North Middlesex	Ms.	Shirley	Scott		Clerk	229 Parkhill Main Street	Parkhill	ON	N0M 2K0	T:519.294.6244 F:519.294.0573	shirleys@northmiddlesex.on.ca
Local	Municipality of Thames Centre	Mr.	Greg	Borduas	Administration	CAO	4305 Hamilton Road	Dorchester	ON	N0L 1G3	T:519.268.7334 F:519.268.3928	gborduas@thamescentre.on.ca
Local	Township of Lucan-Biddulph	Mr.	Ron	Reymer	Administration	Clerk-Administrator	33351 Richmond Street	Lucan	ON	N0M 2J0	T:519.227.4491 Ext. 22 F:519.227.4998	rreymer@lucanbiddulph.on.ca
Local	Township of Southwold	Ms.	Donna	Ethier	Administration	CAO/Clerk/ Deputy Treasurer	35663 Fingal Line	Fingal	ON	N0L 1K0	T:519.769.2010 F:519.769.2837	cao@twp.southwold.on.ca
Local	Township of Adelaide Metcalfe	Ms.	Fran	Urbshott		Clerk/ Administrator/ Treasurer	2340 Egremont Drive RR5	Strathroy	ON	N7G 3H6	T:519.247.3687	fran@adelaidemetcalfe.on.ca
Local	Municipality of Central Elgin	Mr.	Donald	Leitch		CAO/Clerk	450 Sunset Drive 1st Floor	St. Thomas	ON	N5R 5V1		
Local	City of London	Mr.	Pat	McNally	Administration	General Manager/City Engineer and Director - Water Environment and Customer Relations	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext.4989 F:519.661.2354	pmcnally@london.ca
Local	City of London	Mr.	Ron	Standish	EES - Wastewater and Treatment	Director - Wastewater and Treatment	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext. 4978 F:519.661.2355	rstandis@london.ca
Local	City of London	Mr.	David	Leckie	EES - Roads and Transportation	Director of Roads and Transportation	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext.5806 F:519.661.5931	dleckie@london.ca
Local	City of London	Mr.	Jay	Stanford	EES - Environmental Programs and Solid Waste	Director - Environmental Programs and Solid Waste	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext.5411 F:519.661.2354	Jstanfor@london.ca
Local	City of London	Mr.	David	Ailles	Development Approvals	Managing Director	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext.0209 F:519.661.5931	dailles@london.ca
Local	City of London	Mr.	Jeff	Fielding	CAO's Department	CAO	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext.4997 F:519.661.5813	jfielding@london.ca

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email
Local	City of London	Mr.	Vic	Cote	Finance and Corporate Services	General Manager of Finance & Corporate Services & Acting City Treasurer	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 ext.4563 F:519.661.4892	vcote@london.ca
Local	City of London	Mr.	Kevin	Bain	City Clerk's Office	City Clerk	300 Dufferin Ave. P.O. Box 5035	London	ON	N6A 4L9	T:519.661.2500 Ext.4937 F:519.661.4892	kbain@london.ca
Local	Ontario Provinicial Police					Detachment Commander	28444 Centre Road	Strathroy	ON	N7G 3H6	T:519.245.2323 F:519.245.1410	
Local	Lake Huron Primary Water Supply System	Mr.	Andrew	Henry	Regional Water Supply Division	Division Manager Regional Water Supply	235 North Centre Road, Suite 200	London	ON	N5X 4E7	T:519.661.2500 ext.1355 F:519.474.0451	ahenry@london.ca
Local	Thames Valley District School Board	Mr.	Brian	Greene	Business Services	Executive Superintendent and Treasurer	1250 Dundas Street	London	ON	N5W 5P2	T: 519.452.2000 ext. 20222 F:519.452.2395	btucker@tvdsb.on.ca
Local	London District Catholic School Board	Mr.	Tim	Holmes		Superintendent of Business	5200 Wellington Road South, PO Box 5474	London	ON	N6A 4X5	T:519.663.2088 ext. 43602 F:519.663.9250	t.holmes@ldcsb.on.ca
Local	Chippewa's of the Thames	Chief	Joe	Miskokomon			320 Chippewa Road	Muncey	ON	N0L 1Y0	T:519.289.5555 F:519.289.2230	jmiskokomon@cottfn.ca
Local	Oneida Nation of the Thames	Chief	Joel	Abram			2212 Elm Ave.	Oneida	ON	N0L 2G0	T:519.652.0543 F:519.652.9287	joel.abram@oneida.on.ca
Local	Oneida Nation of the Thames	Ms.	April	Varewyck			2212 Elm Ave.	Oneida	ON	N0L 2G0	T:519.652.6922 F:519.652.9287	april.varewyck@oneida.on.ca
Local	Munsee-Delaware Nation	Chief	Patrick	Waddilove			289 Jubilee Road, RR#1	Muncey	ON	N0L 1Y0	T:519.289.5396 F:519.289.5156	pwaddilove@munsee.on.ca
Local	Moravian of the Thames	Chief	Greg	Peters			RR#3 14760 School House Line	Thamesville	ON	N0P 2K0		gcpeters@mnsi.net
Local	Caldwell First Nation	Chief	Louise	Hillier			P.O. Box 388	Leaminton	ON	N8H3W3	T:519.326.6914 F: 519.322-1533	wlh@porchlight.ca
Local	London District Chiefs Council	Mr.	Ray	Martin		Executive Director	22361 Austin Line	Bothwell	ON	N0P 1C0		
Local	London District Chiefs Council	Mr.	Martin	Powless		Lands & Estate Administer	2212 Elm Ave.	Southwold	ON	N0L 2G0		
Local	Hydro One	Mr.	Bruno	DiLullo			850 Pond Mills Rd.	London	ON	N5Z 4R2	T:519.649.3664 F:519.649.3650 C:519.475.0539	
Local	London Transit Commission	Mr.	Larry	Ducharme		General Manager	450 Highbury Ave N	London	ON	N5W 5L2	T:519.451.1347	

Appendix 2.2:
Agency Responses

Ministry of the Attorney General

Ministry of the
Attorney General

Crown Law Office
Civil Law

720 Bay Street
8th Floor
Toronto ON M5G 2K1

Tel/Tél: (416) 326-4930
Fax/Téléc.: (416) 326-4181

Ministère du
Procureur général

Bureau des avocats
de la Couronne Droit civil

720 rue Bay
8e étage
Toronto ON M5G 2K1

Please refer to File
S.V.P. Se référer au dossier
No.

Ontario

May 4, 2009

VIA REGULAR MAIL

Nina Sampson
Environmental Technician
Stantec Consulting Ltd.
800 – 171 Queens Avenue
London, ON N6A 5J7

Dear Ms. Sampson:

Re: Middlesex Centre Master Servicing Plan Class EA

Thank you for your letter of April 29, 2009.

Inquiries and communications such as yours are handled by Aboriginal and Ministry Relationships Branch of the Ministry of Aboriginal Affairs.

I have forwarded your letter to that Branch and ask that you direct further questions to that office. The address is:

Ministry of Aboriginal Affairs
160 Bloor Street East, Suite 900
Toronto, ON M7A 2E6
Tel.: 416-326-4740

Yours truly,

E. Ria Tzimas
Counsel
Ministry of the Attorney General
Crown Law Office – Civil

City of London

Gorrie, Cameron

From: Tyrrell, John
Sent: Wednesday, July 15, 2009 4:31 PM
To: Sampson, Nina
Cc: Gorrie, Cameron
Subject: FW: Middlesex Centre Master Servicing Plan

Please file

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Lucas, John [mailto:JLUCAS@london.ca]
Sent: Friday, July 10, 2009 2:39 PM
To: Tyrrell, John
Subject: RE: Middlesex Centre Master Servicing Plan

Sorry about the delay in getting back to you. Here are some comments on the initiation of the EA:

- It is our understanding that growth projects are to be in accordance with your Official Plan and this is not being reconsidered.
- We agree to coordinate in areas of mutual service planning interest, most notably our Transportation Master Plan, natural heritage corridors and connections (eg. Regional pathways)
- The agreement governing the ongoing sanitary services we provide for Arva is to be reflected in the plan.
- We expect to be consulted on any options that could have trans-boundary effects (eg. Sewage treatment plants upstream of London.)
- We expect to be consulted on any options that would change the present configuration and operations of our systems that you presently rely upon (eg. Komoka watermain).
- We recognize that the current water servicing agreements between the City of London and Middlesex Centre for the communities of Arva, Ballymote, and Delaware will be consolidated in the near future, and ratified by both Municipal Councils. The consolidated agreement will provide specific servicing arrangements and limitations to the water to be supplied by the City of London to Middlesex Centre. This should be reflected in the plan.

Please use me as the point person for general contact through the stages of the EA, as well as for specific issues.

John Lucas, P.Eng.
Manager, Transportation Planning and Design
City of London
519-661-2500 x5537

Gorrie, Cameron

From: Tyrrell, John
Sent: Friday, June 05, 2009 3:58 PM
To: Sampson, Nina
Subject: FW: Middlesex Centre Master Servicing Plan

Follow Up Flag: Follow up
Flag Status: Flagged

Please file

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Lucas, John [mailto:JLUCAS@london.ca]
Sent: Tuesday, June 02, 2009 3:04 PM
To: Tyrrell, John
Cc: Maureen Looby
Subject: RE: Middlesex Centre Master Servicing Plan

I am making arrangements to speak to two internal staff committees. This is a mechanism to get consolidated comments for you, but I can't give you a date yet for specific comments on your PIC #1. Clearly, we are interested in the study, particularly where existing or future servicing involves London systems and infrastructure. We will work out details on transportation data as well.

John Lucas, P.Eng.

Manager, Transportation Planning and Design

City of London

519-661-2500 x5537

From: Tyrrell, John [mailto:john.tyrrell@stantec.com]
Sent: Friday, May 15, 2009 9:16 AM
To: Lucas, John

Cc: Maureen Looby
Subject: Middlesex Centre Master Servicing Plan

John,

For your use and distribution, I have included a copy of yesterday's handout.

With regard to the transportation component of this study, on behalf of Middlesex Centre, could we have your permission to speak directly to your transportation consultant AECOM (through Joe Haasen) to allow for a flow of information so that each study can ensure we each have data from the other?

Thanks

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

Gorrie, Cameron

From: Stanford, Jay [JSTANFOR@london.ca]
Sent: Thursday, April 30, 2009 9:52 AM
To: Sampson, Nina
Cc: loobym@middlesexcentre.on.ca
Subject: Letter April 24

Hi Nina

I received your single-sided, 2 page letter, dated April 24 regarding the Middlesex Centre Master Servicing Plan Class EA on April 29. It refers to the need for comments from the City of London by May 8 (7 working days). Please note that the report was NOT included in the package that I received.

The letter suggests that comments are being solicited in the following servicing areas. I cannot tell from your letter if the gentlemen noted beside the areas also received a letter and/or report. Your letter does state "Please also circulate this notice to any parties within your agency who may have an interest in this project." As noted above, I have nothing to circulate.

1. water (Pat McNally & also our City Engineer)

2. sanitary (Ron Standish)

3. storm (Ron Standish)

4. transportation (Dave Leckie)

5. solid waste management (Jay Stanford)

I do not know how important comments are from the City of London at this point in time. If they are important, 7 working days will not be sufficient for my area. I cannot comment on the other areas. My preference would be I do suggest that you contact the 3 gentlemen individually rather than rely on me to follow up.

I have copied Maureen Looby as her advice on solid waste management at this stage would be helpful.

regards. . . . .

Jay Stanford

Jay Stanford, M.A., M.P.A., Director

Environmental Programs & Solid Waste

Environmental & Engineering Services Department

300 Dufferin Ave. P.O. Box 5035

London, Ontario N6A 4L9

Tel: (519) 661-2500 ext. 5411

Fax: (519) 661-2354

E-mail: jstanfor@london.ca

Web: www.london.ca

Web: www.clear.london.ca (your source for local environmental information)

CN Rail Engineering

Gorrie, Cameron

From: Gorrie, Cameron
Sent: Thursday, February 11, 2010 3:59 PM
To: 'alex.tam@cn.ca'
Subject: RE: Municipality of Middlesex Centre - Master Servicing Plan - Add to Mailing List
Attachments: Notice of PIC 3 16 February 2010.pdf

Alex,

I have added you to the contact list for the Master Servicing Plan. I have also attached a copy of the Notification of PIC #3 as published in today's London Free Press.

Cameron Gorrie, E.I.T.
Environmental Infrastructure
Stantec
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 295
Fx: (519) 645-6575
Cell: (226) 268-4859
cameron.gorrie@stantec.com
stantec.com

From: Alex.Tam@cn.ca [mailto:Alex.Tam@cn.ca]
Sent: Thursday, February 11, 2010 3:40 PM
To: Tyrrell, John
Cc: John.Mactaggart@cn.ca; loobym@middlesexcentre.on.ca
Subject: Municipality of Middlesex Centre - Master Servicing Plan - Add to Mailing List

Hi John,

Please add me to the mailing list of the Municipality of Middlesex Centre - Master Servicing Plan study.

Regards,

Alex Tam
Assistant Engineer
CN Engineering Services

4 Welding Way (off Administration Road)
P.O. Box 1000
Concord, Ontario
L4K 1B9
Phone #: 905-669-3373
Fax #: 905-760-3406

Gorrie, Cameron

From: Daniel.Loureiro@cn.ca
Sent: Monday, June 29, 2009 9:21 AM
To: Sampson, Nina
Subject: Middlesex Centre Master Servicing Plan Class EA

Follow Up Flag: Follow up
Flag Status: Flagged

Nina,

There is a potential impact to CN property. CN will not be able to attend the PIC's but please keep me posted on the progress of the project. The map sent to CN displays a very wide area and it is difficult to distinguish where exactly our property is being affected.

Daniel Loureiro
CN Rail Engineering
905-669-3373

Ministry of Health and Long-Term Care

Ministry of Health and Long-Term Care

Environmental Health Branch
2nd Floor, 5700 Yonge Street
Toronto ON M2M 4K5

Telephone: 416-327-2102
Facsimile: 416-327-0984

Ministère de la Santé et des Soins de longue durée

Direction de l'hygiène du milieu
5700, rue Yonge, 2e étage
Toronto ON M2M 4K5

Téléphone : 416-327-2102
Télécopieur : 416-327-0984

Ontario

May 20, 2009

Nina Sampson, HBES, CEPIT
Environmental Technician
Stantec Consulting Ltd.
800 – 171 Queens Avenue
London ON N6A 5J7

Dear Ms. Sampson:

RE: Middlesex Centre Master Servicing Plan Class EA

Thank you for your letter with regard to the above Environmental Assessments (EA).

Although the Public Health Branch is interested in the public health aspects of these EA and wishes to be kept informed of any further developments, we recommend that you request input from the local Medical Officer of Health for the health unit in which the EA is located.

Dr. Graham Pollett
Medical Officer of Health
The Middlesex-London Health Unit
50 King Street
London ON N6A 5L7

Sincereley,

Tony Amalfa, B.Sc., C.P.H.I.(C)
A/Co-Director
Environmental Health Branch
Public Health Division

Attachment

c: Dr. Graham Pollett, Medical Officer of Health, The Middlesex-London Health Unit

OCMS# HLTC2967DC-2009-248

Indian & Northern Affairs Canada

Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

www.inac.gc.ca
www.ainc.gc.ca

Your file - Votre référence
06 MAI 2009
Our file - Notre référence

Ms. Nina Sampson
Environmental Technician
Stantec Consulting Inc.
800 – 171 Queens Avenue
LONDON, ONTARIO N6A 5J7

Dear Ms. Sampson:

Re: Middlesex Centre Master Servicing Plan Class EA

I am writing in response to your letter of April 24, 2009 addressed to Mr. Franklin Roy inquiring about any claims that may affect the subject property.

We can advise that our inventory includes active litigation (cases) in the vicinity of this property. It is entitled *Walpole Island First Nation, Bkejwanong Territory v. Attorney General of Canada, Her Majesty the Queen in Right of Ontario, filed in Toronto, court file reference #00-CV-189329.*

I am unable to comment with respect to the possible effect of this claim as the case has not yet been adjudicated and any statement regarding the outcome of the litigation would be speculative at this point. It is recommended that you consult legal counsel as to the effect this/these action(s) could have on the lands you are concerned with.

If you are interested in further details about the claim, a copy of the pleadings can be obtained from the Court for a fee; please contact the appropriate Court Registry Office and make reference to the court file number listed above.

.../2

If you have any further questions please do not hesitate to contact me at (819) 994-1947. Also, please note that for all future requests of this nature should no longer be addressed to Mr. Franklin Roy. Instead, could you kindly modify your distribution list to send these requests to the following destination:

Marc-André Millaire, Litigation Team Leader, Ontario/Nunavut Team
Indian and Northern Affairs
LITIGATION MANAGEMENT AND RESOLUTION BRANCH
10 Wellington Street
Gatineau, Quebec
K1A 0H4

Sincerely,

Marc-André Millaire
Litigation Team Leader
Eastern Litigation Directorate
Litigation Management and Resolution Branch

Lake Huron Primary Water Supply System

COPY

Lake Huron
Primary Water Supply System

RECEIVED

STANTEC CONSULTING LTD.

October 15, 2009

Municipality of Middlesex Centre
10227 Ilderton Road R.R. #2
Ilderton, Ontario N0M 2A0

Attention: Marc Bancroft, Senior Planner

Re: Water Transmission Pipeline Easement
Lake Huron Primary Water Supply System

Dear Mr. Bancroft:

Further to your correspondence of September 11, 2009 and subsequent discussions with you and Maureen Looby, it is the understanding of the Lake Huron Primary Water Supply System that the village of Ilderton in Middlesex Centre has the potential to expand and is very likely to develop in the near future. Recognizing that the water transmission pipeline for the Lake Huron Primary Water Supply System extends through the eastern limits of development area, I appreciate the opportunity to discuss with you the potential impacts and restrictions of land use within our easement.

In the Ilderton area, the Lake Huron Primary Water Supply System transmission pipeline is twinned within the easement with an approximate offset of 7.5m from the east and west easement limits to the centerline of the respective pipeline. The easement is approximately 30.5m wide and the long-term "build-out" conceptual plans for this transmission main contemplates a third future pipeline in the centre of the easement. No setbacks from the easement have been established at this time, but this may be discussed on a case-by-case basis as development plans are reviewed.

In general, the following restrictions are essential for the protection of this regionally significant infrastructure:

- No structures shall be erected within the easement. This includes but not limited to above-ground buildings, enclosures and shelters, as well as buried or partially buried infrastructure.
- No trees shall be planted within the easement. Plantings and minor landscaping within the easement may be allowable and will require consultation and approval of the Lake Huron Primary Water Supply System.
- Infrastructure crossings across our easement, such as roads, sewers and watermains, may be permissible and will require consultation and approval of the Lake Huron Primary Water Supply System.
- No removal of soil (cuts), grade reductions, or changes in topography will be permitted which reduce the amount of ground cover over the existing transmission pipelines.
- Soil fill may be permissible within the easement, and will require consultation and approval of the Lake Huron Primary Water Supply System.
- Acceptable access to our easement and our buried infrastructure shall be maintained at all times.

Lake Huron Primary Water Supply System
Office 519.661.2500 ext. 2714
Fax 519.474.0451
ahenry@london.ca
http://watersupply.london.ca/

Certified System ISO 14001

c/o The City of London
Regional Water Supply Division
29 Kilworth Park Drive
RR#5 Komoka, Ontario
N0L 1R0

We look forward to working with the Municipality of Middlesex Centre to address the potential development requirements and land usage in the Ilderton area to everyone's satisfaction. Should you have any questions or comments, please feel free to contact the undersigned at your earliest convenience.

Best regards,

Andrew Henry, P.Eng
Division Manager, Regional Water Supply
Lake Huron & Elgin Area Primary Water Supply Systems

c.c. P. McNally, CAO – Lake Huron Primary Water Supply System
M. Looby, Director Public Works & Engineering – Middlesex Centre
J. Tyrell – Stantec Consulting Ltd.

Ministry of Municipal Affairs & Housing

Ministry of Municipal Affairs and Housing

Municipal Services Office - Western

659 Exeter Road, 2nd Floor
London ON N6E 1L3
Tel. (519) 873-4020
Toll Free 1-800-265-4736
Fax (519) 873-4018

Ministère des Affaires municipales et du Logement

Bureau des services aux municipalités - région de l'Ouest

659, rue Exeter, 2e étage
London ON N6E 1L3
Tél. (519) 873-4020
Sans frais 1 800 265-4736
Téléc (519) 873-4018

Ontario

September 30, 2009

John Tyrrell
Senior Environmental Engineer
Stantec Consulting Ltd.
800-171 Queens Avenue
London, ON N6A 5J7

Dear Mr. Tyrrell:

Re: **Municipality of Middlesex Centre Master Servicing Plan Class EA**

Thank you for your recent circulation of the above-noted matter to us for our review. In this regard, we offer the following comments for your consideration.

It is understood that this project is a Schedule 'B' Municipal Class Environmental Assessment for Municipal Water and Wastewater Projects. The purpose of this Environmental Assessment Study is to identify alternatives to develop a Master Servicing Plan for the Municipality. The Master Servicing Plan will address planning, for the municipality, related to water and water distribution, wastewater collection and treatment, storm water management, transportation and solid waste based on 20-year growth and occupancy projections.

This office provides access to provincial services on municipal government, finance and administration, as well as land use planning and development issues covered under the *Planning Act*. Section 2 of the *Planning Act* speaks to matters of provincial interest. This section directs decision-making bodies (whether it is a council of a municipality, a local board, a planning board, a minister of the Crown and a ministry, board, commission or agency of the government, or the Ontario Municipal Board) to be consistent with the policy statements issued under Section 3 of the *Planning Act* in exercising any authority that affects a planning matter.

The current policy on land use planning matters in Ontario is the "Provincial Policy Statement 2005" (PPS). The PPS speaks to issues such as the promotion of efficient, cost-effective development and land use patterns and the proper consideration of the various resources of this province, as well as matters dealing with public health and safety.

The requirements of the *Planning Act* apply to applications for planning approvals under this legislation; these applications include official plan amendments and zoning bylaw amendments. From our review of this particular matter, it appears that no such approvals are being sought in this case. However, this project may have implications with respect to those matters covered by the PPS as noted above, and we recommend that you consider these policies in your review of this undertaking.

Environmental Assessment Studies that examine municipal waste management and waster supply issues, should ensure that these systems are provided in a manner that: 1) are of an appropriate size and type to accommodate present and future requirements; 2) can be sustained by the water resources upon which these services rely; 3) are located and designed in accordance with provincial standards; 4) are financially viable and complies with all other regulatory requirements; 5) promote water conservation and water use efficiency; and 6) protects human health and the natural environment.

Additionally, you should ensure that any County and Local Official Plan policies regarding municipal wastewater services and management are integrated into the assumptions regarding the preferred solution recommended under this evaluation process.

Finally, our comments on this undertaking should not be considered as approval for any other related applications under the *Planning Act* or other provincial legislation that may be required, may be related to, or may result from this project.

We appreciate being included in your circulation of this matter, and would like to be informed of future developments on this file. If there are any questions or concerns with these comments, please contact me at (519) 873-4769 or send them by email to Craig.Cooper@ontario.ca.

Sincerely,

Craig Cooper, MCIP, RPP
Planner, MSO-Western

cc. Maureen A. Lobby, Director — Public Works and Engineering, Municipality of Middlesex Centre.

Ministry of Municipal Affairs and Housing

Municipal Services Office - Western

659 Exeter Road, 2nd Floor
London ON N6E 1L3
Tel. (519) 873-4020
Toll Free 1-800-265-4736
Fax (519) 873-4018

Ministère des Affaires municipales et du Logement

Bureau des services aux municipalités - région de l'Ouest

659, rue Exeter, 2e étage
London ON N6E 1L3
Tél. (519) 873-4020
Sans frais 1 800 265-4736
Téléc (519) 873-4018

Ontario

May 8, 2009

Nina Sampson
Environmental Technician
Stantec Consulting Ltd.
800-171 Queens Avenue
London, ON N6A 5J7

Dear Ms. Sampson:

Re: **Middlesex Centre Master Servicing Plan Class EA**

Thank you for your recent circulation of the above-noted matter to us for our review. In this regard, we offer the following comments for your consideration.

It is understood that this project is a Schedule 'B' Municipal Class Environmental Assessment for Municipal Water and Wastewater Projects. The purpose of this Environmental Assessment Study is to identify alternatives to develop a Master Servicing Plan for the Municipality. The Master Servicing Plan will address planning, for the municipality, related to water and water distribution, wastewater collection and treatment, storm water management, transportation and solid waste based on 20-year population projections.

This office provides access to provincial services on municipal government, finance and administration, as well as land use planning and development issues covered under the *Planning Act*. Section 2 of the *Planning Act* speaks to matters of provincial interest. This section directs decision-making bodies (whether it is a council of a municipality, a local board, a planning board, a minister of the Crown and a ministry, board, commission or agency of the government, or the Ontario Municipal Board) to be consistent with the policy statements issued under Section 3 of the *Planning Act* in exercising any authority that affects a planning matter.

The current policy on land use planning matters in Ontario is the "Provincial Policy Statement 2005" (PPS). The PPS speaks to issues such as the promotion of efficient, cost-effective development and land use patterns and the proper consideration of the various resources of this province, as well as matters dealing with public health and safety.

The requirements of the *Planning Act* apply to applications for planning approvals under this legislation; these applications include official plan amendments and zoning bylaw amendments. From our review of this particular matter, it appears that no such approvals are being sought in this case. However, this project may have implications with respect to those matters covered by the PPS as noted above, and we recommend that you consider these policies in your review of this undertaking.

Environmental Assessment Studies that examine municipal waste management and waster supply issues, should ensure that these systems are provided in a manner that: 1) are of an appropriate size and type to accommodate present and future requirements; 2) can be sustained by the water resources upon which these services rely; 3) are located and designed in accordance with provincial standards; 4) are financially viable and complies with all other regulatory requirements; 5) promote water conservation and water use efficiency; and 6) protects human health and the natural environment.

Additionally, you should ensure that any County and Local Official Plan policies regarding municipal wastewater services and management are integrated into the assumptions regarding the preferred solution recommended under this evaluation process.

Finally, our comments on this undertaking should not be considered as approval for any other related applications under the *Planning Act* or other provincial legislation that may be required, may be related to, or may result from this project.

We appreciate being included in your circulation of this matter, and would like to be informed of future developments on this file. If there are any questions or concerns with these comments, please contact me at (519) 873-4769 or send them by email to Craig.cooper@ontario.ca.

Craig Cooper, MCIP, RPP
Planner, MSO-Western

Ministry of Natural Resources

Gorrie, Cameron

From: Tyrrell, John
Sent: Tuesday, October 20, 2009 11:34 AM
To: Gorrie, Cameron
Subject: FW: Municipality of Middlesex Centre Master Servicing Plan

Can you please contact on my behalf.

Thanks

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Tait, Maryjo (MNR) [mailto:Maryjo.Tait@ontario.ca]
Sent: Tuesday, October 20, 2009 11:33 AM
To: Tyrrell, John
Cc: Irving, Daraleigh (MNR)
Subject: Municipality of Middlesex Centre Master Servicing Plan

Hi John,

Thank you for sending us the Notice of Commencement for the Middlesex Centre Master Servicing Plan. I would like to ask you a few brief questions about the Plan. When you have time, would you please contact me at 519-773-4786.

Thank you so much,

Maryjo Tait
Planning Intern – Alymer District
Ministry of Natural Resources
615 John Street North
Alymer, ON N5H 2S8
Phone: (519) 773-4786
Fax: (519) 773-9014
Email: maryjo.tait@ontario.ca

NOTE TO FILE

October 20, 2009 @ 11:50AM

Replied to request for information email from Ministry of Natural Resources – Aylmer District (Maryjo Tait).

Spoke with Maryjo on the phone – she wanted to know what stage we were at – and whether we had taken into account any natural considerations.

I explained to her that we are not yet at the stage of determining preferred alternatives, but we have come up with Guidelines. The first PIC was to inform the public of the project commencement. The second PIC informed the public of our guiding principles, constraints, and existing infrastructure and possible recommendations to look into

Normally the MNR would take a look at the study area and let us know if they have any concerns.

I explained that another PIC would follow in late November that would outline preferred alternatives and solutions. At this point, the MNR would have a better idea of what input they might have.

Emailed Maryjo the handout from PIC 2 for her to review and to comment upon if necessary. Made mention of the constraint mapping.

She asked that they be kept in the loop.

Ministry of the Environment

MINISTRY OF THE ENVIRONMENT

SOUTHWESTERN REGION

733 Exeter Road
London, Ontario, N6E 1L3
519-873-5013/FAX 873-5020

FAX COVER SHEET

DATE: April 30, 2009

NO. of PAGES: 2
(including cover)

FROM: Bill Armstrong

TO: Nina Simpson
Stantec

FAX NO: (519) 645-6575

****

MESSAGE:

Re. Middlesex Centre Master Servicing Plan

****

IF YOU DO NOT RECEIVE THE SPECIFIED NUMBER OF PAGES, OR THE COPY IS ILLEGIBLE, PLEASE CONTACT THE RECEPTIONIST AT: 873-5000

Ministry of the Environment

733 Exeter Road
London ON N6E 1L3
Tel': 519 873-5000
Fax: 519 873-5020

Ministère de l'Environnement

733, rue Exeter
London ON N6E 1L3
Tél.: 519 873-5000
Téléc.: 519 873-5020

Ontario

BY FAX ONLY

April 30, 2009

Nina Simpson
Stantec
800-171 Queens Avenue
London, Ontario
N6A 5J7

Dear Ms Simpson:

RE: Middlesex Centre Master Servicing Plan

This acknowledges receipt of the notification of the initiation of this project and the request for ministry comments. Clearly at this early stage of the process the ministry is unable to provide meaningful comment. We do expect to be able to provide comment on relevant material as the process moves forward.

We do note however that there has been a history of conversations between my office and the municipality (current and former) regarding a number of servicing (and growth management) issues in the municipality. We anticipate this process will address those issues and to this end we commend the initiative.

If questions arise or if clarification is needed please contact the undersigned at (519) 873-5013 or via email at bill.armstrong@ontario.ca.

Yours truly,

W. Armstrong, M.E.S, RPP
Regional Environmental Planner
Southwestern Region

Ministry of Transportation

Gorrie, Cameron

From: Morrisey, John (MTO) [John.Morrisey@ontario.ca]
Sent: Wednesday, March 03, 2010 1:08 PM
To: Tyrrell, John
Cc: Boudreau, Kevin (MTO); Burns, Tim (MTO); Maureen Looby; Gorrie, Cameron
Subject: RE: Municipality of Middlesex Centre - Master Servicing Plan

John,

The Ministry of Transportation have reviewed the material you provided, and have no specific concerns. That being said, the municipality should be made aware of the following general statement:

> In addition to all the applicable municipal requirements, all proposed development (including construction of services) located adjacent to, in the vicinity of, or within a provincial highway right-of-way, and within MTO's permit control area under the Public Transportation and Highway Improvement Act (PTHIA), will also be subject to MTO approval. Development located adjacent to or in the vicinity of a provincial highway or interchange / intersection within MTO's permit control area will be subject to MTO's policies, standards, and requirements. MTO Building and Land Use, Sign, Entrance, and Encroachment Permits will be required prior to construction.

Thank-you,

John Morrisey
Corridor Management Planner
Corridor Management Section
West Region
Phone 519-873-4597
Fax 519-873-4600
email john.morrisey@ontario.ca

From: Tyrrell, John [mailto:john.tyrrell@stantec.com]
Sent: March 2, 2010 4:13 PM
To: Morrisey, John (MTO)
Cc: Boudreau, Kevin (MTO); Burns, Tim (MTO); Maureen Looby; Gorrie, Cameron
Subject: RE: Municipality of Middlesex Centre - Master Servicing Plan

John,

On behalf of Middlesex Centre, please find attached the handouts from PIC 3 of the Master Servicing Plan held on February 16, 2010.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Managing Leader, Environmental Infrastructure
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Morrisey, John (MTO) [mailto:John.Morrisey@ontario.ca]
Sent: Tuesday, March 02, 2010 4:08 PM
To: loobym@middlesexcentre.on.ca
Cc: Tyrrell, John; Boudreau, Kevin (MTO); Burns, Tim (MTO)
Subject: Municipality of Middlesex Centre - Master Servicing Plan

Maureen,

It has come to the attention of the Ministry of Transportation (MTO), that the municipality just held its third Public Information Centre (PIC) for its Master Servicing Plan (February 16, 2010). As you are aware, portions of Highway 401 and Highway 402 run through the municipality. As we were unable to attend, would you be so kind as to provide PDF's of display boards, handouts, etc. that was prepared for the PIC, so that MTO may review and provide comments if required.

I apologize for the timing.

Should you wish to discuss, please do not hesitate to call.

Regards,

John Morrisey
Corridor Management Planner
Corridor Management Section
West Region
Phone 519-873-4597
Fax 519-873-4600
email john.morrisey@ontario.ca

Ontario Realty Corporation

Ontario Realty Corporation
Société immobilière de l'Ontario

1 Dundas Street West,
Suite 2000, Toronto, Ontario
M5G 2L5

October 19, 2009

To Ms. Maureen A. Looby and Mr. John Tyrrell

RE: **Notice of Commencement and Public Information Centre #2, Municipality of Middlesex Centre Master Servicing Plan**

Thank you for circulating Ontario Realty Corporation (ORC) on your Notice of Commencement and Public Information Centre. The ORC is the strategic manager of the government's real property with a mandate of maintaining and optimizing value of the portfolio, while ensuring real estate decisions reflect public policy objectives of the government.

As you may be aware, ORC is responsible for managing real property that is owned by the Ministry of Energy and Infrastructure (MEI). Our preliminary review of your notice and supporting information indicates that ORC-managed property may be directly in the study area. As a result, your proposal may have the potential to impact properties and/or the activities of tenants present on ORC-managed lands. Please note that as no map has been provided, ORC cannot provide detailed information about the location of ORC managed properties.

Potential Negative Impacts to ORC Tenants and Lands

General Impacts

Negative environmental impacts associated with the project design and construction, such as the potential for dewatering, dust, noise and vibration impacts, and impacts to natural heritage features/habitat and functions, should be avoided and/or appropriately mitigated in accordance with applicable regulations best practices and Ministry of Natural Resources (MNR) and Ministry of the Environment (MOE) standards. Avoidance and mitigation options that characterize baseline conditions and quantify the potential impacts should be present as part of the EA project file. Details of appropriate mitigation, contingency plans and triggers for implementing contingency plans should also be present.

Impacts to Land holdings

Negative impacts to land holdings, such as the taking of developable parcels of ORC managed land or fragmentation of utility or transportation corridors, should be avoided. If the potential for such impacts is present as part of this undertaking, you should contact the undersigned to discuss these issues at the earliest possible stage of your study.

If takings are suggested as part of any alternative these should be appropriately mapped and quantified within EA report documentation. In addition, details of appropriate mitigation and or next steps related to compensation for any required takings should be present. ORC requests circulation of the draft EA report prior to finalization if potential impacts to ORC-managed lands are present as part of this study.

Heritage Management Process & Class Environmental Assessment (EA) Process

Should the proposed activities impact cultural heritage features, on ORC managed lands, a request to examine cultural heritage issues which can include the cultural landscape, archaeology and places of sacred and secular value could be required. The Ontario Realty Corporation Heritage Management Process should be used for identifying and conserving heritage properties in the provincial portfolio (this document can be downloaded from the Heritage section of our website: http://www.ontariorealty.ca/What-We-Do/Heritage.htm). Through this process, ORC identifies, communicates and conserves the values of its heritage places. In addition, the Class EA ensures that ORC considers the potential effects of proposed undertakings on the environment, including cultural heritage.

Potential Triggers Related to MEI's Class EA

The ORC is required to follow the MEI Class Environmental Assessment Process for Realty Activities Not Related to Electricity Projects (MEI Class EA). The MEI Class EA applies to a wide range of realty and planning activities including leasing or letting, planning approvals, dispostion, granting of easements, demolition and property maintenance/repair. For details on the ORC Class EA please visit the Environment and Heritage page of our website found at http://www.ontariorealty.ca/AssetFactory.aspx?did=2240

If the MEI Class EA is triggered, and deferral to another ministry's or agency's Class EA or individual EA is requested, the alternative EA will be subject to a critical review prior to approval for any signoff of a deferral by the proponent. The alternative EA needs to fulfill the minimum criteria of the MEI Class EA. When evaluating an alternative EA there must be explicit reference to the corresponding undertaking in the MEI Class EA (*e.g.*, if the proponent identifies the need to acquire land owned by MEI, then "acquisition of MEI-owned land", or similar statement, must be referenced in the EA document). Furthermore, sufficient levels of consultation with MEI's/ORC's specific stakeholders, such as the Ontario Ministry of Natural Resources, must be documented with the relevant information corresponding to MEI's/ORC's undertaking and the associated maps. In addition to archaeological and heritage reports, a Phase I Environmental Site Assessment (ESA), on ORC lands should also be incorporated into the alternative EA study. Deficiencies in any of these requirements could result in an inability to defer to the alternative EA study and require completing MEI's Class EA prior to commencement of the proposed undertaking.

In summary, the purchase of MEI-owned/ORC-managed lands or disposal of rights and responsibilities (e.g. easement) for ORC-managed lands triggers the application of the MEI Class EA. If any of these realty activities affecting ORC-managed lands are being proposed as part of any alternative, please contact the Sales and Marketing Group through ORC's main line (Phone: 416-327-3937, Toll Free: 1-877-863-9672), and contact the undersigned at your earliest convenience to discuss next steps.

Specific Comments

If the project involves an individual EA and the undertaking directly affects all or in part any ORC-managed property, please send the undersigned a copy of the DRAFT Individual EA report and allow sufficient time (minimum of 30 calendar days) for comments and discussion prior to finalizing the report to ensure that all MEI Class EA requirements can be met through the EA study.

Concluding Comments

Thank you for the opportunity to provide initial comments on this undertaking. Please ensure that mapping is provided to ORC at your earliest convenience to determine if ORC managed properties are in the study area. If you have any questions on the above I can be reached at the contacts below.

Sincerely,

Lisa Myslicki
Environmental Coordinator
Ontario Realty Corporation - Professional Services
1 Dundas Street West,
Suite 2000, Toronto, Ontario
M5G 2L5
(416) 212-3768
lisa.myslicki@ontariorealty.ca

Ontario Realty Corporation
Société immobilière de l'Ontario

1 Dundas Street West,
Suite 2000, Toronto, Ontario
M5G 2L5

June 5, 2009

To Ms. Nina Sampson,

RE: **Middlesex Centre Master Servicing Plan Class EA**

Thank you for circulating Ontario Realty Corporation (ORC) on your Notification. The ORC is the strategic manager of the government's real property with a mandate of maintaining and optimizing value of the portfolio, while ensuring real estate decisions reflect public policy objectives of the government.

As you may be aware, ORC is responsible for managing real property that is owned by the Ministry of Energy and Infrastructure (MEI). Our preliminary review of your notice and supporting information indicates that ORC-managed property is directly in the study area. As a result, your proposal may have the potential to impact this property and/or the activities of tenants present on ORC-managed lands. Attached please find a map that identifies these properties to assist you in identifying and avoiding potential impacts on ORC-managed lands. Please note that lands managed by Hydro One, on behalf of ORC, are in the study area. Please note that these lands are also subject to the same following requirements.

Potential Negative Impacts to ORC Tenants and Lands

General Impacts

Negative environmental impacts associated with the project design and construction, such as the potential for dewatering, dust, noise and vibration impacts, and impacts to natural heritage features/habitat and functions, should be avoided and/or appropriately mitigated in accordance with applicable regulations best practices and Ministry of Natural Resources (MNR) and Ministry of the Environment (MOE) standards. Avoidance and mitigation options that characterize baseline conditions and quantify the potential impacts should be present as part of the EA project file. Details of appropriate mitigation, contingency plans and triggers for implementing contingency plans should also be present.

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Negative impacts to land holdings, such as the taking of developable parcels of ORC managed land or fragmentation of utility or transportation corridors, should be avoided. If the potential for such impacts is present as part of this undertaking, you should contact the undersigned to discuss these issues at the earliest possible stage of your study.

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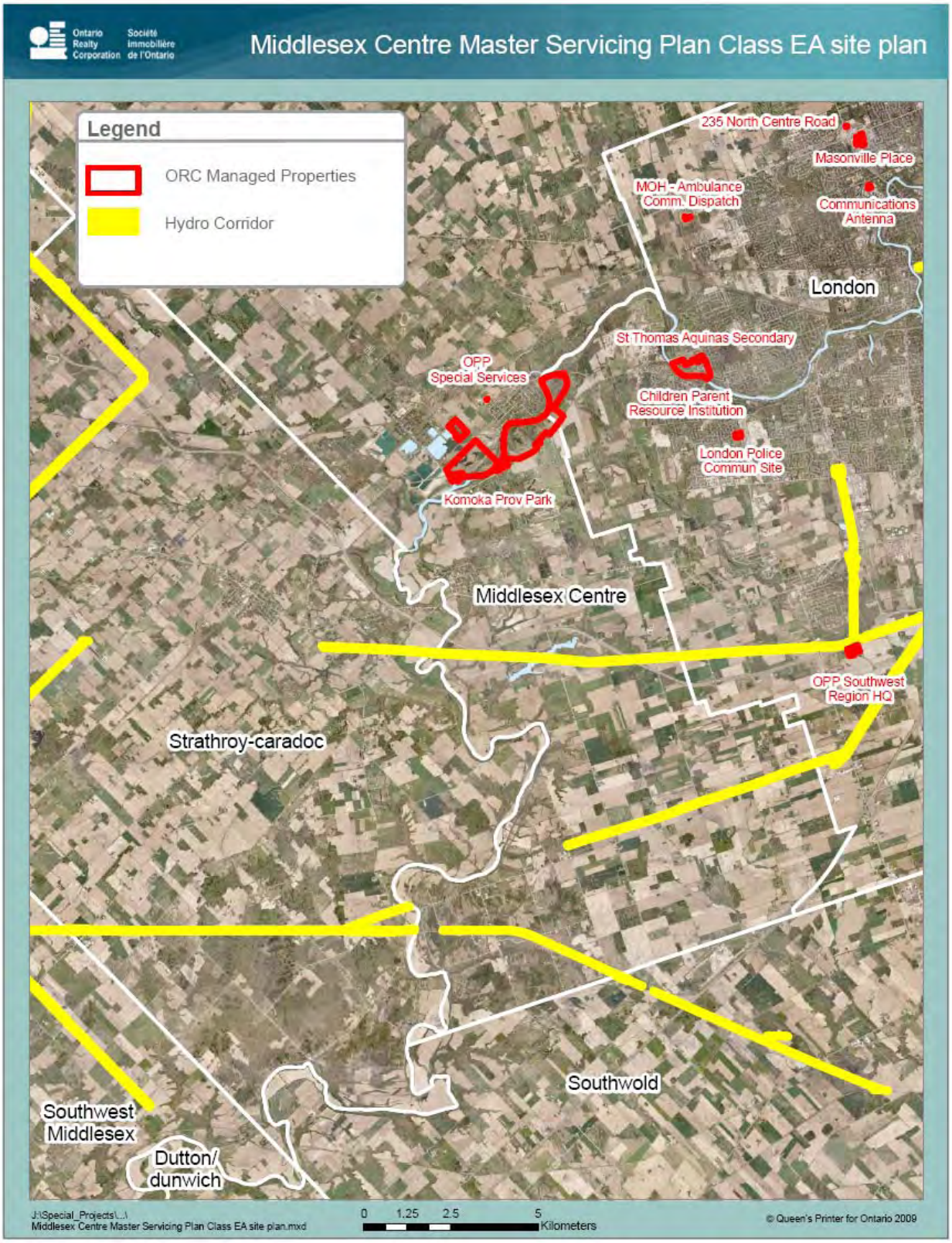
Concluding Comments

Thank you for the opportunity to provide initial comments on this undertaking. If you have any questions on the above I can be reached at the contacts below.

Sincerely,

Lisa Myslicki
Environmental Coordinator
Ontario Realty Corporation - Professional Services
1 Dundas Street West,
Suite 2000, Toronto, Ontario
M5G 2L5
(416) 212-3768
lisa.myslicki@ontariorealty.ca

Appendix 1: Location of ORC property



Transport Canada

Gorrie, Cameron

From: Tyrrell, John
Sent: Wednesday, September 30, 2009 9:01 AM
To: Gorrie, Cameron
Subject: FW: Municipality of Middlesex Centre Master Servicing Plan NEATS 18776
Attachments: Annex A Navigable Waters Protection Act Application Addresses.doc; TC Application Form.pdf; TC Application Guide.pdf

For review and filing

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Epp, Ingrid [mailto:ingrid.epp@tc.gc.ca]
Sent: Wednesday, September 30, 2009 9:00 AM
To: Tyrrell, John
Subject: Municipality of Middlesex Centre Master Servicing Plan NEATS 18776

Mr. Tyrrell,

Thank you for your letter regarding the above referenced environmental assessment. Please in future forward correspondence on this environmental assessment to the undersigned.

We have reviewed the information, and note the following:

Transport Canada is responsible for the administration of the *Navigable Waters Protection Act,* which prohibits the construction or placement of any “works” in navigable waters without first obtaining approval. If any of the related project elements or activities may cross or affect a potentially navigable waterway, you are requested to prepare and submit an application in accordance with the requirements as outlined in the attached Application Guide. Any questions about the NWPA application process should be directed to the Navigable Waters Protection Program at 1-866-821-6631 or NWPOntario@tc.gc.ca.

Please note that certain approvals under the *Navigable Waters Protection Act* or *Railway Safety Act* trigger the requirement for a federal environmental assessment under the Canadian Environmental Assessment Act. You may therefore wish to consider incorporating CEAA requirements into your provincial environmental assessment.

<<Annex A Navigable Waters Protection Act Application Addresses.doc>> <<TC Application Form.pdf>> <<TC Application Guide.pdf>>

Please contact me should you wish to discuss this further.

Regards,
Ingrid Epp
Environmental Assistant
Environment and Engineering
Transport Canada - Ontario Region (PHE)
4900 Yonge Street, North York, ON M2N 6A5
tel: 416-952-3379
email: ingrid.epp@tc.gc.ca

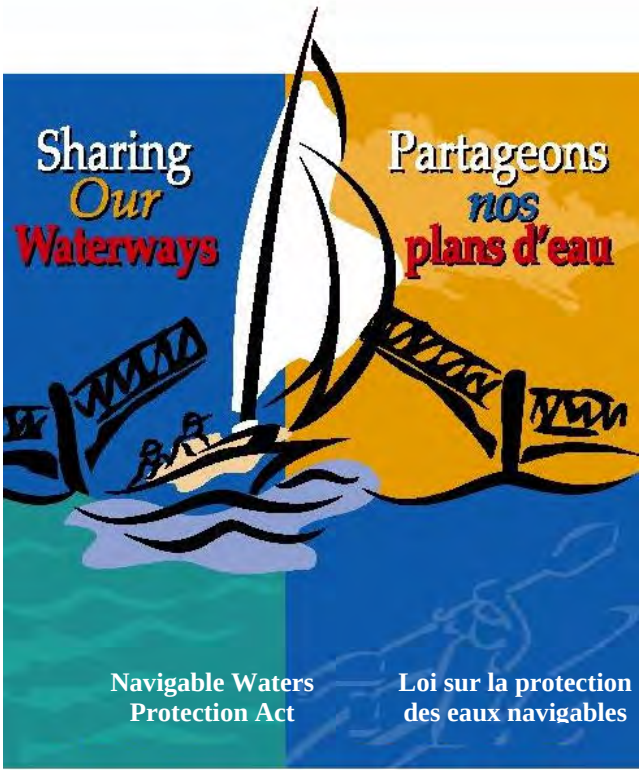
Transport Canada
Marine

Transports Canada
Maritime

Ontario Region
&
Prairie & Northern Region

NAVIGABLE WATERS PROTECTION ACT

APPLICATION GUIDE



Navigable Waters Protection
201 Front Street North
Suite 703
Sarnia, Ontario, N7T 8B1

Phone (519) 383-1865 Fax (519) 383-1989

Canada

APPLICATION GUIDE CHECKLIST

Before returning your application form, the following **must** be included otherwise your application will not be processed:

- ☐ Name of property owner & description of the project site
- ☐ Complete mailing address of the property owner
- ☐ Plot or survey plan with project shown & adjacent landowners
- ☐ Map or chart with arrow to show location of project
- ☐ Plan view of the project (with dimensions)
- ☐ Side view of project (with dimensions)
- ☐ Location for disposal of dredge spoils (if applicable)
- ☐ Name of the contractor/firm doing the work (if applicable).

APPLICATION GUIDE

INTRODUCTION

The Navigable Waters Protection Act (NWPA) revised Statutes of Canada, 1985, is one of the oldest pieces of federal legislation. It first became law on May 17, 1882. The principle objective is to protect the public right of navigation by prohibiting the building or placement of any "work" in, upon, over, under, through, or across a navigable water without the authorization of the Minister of Transport. The jurisdiction of the legislature begins at the high water mark. Therefore structures that are between low and high water marks will require approval under the NWPA. The administration of the NWPA was recently transferred to Transport Canada.

Important Notice

An approval granted by the Minister is neither a general approval of construction nor an authorization in respect of any law, excepting the Navigable Waters Protection Act. An authorization may also be required from the Minister under the Fisheries Act; you should contact the Department of Fisheries & Oceans for such a determination. In addition, contact should also be made with local municipal, provincial and other government offices to determine if other approvals will be required for the proposal.

What is a Navigable Waterway?

A navigable water is any body of water capable of being navigated by floating vessels of any description for the purpose of transportation, commerce or recreation. This includes both inland and coastal waters. The authority to determine the navigability of a waterway and consequently the requirement for an application under the NWPA, rests with the Minister of Transport or his/her designated representative.

Examples of Some Types of "Works" Requiring Authorization

- any bridge, boom, dam, causeway, wharf, dock, boathouse, intake, outfall, etc.;
- dredging; dumping of fill, retaining wall, groyne, breakwater;
- submarine or overhead cables, tunnel, pipeline;
- aquaculture facilities;
- any other device, structure, or thing whether similar in character to the above or not.

Permit Process

There are basically two types of processes followed in reviewing an application under the Act:

- **Formal Approval**
  The formal approval process is followed when NWPA officials determine that your work or project poses a substantial interference with navigation. Under the requirements of the Act all bridges, booms, dams, and causeways must be processed by formal approval.

- **Letter of Exemption**
  The exemption process is followed when NWPA officials determine that your work or project does not pose a substantial interference with navigation.

How to Make an Application

1. Application Form - Complete, sign and date the enclosed application form.

2. Site Location - Obtain 6 copies of a map or topographic chart of your area. Please include enough details to simplify the location of the proposed project. If not already shown, add the following:

- Name of the waterbody in which the project is located;
- Location of the proposed project (draw an arrow showing the exact location of the site on the map);
- Approximate latitude and longitude of the project

3. Plot Plan - One (1) copy of your plot or survey plan, showing adjacent property owners (include names), with the location of the proposed work clearly indicated.

4. Plan View (6 copies) - The plan view shows the proposed project as if you were looking straight down on it from above. Provide these drawings, to scale or dimensioned, containing sufficient detail to clearly show your proposed project, including:

- Any existing works presently on your property or adjacent properties such as docks, slipways, breakwaters etc.;
- Existing shorelines;
- Dimensions (length, width, etc.) of the project All dimensions should be from the ordinary high water mark.. See sample sketches for further details;
- Average water depth around the project;
- Scale of drawing.
- North arrow.

5. **Profile View or Section View (6 copies)** - The profile view is a scale drawing that shows the side, front, or rear of the proposed structure as it would look if you were standing to the side of it; the section view is a scale drawing that shows the proposed structure as it would look if sliced internally for display. Clearly show the following:

- Dimensions of the project, including width, height etc. See the sample sketches for further details;
- The ordinary high water mark (O.H.W.M.) and high water mark (H.W.M.);
- Existing and proposed ground contours;
- Height above the bed of the waterway;
- The type of construction material to be used;
- Scale;

Other information

a) If any information is missing, your application may be delayed; therefore please ensure that your application, plans, etc. are complete.
b) Please be advised that it is recommended that applications for approval under the NWPA be made well in advance of the anticipated start-up date, to allow Coast Guard officials to do a complete investigation and possible environmental assessment of your project, which may take several months.
c) Advise whether you have received or applied for a waterlot lease or permit, and if so, with whom you have applied and when.
d) Provide a proposed construction schedule, advising when you plan on starting the project.
e) If you are not the upland owner, provide the owners consent in writing.
f) Provide an environmental assessment or study if one has been prepared.

Where to Make an Application

In accordance with the map below, please submit applications for approval to the addresses listed on Annex A "Navigable Waters Protection Act Application Addresses".

Ontario Region & Prairie & Northern Region
NWP PROGRAM – AREA OFFICES

Navigable Waters Protection Act
Request for Project Review

Is this the first time you are requesting a review for this project?

Yes ☐ No ☐

Section A — Proponent / Owner /Other Information

Name of Proponent/Owner:		
Mailing Address:		
Street Address (if different than above):		
City/Town:	Province/Territory:	Postal Code:
Tel. No. (Residence):	Tel. No. (Work):	Tel. No.: (Other)
Fax No:	E-mail Address:	
Name of Contractor/Agency/Consultant (if applicable):		
Mailing Address:		
Street Address (if different than above):		
City/Town:	Province/Territory:	Postal Code:
Tel. No. (Residence)	Tel. No. (Work):	Tel No. (Other)
Fax No:	E-mail Address:	

Section B — Location of the project and physical description of the site

Name of Nearest Community (*City, Town, Village*):	Municipality / District / County:
Legal Description (Lot, Concession, Township, Section, Range):	Name of Primary Watercourse (River, Lake, Bay)
Access Road to Proposed Work Site (e.g., *route number, highway series number or street name/number if urban area, etc.)*	
Topographic/Chart No. (if applicable)	Water lot Lease or Permit (if applicable)
Description of shoreline, if applicable *(i.e., ground type, vegetation, slope, other)* *Note: Enclose photographs:*	Description of watercourse *Note: Enclose photographs:*
Average width and depth of waterway at the project site:	Type of navigation (recreational/commercial):

Section C — Description of Project (Please attach additional information – see Section D)

What is the proposed project? *(dock, dam, bridge, aquaculture site, etc.)* *Note: Detailed description of work must be attached.*	
Proposed Start Date:	Proposed Completion Date:
Status of the Project (circle): New Existing Addition Repair	Is the work permanent or temporary?

Section D — What to send to Navigable Waters Program with Request for Project Review

Attach the following documents/information:

- Detailed project description with construction schedule
- Detail of any temporary works and method of construction activities
- Property ownership status (if you are not the owner, attach a letter of permission from the owner)
- Map or chart to show location of project (6 copies)
- Sketch or drawing of project, including side and top view and showing dimensions of the project (6 copies)
- Survey plan or sketch with dimensions indicating the location of existing buildings, shoreline structures, property lines, high and low water marks, and adjacent properties
- Current photographs of the proposed work site (photos of open water period where possible)
- A list of any equipment that may be used during the project

Date:	**Signature:**
For NWPA Use only:	
NWPA #:	

Annex A Navigable Waters Protection Act Application Addresses

To apply for approval of works or for additional inquiries about the Navigable Waters Protection Act or Program, please contact the appropriate office below.

NWP Regional Office - South Western Ontario

Navigable Waters Protection Program

100 Front Street South,

Sarnia, ON N7T 2M4

NWPA Prescott Office - Eastern Ontario

Navigable Waters Protection Program P.O. Box 1000
401 King St. W
Prescott, ON K0E 1T0

NWPA Parry Sound Office - North Eastern Ontario

Navigable Waters Protection Program
28 Waubeek St.
Parry Sound, ON P2A 1B9

NWPA Kenora Office - North Western Ontario

Navigable Waters Protection Program P.O. Box 649
1100 3rd Ave. S
Kenora, Ontario P9N 3X6

NWP Winnipeg Office - Manitoba

Navigable Waters Protection Program Freshwater Institute
501 University Crescent
Winnipeg, MB R3T 2N6

NWP Prince Albert Office - Saskatchewan

Navigable Waters Protection Program
125 - 32nd Street West
Prince Albert, SK S6V 7H7

NWP Edmonton Office - Alberta

Navigable Waters Protection Program

4253 - 97th Street

Edmonton, AB T6E 5Y7

Upper Thames River Conservation Authority

UPPER THAMES RIVER
CONSERVATION AUTHORITY
"Working in Partnership with the Community for a Healthy Watershed"

The Thames
A Canadian
Heritage River

October 5, 2009

Stantec Consulting Limited
800-171 Queens Avenue
London, Ontario
N6A 5J7

Attention: **John Tyrrell** – (via e-mail: john.tyrrell@stantec.com)

Dear Mr. Tyrrell:

Re: **Municipality of Middlesex Centre**
Master Servicing Plan
Municipal Class Environmental Assessment
Notice of Commencement – PIC#2

We are in receipt of your letter regarding the Middlesex Centre Master Servicing Plan Notice of Commencement - Public Information Centre #2.

We would appreciate the opportunity for our technical staff to review and provide comments on any draft environmental study report or on the draft servicing plan. Our scope of review is based on the policies set out in the Upper Thames River Conservation Authority Planning Policy Manual (June 28, 2006). EA and subsequent detailed design project review for the Municipality of Middlesex Centre Master Servicing Plan would generally be guided by, but not limited to, natural heritage, natural hazard, and pollution prevention areas of concern for lands regulated within our jurisdiction.

We would appreciate receiving information and reports as they become available in order to ensure that we can meet the project deadlines with our comments.

If you have any questions, please do not hesitate to contact the undersigned.

Yours truly,
UPPER THAMES RIVER CONSERVATION AUTHORITY

Karen M. Winfield

Karen M. Winfield
Land Use Regulations Officer

c.c. – Maureen A. Looby, Municipality of Thames Centre – (via e-mail: loobym@middlesexcentre.on.ca)

UPPER THAMES RIVER
CONSERVATION AUTHORITY
"Working in Partnership with the Community for a Healthy Watershed"

The Thames
A Canadian
Heritage River

April 28, 2009

Stantec Consulting Limited
800-171 Queens Avenue
London, Ontario
N6A 5J7

Attention: **Nina Sampson** – (via e-mail: Nina.Sampson@stantec.com)

Dear Ms. Sampson:

Re: **Municipality of Middlesex Centre**
Master Servicing Plan
Municipal Class Environmental Assessment
Notice of Study Commencement

We are in receipt of your letter (dated April 24, 2009) regarding the proposed Middlesex Centre Master Servicing Plan Class EA.

We would appreciate the opportunity for our technical staff to review and provide comments on any draft environmental study report or on the draft servicing plan. Our scope of review is based on the policies set out in the Upper Thames River Conservation Authority Planning Policy Manual (June 28, 2006). EA and subsequent detailed design project review for the Municipality of Middlesex Centre Master Servicing Plan would generally be guided by, but not limited to, natural heritage, natural hazard, and pollution prevention areas of concern for lands regulated within our jurisdiction.

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Yours truly,
UPPER THAMES RIVER CONSERVATION AUTHORITY

Karen M. Winfield

Karen M. Winfield
Land Use Regulations Officer

Appendix 2.3:
Stakeholders List

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email
Other	Bluewater Recycling	Mr.	Francis	Veilleux			415 Canada Ave	Huron Park	ON	NOM		
Other	Norquay Developments Ltd.	Mr.	Bill	Veitch		Land Development Manager	301-100 Wellington Street	London	ON	N6B 2K6	T: 519.672.4011	bveitch@norquaydevelopments.ca
Other	MHBC Planning	Ms.	Carol	Wiebe		Partner	630 Colborne Street Suite 202	London	ON	N6B 2V2	T:519.858.2797 M:519.500.7092	cwiebe@mhbcplan.com
Other	MHBC Planning	Mr.	Harry	Shnider			630 Colborne Street Suite 202	London	ON	N6B 2O2	T: 519.858.2797	hshnider@mhbcplan.com
Other	Patton Cormier & Associates, Lawyers	Mr.	Alan R.	Patton			1512-140 Fullarton Street	London	ON	N6A 5P2	T: 519.432.8282 F: 519.432.7285	apatton@pattoncormier.ca
Other	Zelinka Priamo Ltd.	Mr.	Michael	Hannay			318 Wellington Road	London	ON	N6P 4P4	T: 519.474.7137 F: 519.474.2284	
Other		Mr.	Barry	Card			252 Pall Mall Street	London	ON	N6A 5P6		
CC Client	Municipality of Middlesex Centre	Ms.	Maureen	Looby	Engineering Services	Manager-Public Works and Engineering	10227 Ilderton Rd. RR #2	Ilderton	ON	N0M 2A0	T:519.666.0190 F::519.666.0271	loobym@middlesexcentre.on.ca
Property Owners		Mr. & Ms.	Darryl and Patricia	Newbigging			22372 Komoka Rd. RR #3	Komoka	ON	N0L 1R0		
City of London		Mr.	John	Lucas			300 Dufferin Ave. PO Box 5035	London	ON	N6A 4L9		
Komoka Ward 4 Councillor		Mr.	Brian	Ritchie			22862 Komoka Rd.	Komoka	ON	N0L 1R0	T:519-657-2084	
Agent	AGM	Mr.	Rick	Dykstra			3514 White Oaks Road	London	ON	N6E 2Z9		rick@agm.on.ca
Consultant		Mr.	Jim	Hebb			156 Pinewood Drive	London	ON	N6J 3L2		
Owner		Mr.	Don	Ardy			1593 Napoli Drive West	Sarasota	FL			drardy@comcast.net
Landowner/Business		Mr.	Douglas	Wastell			28 Chantry Place	London	ON	N6G 5A5		
Owner		Mr. & Ms.	James and Sylvia	Brown			10379 Ilderton Rd.	Ilderton	ON	N0M 2A0		
Resident		Mr.	Ed	Baker			6477 Carriage Rd.	Southwold	ON	N0L 2G0		
Property Owners		Mr.	Ron	Watson			31 Westbrook Cres. RR #5	Komoka	ON	N0L 1R0		
Property Owners		Mr.	Doug	Weldon			21525 Richmond Stree	Arva	ON	N0M 1C0		
Business Owner	1571145 Ontario Ltd.	Ms.	Tracy	Powell			22446 Mill Road	Mt. Brydges	ON			
Business Owner	Bycraft Gardens	Mr.	Daryl	Bycraft			11062 Sinclair Drive RR #1	Ilderton	ON	N0M 2A0		
Property Owners		Mr.	Peter	Vanderweg			23273 Richmond Stree	Birr	ON	N5X 4B2		
Property Owners		Mr.	Graeme	Lowry			90 Sir James Court	Arva	ON	N0M 1C0		
Property Owners		Mr.	Rob	Hern			45 Baron Crescent	Komoka	ON	N0L 1R0		rhern@truelineservices.ca
Developer	Corlon Properties Inc.	Mr.	Dave	Schmidt			379 Sunningdale Road	London	ON	N6G 5B9		dschmidt@sunningdalegolf.com
		Mr.	Dave	Johnson			PO Box 281	Delaware	ON	N0L 1E0	F: 519-652-5774	davejohnsonjto@gtn.on.ca
		Mr.	Wayne	Crowder			PO Box 249	Delaware	ON	N0L 1E0		
		Mr.	Joe	Meyer			71 Atkinson Street, Bo	Delaware	ON	N0L 1E0		

Interest	Agency	Title	First Name	Last Name	Division	Title	Address	City	Pr	Postal	Phone #	Email
Property Owner		Mr. & Mrs.	Larry and Donna	Slater			PO Box 42	Komoka	ON	N0L 1R0		
Consultant	Stantec Consulting	Mr.	Anthony	Gubbels								
Consultant	Sergio E. Pompilii & Assoc. Ltd.	Mr.	Sergio	Pompilii			301 Oxford Street W	London	ON	N6H 5C4		sergio@sepompilii.on.ca
Consultant	R.W. Stratford Consulting Inc.	Mr.	Bob	Stratford			650 Waterloo Street, Suite 101	London	ON	N6B 2R4	T: 519-857-8806 F: 1-888-536-8304	bob.stratford@rwsconsultinc.ca
Contractor	K&L Construction Ltd.	Mr.	Kelly	Cahill			1615 North Routledge Park	London	ON	N6H 5N5	T: 519-472-7164 F: 519-472-9877	kelly.cahill@kandlconstruction.com
	CN Engineering Services	Mr.	Alex	Tam			4 Welding Way PO Box 1000	Concord	ON	L4K 1B9	T: 905-669-3373 F:905-760-3406	alex.tam@cn.ca
		Mr.	David	Johnstone			22521 Komoka Road, P.O. Box 74	Komoka	ON	N0L 1R0		
Property Owner		Mr.	Barry	Bloomfield			12955 Ten Mile Road	Ilderton	ON	N0M 2A0		
Councillor		Mr.	Albert	Bannister			16016 Nine Mile Road	Ilderton	ON	N0M 2A0		
Councillor		Mr.	Clare	Bloomfield			12543 Ilderton Road, RR2	Ilderton	ON	N0M 2A0		

Appendix 2.4:
PIC 1

Middlesex Centre
Master Servicing Plan

Phases 1 and 2 of the Municipal Servicing Class Environmental Assessment Process

Public Information Centre 1

May 14, 2009

One Team. Infinite Solutions

Stantec

Middlesex Centre
Master Servicing Plan

Phases 1 and 2 of the Municipal Servicing Class Environmental Assessment Process

Public Information Centre 1

May 14, 2009

One Team. Infinite Solutions

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Presentation Outline

- Introduction
- Problem Identification
- Environmental Assessment Process
- Guiding Principles
- Agency and Public Consultation
- Service Areas
  - –Water
  - –Wastewater
  - –Storm Water
  - –Transportation
  - –Solid Waste
- Communication
- Next Steps

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Introduction

- Middlesex Centre's Strategic Plan 2006 to 2011 has as one of its goals:
  - "Improve and maintain existing infrastructure using responsible financing and ensuring adequate reserve funds"
- Middlesex Centre's Strategic Plan 2006 to 2011 has as one of its objectives:
  - "Implement a Long Term Servicing Master Plan which addresses municipal water, waste water, storm water, solid waste and roads"

Stantec

Introduction

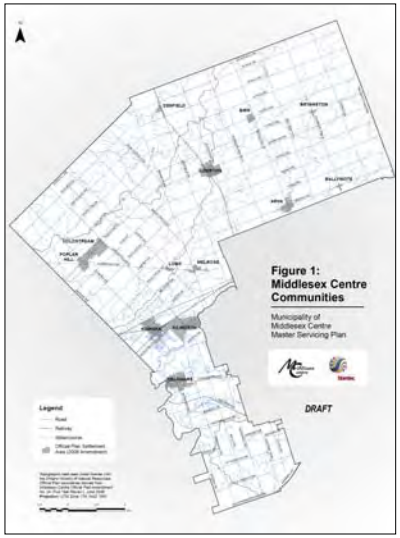
- The Master Servicing Plan (MSP) for Middlesex Centre is a strategic document to assist in the overall planning for a period of 20 years
- The MSP will address municipal water, wastewater, storm water, solid waste and transportation
- The MSP will provide guidance to Council and Staff and is a policy document from which implementation tools will be subsequently developed
- The MSP may identify certain strategic municipal and community level projects

Stantec

Introduction

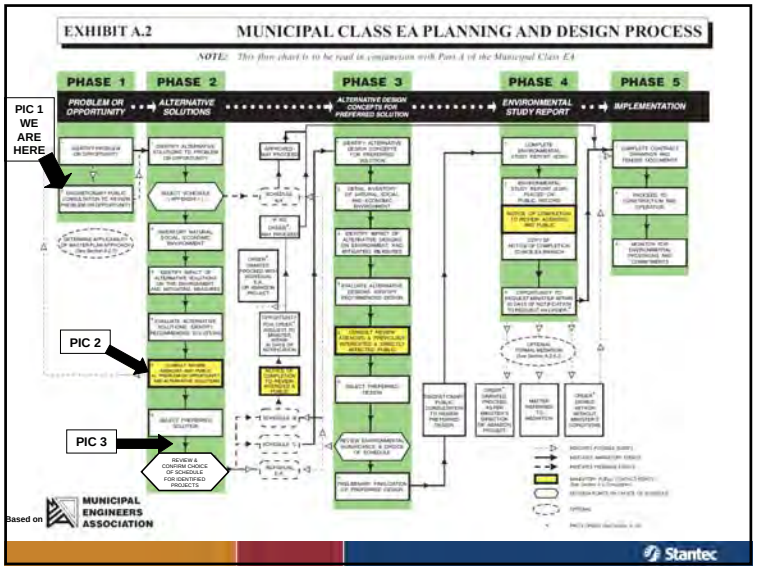
Problem Identification

"The Municipality of Middlesex Centre is a 588km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required."



Environmental Assessment Process for Master Plans

- Prepared at the conclusion of Phases 1 and 2 of the Class EA process
- Provides a broad level of assessment and would require specific projects to undergo investigations that are more detailed
- Becomes the basis for, and is used in support of, future investigations for the specific Schedule B and C projects identified within the Master Plan
- Specific Schedule B and C projects would have to fulfill the documentation requirements of each Schedule

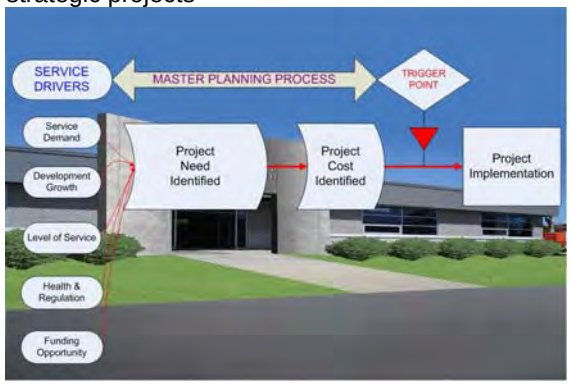


Guiding Principles

- The following are the MSP guiding principles as developed by the Steering Committee and Stantec:
  - The MSP will be informed by the Strategic Plan
  - Preference will be for long term servicing solutions over interim solutions
  - All services to be fully funded through adequate planning, budgeting and identified revenue streams

Guiding Principles

- MSP will identify trigger points rather than dates for strategic projects



Guiding Principles

- Proven, cost effective technologies that should be in long term use and are capable of continuous improvement will be utilized
- Middlesex Centre should service Middlesex Centre, where possible
- Recommended servicing solutions will be 20-year solutions and ensure that there is expandability to 40-years, if possible (or to the life expectancy of the infrastructure)

Agency and Public Consultation

- Agency contact list was developed using Municipal Class EA guidelines
- Contacts were sent a Project Notification letter as well as a letter alerting them of this Public Information Meeting
- Notice of Public Information Meeting posted in the London Free Press
- Notice posted on the Municipality of Middlesex Centre's website
- Comments received to date have been compiled and reviewed
- Stakeholder list will be developed from this public meeting and will be updated during process

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Water Supply and Distribution

- Municipal owned water supply and distribution is currently provided to all or part of the communities of Ilderton, Kilworth-Komoka, Arva, Delaware, Ballymote, Birr, Denfield, Melrose

Stantec

Wastewater Collection and Treatment

- Municipally owned wastewater collection and treatment is currently provided to all or part of the communities of Ilderton, Kilworth, Komoka, and Arva

Stantec

Storm Water Management

- There are presently two municipally owned Stormwater Management (SWM) facilities in Melrose and Kilworth
- There are a number of privately owned SWM facilities which will eventually be municipally owned

Stantec

Transportation

- Middlesex Centre owns 575 km of roadway
- MSP will be a strategic level assessment of existing and future transportation conditions to determine future needs
- MSP is not a “Road Needs Study” which reviews condition of existing assets

Solid Waste Management

- Municipal wide service provided for:
  - Solid Waste and Recycling
  - Household Hazardous Waste
  - Heavy Items
  - Yard Waste
- Solid Waste and Recycling through Blue Water Recycling Association of which Middlesex Centre is a member

Next Steps (May 2009 to September 2009)

- Review background information
- Review comments received from Project Initiation and PIC # 1
- Technical memoranda prepared to address specific requirements for each service component
  - 20-year Demand Forecast
  - Policy Review
  - Technical Standards Review
  - Community Level Review of Issues & Opportunities
  - Municipal Level Review of Issues & Opportunities
- Environmental review
  - Inventory of the natural, physical, social and economic environment
  - Scope to meet the strategic level of Master Planning solutions

Next Steps (September 2009 forward)

- Review alternative solutions and select preliminary preferred option for each component
- PIC 2 to review alternative solutions and preliminary preferred option (September 2009)
- Confirm preferred option and identify trigger points for each component
- PIC 3 to review preferred solution (November 2009)
- Finalize MSP
- Council Review and endorsement (January 2010)
- MSP Complete (February 2010)

Communications

- Stantec Consulting Limited will be the point of contact for queries regarding the MSP
- Due to the potential volume, complexity and sensitivity of some issues, we would request that all questions and comments are to be received in writing to:
  - **Nina Sampson, Environmental Technician, Fax: (519) 645-6575, Email Nina.Sampson@stantec.com**
- Correspondence received will be reviewed periodically by the Steering Committee and will be responded to accordingly

Stantec

Questions

Thank you for your participation.

Stantec

Master Servicing Plan
Class Environmental Assessment

Public Information Meeting #1
Thursday May 14, 2009

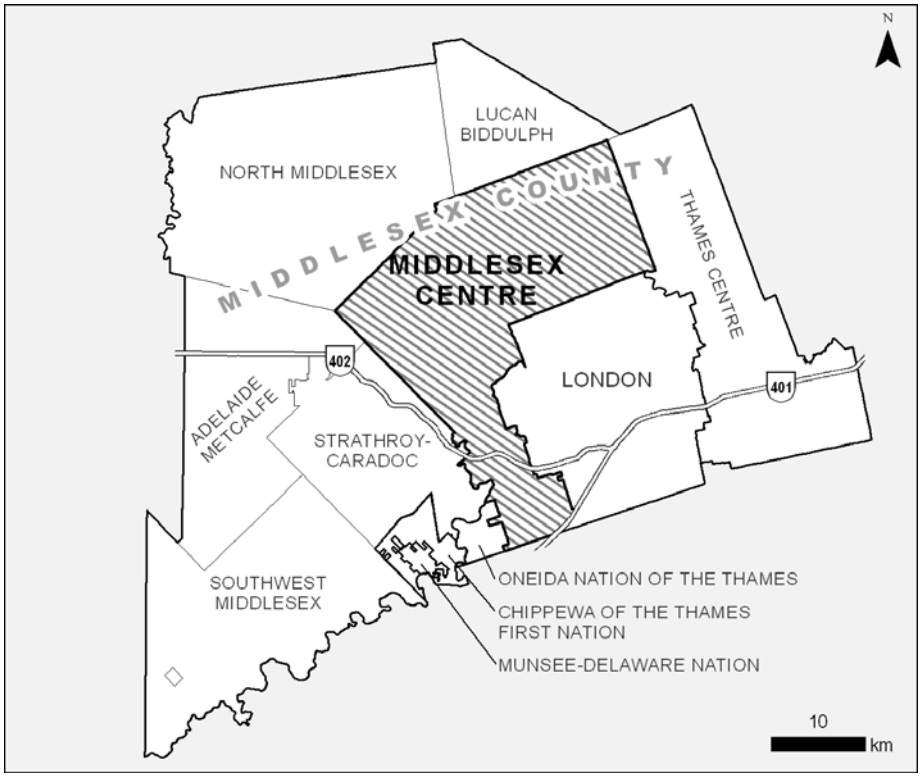
COMMENT SHEET

Name:
Mailing Address:
Interest (*i.e.* property owner, agency):
Comments:

Please place comments in the comment box provided or submit comments to the following:

Nina Sampson, HEBS, CEPIT
Environmental Technician
Stantec Consulting Ltd.
800-171 Queens Ave.
London, ON N6A 5J7
Fax: 519-645-6575
Email: nina.sampson@stantec.com

Middlesex Centre Master Servicing Plan
Class EA
Public Information Meeting #1 Attendance
May 14, 2009
Municipality of Middlesex Centre



Stantec Consulting Ltd.
800 – 171 Queens Avenue
London, ON N6A 5J7
Tel: 519-645-2007
Fax: 519-645-6575

File: 1655-00584

Stantec

Master Servicing Plan
Class EA

Public Information Meeting
Thursday May 14, 2009

Attendance Sheet

Name (please print)	Mailing Address (please print)	Interest in Project (*i.e.* property owner, business owner, agency)
3-5 Darryl & Patricia Newbigging	22372 Komoka Rd RR#3 Komoka N0L1R0	Property owner
John Lucas City of London	300 Dufferin Ave London ON	City of London
Brian Rabe	22862 Komoka Rd Komoka	Komoka - Ward 6 Councillor
RICK DYKSTRA	553 Southdale Rd. E London N6E 1A2	agent (AGH)
JIM HEBB	156 PINEWOOD DR LONDON N6J 3L2	CONSULTANT.
Meghan Bratt	Middlesex County	Student planner.
~~DON ARDY~~	~~MIDDLESEX C.~~	~~OWNER~~
JOE HEYNICK	350 OXFORD ST LONDON	IBI GROUP.
BILL KEITCH	160 WELLINGTON ST LONDON - UNIT 301	NORTHLAND Developing
Harry Shnider	202-630 Colborne St London.	MHBC Planning.
Douglas Wastell	28 Chantry Place London ontario N6G 5A5	Business/Land owner
James & Sylvia Brown	10319 Ilderton Rd.	owner.
DON ARDY	1593 NAPOLI DR W SARASOTA FL.	OWNER.
	DR ARDY @ COMCAST. NET	

Public Information Meeting #1
Thursday, May 14, 2009

Attendance Sheet Cont'd

7-9

Name (please print)	Address (please print)	Interest in Project (*i.e.* property owner, business owner, agency)
Ed. Baker eddbaker@yahoo.com	6477 Carriage Rd SOUTHWOLD ON N0L 2G0	House rental. Interested in efficient use of resources, & environmental concerns - live 2 km miles from Township's new "dump"
Ron Watson	31 Westbrook Cres. Kilworth (RR5 Komoka).	Prop. owner
Doug Welch	21525 Richmond ARVA	
Tracy Powell	22446 Mill Rd Mt Brydges	1571145 Ontario Ltd
DARYL BYCRAFT	RR#1, 11062 SINCLAIR DR ILDERTON, ON N0M 2A0	BYCRAFT GARDENS
Al Edmonds	ARVA	Mayor.
PETER VANDERWEG	23273 RICHMOND ST RR42	BIRR PROPERTY OWNER.

Gorrie, Cameron

From: Tyrrell, John
Sent: Friday, June 26, 2009 10:49 AM
To: Graeme Lowry
Subject: RE: Master Servicing Plan
Attachments: Handout.PIC1.MSP.15May2009.pdf

Please find attached a copy of the meeting's handout for your information as requested.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Graeme Lowry [mailto:powerhouse.energy@sympatico.ca]
Sent: Friday, June 26, 2009 10:39 AM
To: Tyrrell, John
Cc: Michael Hannay
Subject: Master Servicing Plan

Hi John,

I was unable to attend the public meeting in Komoka in May. We have an application for subdivision draft plan approval pending at the Township for a development in Arva, but delayed as a Servicing solution is determined, which the Master Servicing Plan will directly impact.

My cousin Doug attended, and in the correspondence you invited us to "decide what sort of input you would like to put into the process that would best suit your concerns and I can confer with the Steering Committee for this project and determine what venue would be best to address these."

Would you be so kind as to send me a copy of the presentation?

Thank you,

Graeme Lowry, St. John Woods Development

Gorrie, Cameron

From: Tyrrell, John
Sent: Tuesday, April 28, 2009 1:46 PM
To: Doug Weldon
Cc: Maureen Looby; Sampson, Nina
Subject: RE: MSP and E.A.for MIddlesex Centre

Doug,

As we discussed yesterday, the first step in the Master Servicing Plan Process will be the first public meeting that will be held on May 14 at the Komoka Community Centre. The advertisement for this is due out this week. At this meeting, we will explain in some detail what the Master Servicing Plan is intended to cover. Based on this meeting, you can decide what sort of input you would like to put into the process that would best suit your concerns and I can confer with the Steering Committee for this project and determine what venue would be best to address these.

I hope to see you on May 14.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Doug Weldon [mailto:doug.weldon@yahoo.ca]
Sent: Tuesday, April 28, 2009 1:27 PM
To: Tyrrell, John
Subject: MSP and E.A.for MIddlesex Centre

Hi, John,

Thanks for the phone time yesterday.
I really appreciate your openness to my call.
For our part, we will do everything we can to support the process around good planning, including the important work your firm is doing.
This little patch of Middlesex Centre in the village of Arva that my family owns due to some long range thinking on the part of my grandfather has tumbled down to my generation of many cousins who see this as an opportunity to direct its future use in a thoughtful, intentional manner, i.e. with leading edge environmental technology. Among

this ownership group, there are individuals who are involved in a variety of environmental technologies and who have a keen interest and knowledge.
Would you be available for a meeting sometime with Graeme Lowry, who lives here in Arva and represents his family's holdings in this project? He is in the renewable energy industry but has done some research on sewage management as well.

Have a good day,

Doug Weldon

Comment received from Daryl Bycraft
Middlesex Centre, Master Servicing Plan
PIC 1

Mailing Address: RR 1, 11062 Sinclair Drive, Ilderton, ON NOM 2A0
Added to Public Contact List

The recycling need to collect more items either with regular pick-up or drop off depots
Items some of the area farms and nursery people would like picked up:

- Plastic wrap and twine from bales of hay
- Empty plastic bags from soil medium and livestock feed
- Plastic trays and pots

Plastic trays and pots can be recycled please include them with pick-up or drop off at depots; instead of being burnt or in bagged garbage. Some municipalities have depots from drop off of household hazardous waste xxxx go depots why doesn't Middlesex Centre set up their own depots or London should be more friendly to non-residents taking these items to their household hazardous wastes.

Depot to take old electronics, computers, TV's, cell phones, and batteries for recycling or saver disposal

Master Servicing Plan
Class Environmental Assessment

Public Information Meeting #1
Thursday May 14, 2009

COMMENT SHEET

Name: DARYL BYCRAFT

Mailing Address: RR#1, 11062 SINCLAIR DR ILDERTON, ON N0M 2A0

Interest (*i.e.* property owner, agency): BYCRAFT GARDENS

Comments: The recycling needs to collect more items either with regular pick-ups or drop off depots. Items some of the area farmers and nursery people would like picked up are plastic wrap and twine from bales of hay, also empty plastic bags from soil medium and livestock feeds. Plastic trays and pots can be recycle please include them with pick-ups or drop off at a depot; instead being burnt or in bagged garbage. Some municipalities have depots for drop off of household hazardous waste are go depots why doesn't Middlesex Centre set up their own depots or London should be more friendly to non residences taking these items to their household hazardous wastes.

Please place comments in the comment box provided or submit comments to the following:

Nina Sampson, HEBS, CEPIT
Environmental Technician
Stantec Consulting Ltd.
800-171 Queens Ave.
London, ON N6A 5J7
Fax: 519-645-6575
Email: nina.sampson@stantec.com

Depot to take old electronics, computers, TV's, cell phones and batteries for recycling or saver disposal.

AGM
SURVEYING • ENGINEERING

RECEIVED
JUN 10 2009
STANTEC CONSULTING LTD.

June 9, 2009

1004-3/Master Servicing Plan Stantec

Stantec Consulting
800 – 171 Queens Avenue
London, ON
N6A 5J7

Attention: **Nina Sampson**
Environmental Technician

Re: **Master Servicing Plan – Middlesex Centre**
Wastell/Pattyn Group
Development lands in Ilderton

We are the Consulting Engineers working for of the Wastell/Pattyn Group in relation to their development lands in the Ilderton area. Figure 1 identifies the lands, the Little Farm at the Northeast corner of Ilderton Road and Hyde Park Road and the Bulk Farm on the south side of Ilderton Road, east of the current developed area.

We had previously met with Municipal staff, submitted applications and appeared before Planning Committee to discuss the development of the properties. One item that they indicated required review was the provision of sanitary servicing for the lands.

We have completed a preliminary sanitary servicing review to look at options to service the lands. A Sanitary Pump Station exists along the south limit of the Little Farm adjacent to Ilderton Road. Apparently this has limited capacity and outlets to the Pump Station on Hyde Park Road.

Figure 2 shows a possible gravity sewer outlet across the Bulk Farm and then being directed to the Sewage Treatment Plant. This sewer would eliminate the need for the existing Pump Station at the Little Farm and service the existing development along Ilderton Road east of Hyde Park Road. There is the potential for this sewer to provide an outlet for the sanitary sewer system west of Hyde Park Road and reduce flows to the Hyde Park Road pump station and possibly allow it to be eliminated.

Figure 3 and 4 show preliminary concept plans for the development of the Little Farm and part of the Bulk Farm. We anticipate that the permanent sanitary sewer could follow the road network. There may also be the opportunity to have Oxbow Public School connected directly to the sanitary system.

Other servicing for roads, water and storm water drainage are adjacent to the development lands. We have shown road connections to meet existing roads. These locations are flexible and can be shifted.

The Lake Huron Water Pipeline has an easement across both properties and the preliminary layouts have been designed around it. We understand that Middlesex Centre has a connection point to the pipeline and this would be able to provide capacity for these lands.

Storm drainage currently is directed to the existing Municipal Drain. Provisions for Stormwater Management can be incorporated into both properties or an area facility can be provided.

We would appreciate the opportunity to review our preliminary sanitary servicing options with your office. We can provide you with more details related to sanitary sewer inverts and how the current system can be re-directed. We would also like to ensure other services for roads, water and storm drainage are considered in the Master Servicing Study.

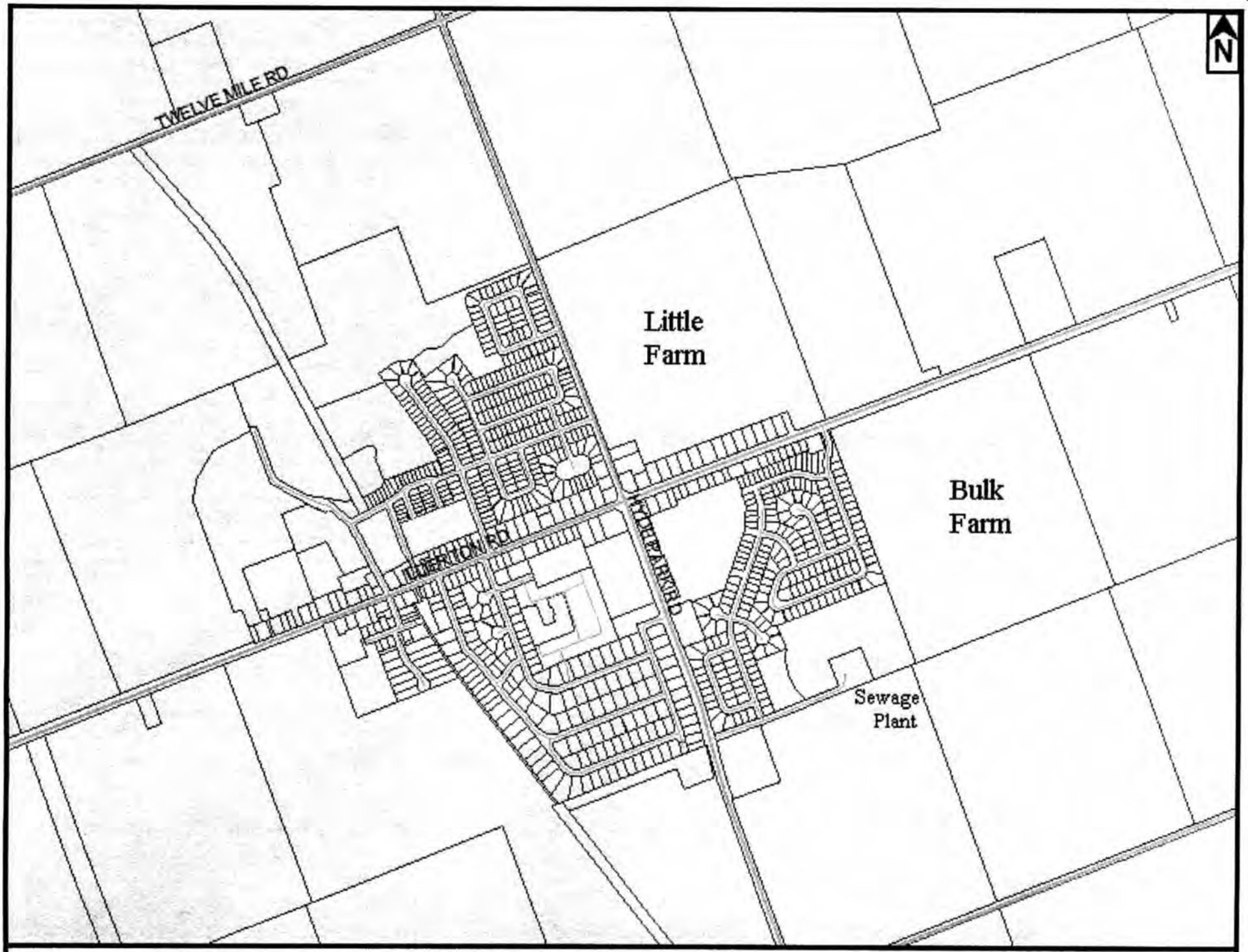
Please contact our office at 519-685-5300 if you have any questions or require more information. We would also like to schedule a meeting with your office.

Yours very truly,

Archibald Gray & McKay Engineering Ltd.

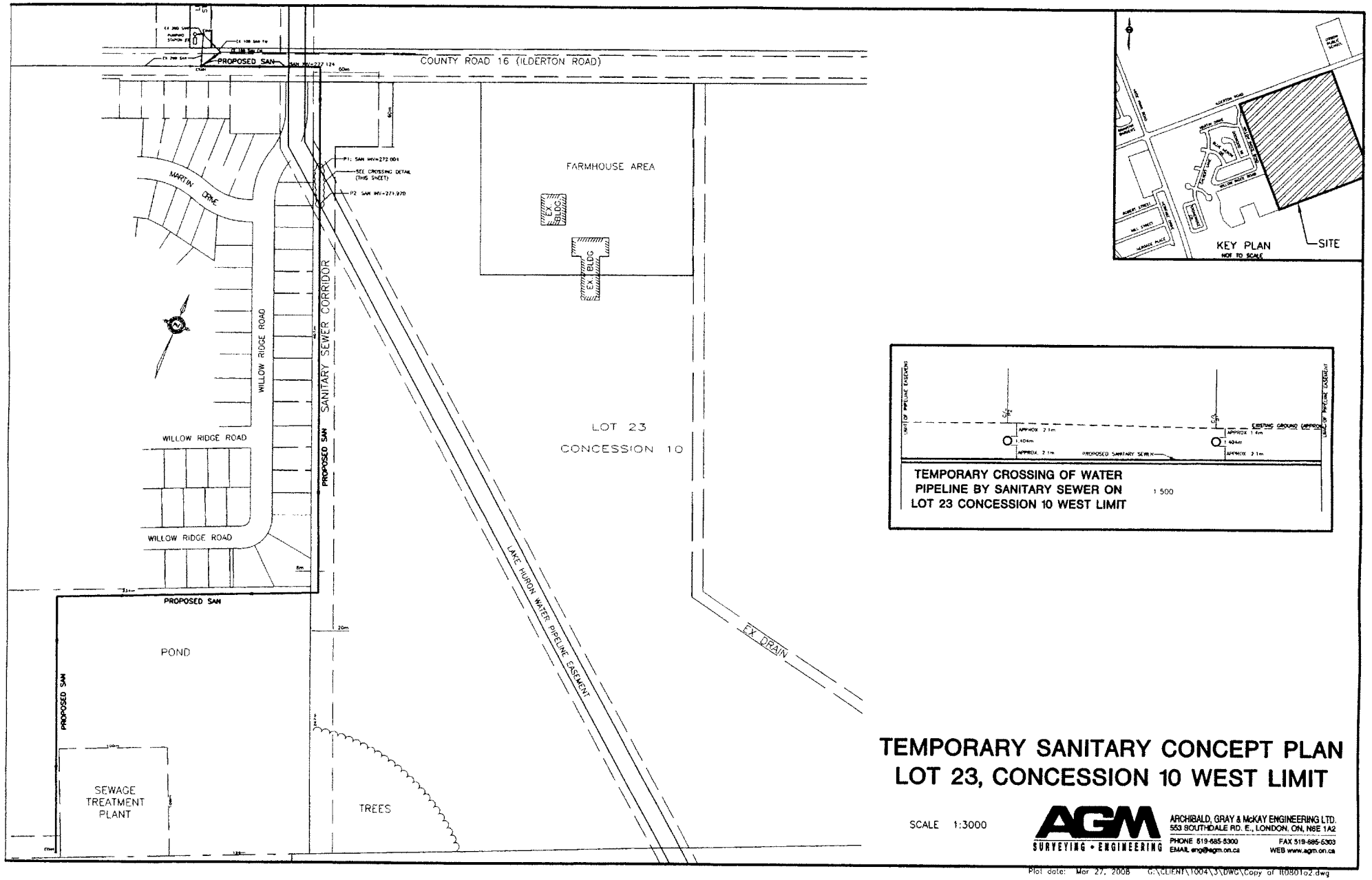
per Rick Dykstra P.Eng
Manager Engineering Services

RD
cc *Maureen Looby*
Wastell/Pattyn Group
Jay McGuffin – MBPC
Jim Hebb



ILDERTON SURROUNDING AREA

Figure 1



TEMPORARY SANITARY CONCEPT PLAN
LOT 23, CONCESSION 10 WEST LIMIT

SCALE 1:3000

AGM SURVEYING • ENGINEERING
ARCHIBALD, GRAY & McKAY ENGINEERING LTD.
553 SOUTHDALE RD. E., LONDON, ON, N6E 1A2
PHONE 519-685-5300 FAX 519-685-5303
EMAIL eng@agm.on.ca WEB www.agm.on.ca

Plot date: Mar 27, 2008 C:\CLIENT\1004\3\DWG\Copy of tt0801o2.dwg

Figure 2

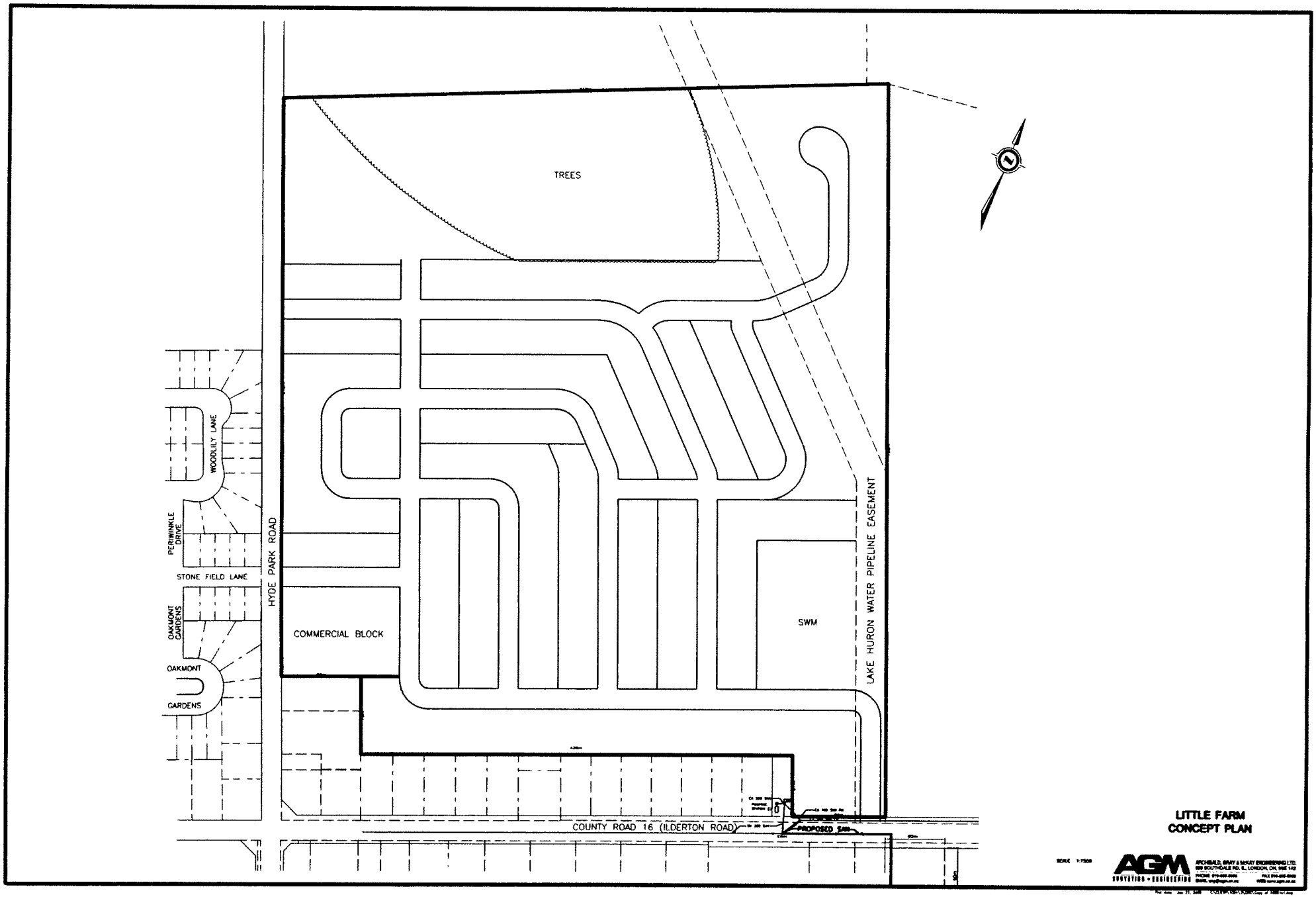
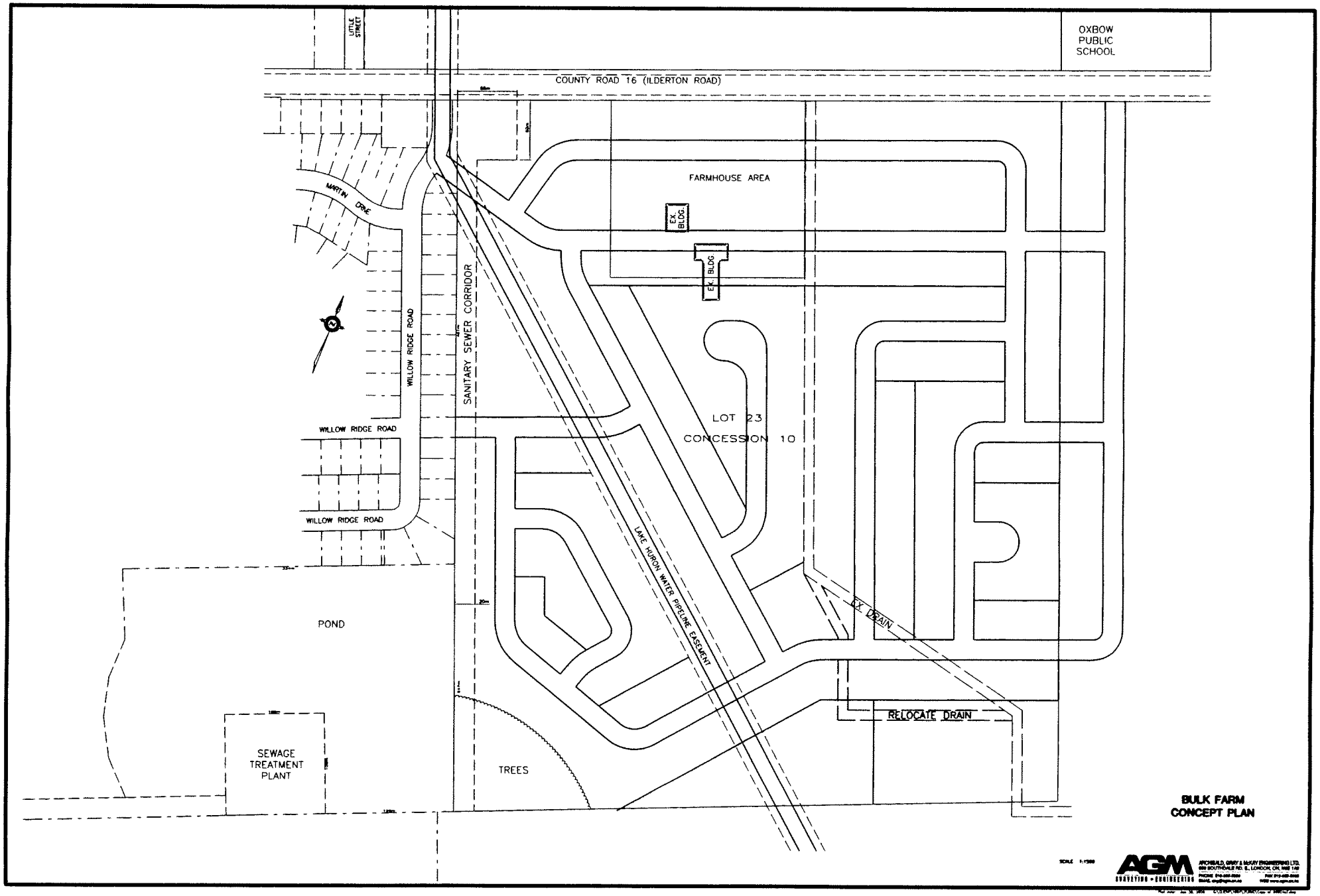

TREES
WOODLILY LANE
PERIWINKLE DRIVE
STONE FIELD LANE
OAKMONT GARDENS
OAKMONT GARDENS
HYDE PARK ROAD
COMMERCIAL BLOCK
SWM
LAKE HURON WATER PIPELINE EASEMENT
COUNTY ROAD 16 (ILDERTON ROAD)
PROPOSED SAN.
LITTLE FARM
CONCEPT PLAN
AGM
SURVEYING • ENGINEERING

Figure 3


OXBOW
PUBLIC
SCHOOL
LITTLE STREET
COUNTY ROAD 16 (ILDERTON ROAD)
FARMHOUSE AREA
EX. BLDG.
EX. BLDG.
MARTIN DRIVE
WILLOW RIDGE ROAD
WILLOW RIDGE ROAD
WILLOW RIDGE ROAD
SANITARY SEWER CORRIDOR
LOT 23
CONCESSION 10
LAKE HURON WATER PIPELINE EASEMENT
EX. DRAIN
RELOCATE DRAIN
POND
SEWAGE
TREATMENT
PLANT
TREES
BULK FARM
CONCEPT PLAN
AGM
ARCHIBALD, GRAY & McKAY ENGINEERING LTD.

Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Tel: (519) 645-2007
Fax: (519) 645-6575

September 01, 2009
File: 165500584

AGM
553 Southdale Road
London, Ontario
N6E 1A2

Attention: **Rick Dykstra, P. Eng., Manager Engineering Services**

Dear: Sir

Reference: **Middlesex Centre Master Servicing Plan**

Thank you for the submission of your letter dated June 9, 2009 regarding the Wastell/Pattyn Group properties which are located to the east of the current Official Plan settlement boundaries of Ilderton. Your letter was reviewed by Stantec and by the Master Servicing Plan Steering Committee at its August 2009 meeting. This letter requested a meeting to review how these proposed developments would be integrated into existing municipal services such as water, wastewater and transportation and how storm water drainage and management would be undertaken.

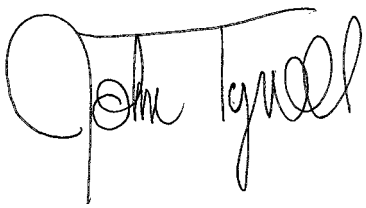
At PIC 1 held in May 2009, it was described in the presentation that the Master Servicing Plan is intended to be a policy document for municipal servicing to be reviewed and approved by Council. Based upon the approved Master Servicing Plan, guidelines and implementation tools can be subsequently developed by municipal staff to review proposed development's servicing plans. Based on this intention, the consensus of the Steering Committee is that specific discussion with regard to the servicing of the Wastell/Pattyn Group properties is not within the present scope of the Master Servicing Plan.

On behalf of the Steering Committee, we would appreciate continued input as the Master Servicing Plan progresses and municipal and community level servicing issues and solutions are reviewed and discussed at future PICs.

If you have any further questions on this matter, please do not hesitate to contact me.

Sincerely,

STANTEC CONSULTING LTD.



John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
john.tyrrell@stantec.com

Attachment: PIC 1

c. Municipality of Middlesex Centre, Maureen Looby

PATTON CORMIER & ASSOCIATES
Lawyers

ALAN R. PATTON, B.A., LL.B.
ELIZABETH K. CORMIER, B.A., LL.B.
STEVEN D.S. ROSS, B.A., LL.B.
ANALEE J. M. FERNANDEZ, B.A., LL.B.

1512 - 140 Fullarton Street
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Tel: (519) 432-8282
Fax: (519) 432-7285

apatton@pattoncormier.ca

Stantec Consulting
8th Floor
171 Queens Ave
London ON N6A 5J7

August 25, 2009

Via Fax 519-645-6575

Attention: John Tyrell P.Eng.

Dear Sir:

Re: Municipality of Middlesex Centre
Long Term Master Servicing Plan

We are sending again our letter of July 10, 2009.

Yours very truly
PATTON CORMIER & ASSOCIATES

Alan R. Patton

ARP/dr
Encl.

cc: St. John Woods Development Ltd. - Via Fax 519-679-5816

Zelinka Priamo Ltd. Attention: Michael Hannay - Via Fax 519-474-2284

PATTON CORMIER & ASSOCIATES

Barristers & Solicitors

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Stantec Consulting
8th Floor
171 Queens Ave
London ON N6A 5J7

July 10th 2009

Via Fax 519-645-6575

Attention: John Tyrell P.Eng.

Dear Sir;

Re: Municipality of Middlesex Centre
Long Term Master Servicing Plan

We are the solicitors for St.John Woods Development Ltd. which has applied to the County of Middlesex for draft approval of a plan of subdivision in the Village of Arva, Municipality of Middlesex Centre.

We are advised that Stantec has been retained by the Municipality to prepare a Long Term Master Servicing Plan, which by the Terms of Reference will involve phase 1 and phase 2 of the Class EA process for the preferred option for servicing the Village of Arva settlement area.

We are also advised that by the Terms of Reference the Master Servicing Plan is to be completed and submitted to Middlesex Centre Council by February 2010.

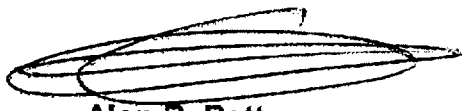
We are advised by our client that in undertaking the Master Servicing Plan you do not wish to meet with our client, or its planning and engineering consultants. We find this somewhat troubling in that our client's land in the Village of Arva is designated for growth in the Official Plan as a settlement area and its application for draft plan approval is with the Approval Authority. The proposed draft plan of subdivision has been circulated for

comment and the statutory public meeting has been held. Could you please elaborate on the reason for not meeting with our client and its consultants as you undertake the Master Servicing Plan?

As the Master Servicing Plan is to involve phases 1 and 2 we assume that it will consider options that include a servicing agreement with the City of London as well as a sewage treatment plan in the Village of Arva. Please confirm this to be the case.

Thank you for your attention to these matters and we look forward to hearing from you as soon as possible.

Yours very truly
PATTON CORMIER & ASSOCIATES



Alan R. Patton

ARP/sb

c.c St. John Woods Development Ltd.
Via Fax 519-679-5816

c.c. Zelinka Priamo Ltd. Attention: Michael Hannay
Via Fax 519-474-2284

Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Tel: (519) 645-2007
Fax: (519) 645-6575

September 01, 2009
File: 165500584

Patton Cormier & Associates
1520-140 Fullarton Street
London, Ontario
N6A 5P2

Attention: **Alan R. Patton**

Dear: Sir

Reference: **Middlesex Centre Master Servicing Plan**

We are in receipt of your letter dated July 10, 2009 (received by fax in our office on August 25, 2009) regarding the St. John Woods Development Ltd property which has applied for draft plan approval and is located within the Official Plan settlement boundaries of Arva. This letter requested clarification on why our staff “do not wish to meet” with your client or their agents.

At PIC 1 held on May 14, 2009, the procedure that Middlesex Centre wished to follow for those members of the public and stakeholders who had comment or questions on the Master Plan was detailed. Our records indicate that subsequent to PIC 1, we have not been contacted by your client or anyone other than yourself on this matter. The handout of the presentation is attached for your reference.

At PIC 1, it was described in the presentation that the Master Servicing Plan is intended to be a policy document for municipal servicing to be reviewed and approved by Council. Based upon the approved Master Servicing Plan, guidelines and implementation tools can be subsequently developed by municipal staff to review proposed development’s servicing plans. Therefore, Stantec at the direction of the Master Servicing Plan’s Steering Committee would not be in a position to undertake a discussion pertaining to the servicing of specific properties as this is not within the present scope of the Master Servicing Plan.

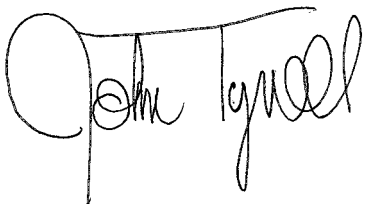
On behalf of the Steering Committee, we would appreciate input from your client and/or their agents as the Master Servicing Plan progresses and municipal and community level servicing issues and solutions are reviewed and discussed at future PICs.

Reference: Middlesex Centre Master Servicing Plan

If you have any further questions on this matter, please do not hesitate to contact me.

Sincerely,

STANTEC CONSULTING LTD.



John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
john.tyrrell@stantec.com

Attachment: PIC 1

c. Municipality of Middlesex Centre, Maureen Looby

Gorrie, Cameron

From: Tyrrell, John
Sent: Wednesday, May 06, 2009 7:46 AM
To: Sampson, Nina
Subject: FW: Middlesex Centre - Master Servicing Plan

Please add Norquay to mailing list for future announcements.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
www.stantec.com

-----Original Message-----
From: Bill Veitch [mailto:bveitch@norquaydevelopments.ca]
Sent: Tuesday, May 05, 2009 5:23 PM
To: loobym@middlesex.on.ca; Tyrrell, John
Cc: Michael Howe
Subject: Middlesex Centre - Master Servicing Plan

Maureen;
As per your advertisement in the paper, could you please add Norquay Developments to the study mailing list.

Thank-you

Bill Veitch, P.Eng.
Norquay Developments Limited
Land Development Manager
301-100 Wellington St.,
London, ON N6B 2K6
1-519-672-4011

Appendix 2.5:
PIC 2

Middlesex Centre
Master Servicing Plan

Phases 1 and 2 of the Municipal Servicing Class Environmental Assessment Process

Public Information Centre 2

September 29, 2009

One Team. Infinite Solutions

Stantec

Presentation Outline

- Introduction
- Problem Identification
- Servicing Principles
- Review of Settlement Areas
- Service Areas
  - Water
  - Wastewater
  - Storm Water
  - Transportation
  - Solid Waste
- Next Steps

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Introduction

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- The Master Servicing Plan (MSP) for Middlesex Centre is a strategic document to assist in the overall planning for a period of 20 years
- The MSP will address municipal water, wastewater, stormwater, solid waste and transportation
- The MSP will provide guidance to Council and Staff and is a policy document from which implementation tools will be subsequently developed
- The MSP may identify certain strategic municipal and community level projects

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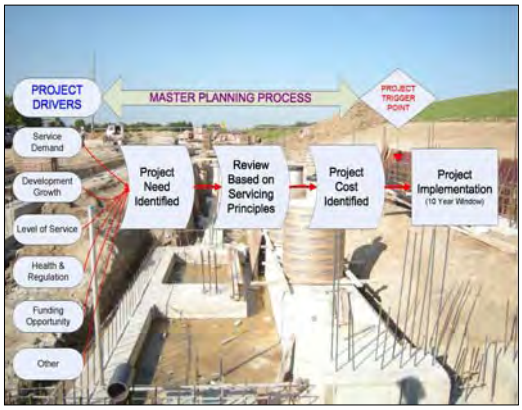

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Problem Identification

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

"The Municipality of Middlesex Centre is a 588km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, stormwater management, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required."

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Guiding / Servicing Principles

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

In PIC # 1, Guiding Principles were described and these have been developed further into the following Servicing Principles:

1. The MSP should be informed by the Municipality's Strategic Plan.
2. Servicing solutions should suit the Municipality's Growth Plan - If Middlesex Centre wishes growth in an area, the MSP would not and should not 'veto' it. However, areas that are not readily provided with municipal services would be costly (capital costs and operational costs).
3. Preference should be for long term servicing solutions over interim solutions.
4. All services to be fully funded through adequate planning, budgeting and identified revenue streams.
5. Servicing solutions should be developed which minimize risk to the municipality, users and others.

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Guiding / Servicing Principles

- INTRODUCTION
- PROBLEM IDENTIFICATION
- **GUIDING / SERVICING PRINCIPLES**
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Bioxnilds
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

In PIC # 1, Guiding Principles were described and these have been developed further into the following Servicing Principles:

6. Proven, cost effective technologies that should be in long term use and are capable of continuous improvement should be utilized.
7. Middlesex Centre should service Middlesex Centre users, where possible.
8. Recommended servicing solutions should be 20-year solutions and ensure that there is expandability to 40-years, if possible (or to the life expectancy of the infrastructure).
9. Service Extension through Integration - Future growth and servicing should use existing infrastructure as much as possible to promote cost effectiveness.

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Guiding / Servicing Principles

- INTRODUCTION
- PROBLEM IDENTIFICATION
- **GUIDING / SERVICING PRINCIPLES**
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Bioxnilds
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

In PIC # 1, Guiding Principles were described and these have been developed further into the following Servicing Principles:

10. Network Servicing versus Linear Servicing.
11. Servicing Higher Areas is preferable to Servicing Lower Areas.
12. Minimize Crossings of natural areas, major utility corridors and other physical barriers.
13. Minimize Complexity (Pumping from one PS to another, servicing large Occasional or Seasonal Users, etc.).

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Review of Settlement Areas

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- **REVIEW OF SETTLEMENT AREAS**
  - **Arva**
  - **Delaware**
  - **Ilderton**
  - **Kilworth-Komoka**
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Bioxnilds
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- TRANSPORTATION
- SOLID WASTE MANAGEMENT
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- COMMUNICATIONS
- QUESTIONS?

- Focus on the Urban and Community Settlement Areas where Official Plan has designated growth to occur:
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- Review Settlement Areas and vicinity with regard to constraints
- Constraints include natural areas, utility corridors, minimum distance separations from large agricultural operations

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Stantec

Arva & Vicinity

Stantec

Arva & Vicinity - Constraints

Stantec

Delaware & Vicinity

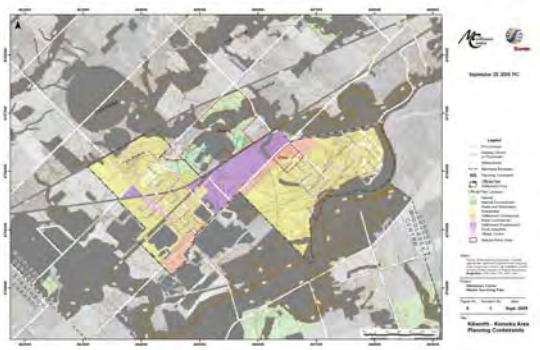
Delaware & Vicinity - Constraints

Ilderton & Vicinity

Ilderton & Vicinity - Constraints

Kilworth-Komoka & Vicinity

Kilworth-Komoka & Vicinity - Constraints



Water Supply & Distribution

Community	Water Supply Sources
Ilderton	Municipal via LHPWSS
Kilworth-Komoka*	Municipal via LHPWSS
Denfield	Municipal via LHPWSS
Birr	Municipal via Well Source
Melrose	Municipal via Well Source
Arva	City of London
Ballymote	City of London
Delaware	City of London
Birr	Private
Ballymote	Private
Bryanston	Private
Lobo	Private
Poplar Hill-Coldstream	Private
Non-Settlement Areas	Private

Water Supply & Distribution – Components

- For Growth Communities, these components are provided by LHPWSS directly or indirectly:
  - Water Source
    - Quantity
    - Quality
    - Security
  - Treatment and Transmission
    - Quantity
    - Quality
    - Security

Water Supply & Distribution

- For Growth Communities, these components are provided by the Municipality:
  - Storage and Pumping
    - To meet high demand periods
    - To provide water for fire protection
    - To provide for emergency supply in case of a supply disruption
  - Distribution
    - To provide water to customers in a safe and efficient manner

Water Supply & Distribution - General

- Komoka – Mt. Brydges Water Transmission Main by LHPWSS
  - To be completed in 2010
  - Provides for long term water supply for Kilworth-Komoka and Delaware
  - Melrose water system to connect at end of current life cycle
  - Supply planned with some capacity available for Middlesex Centre's use
- Non-Municipal Areas
  - No issues identified by the public to date or from discussions with the Middlesex London Health Unit

Water Supply & Distribution

- Arva Water System
  - Water is provided via a connection to the City of London's water supply from agreement dating to 1971
  - Service is limited to the community's growth boundary
  - 2007 water consumption approximately 187m^3/day

Water Supply & Distribution

- Delaware Water System
  - Water provided via a connection to the City of London's water supply from agreement dating to 1982
  - *Komoka-Delaware Municipal Servicing Implementation Study Class EA* identified connection to the Kilworth-Komoka System as the long term strategy
  - Class EA also identified need for additional water storage in Delaware

Water Supply & Distribution

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WATER SUPPLY & DISTRIBUTION**
  - Arva
  - Delaware
  - **Ilderton**
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Ilderton Water System
  - Water provided via a connection to the LHPWSS Transmission Main
  - Water supplied via a booster pumping station with a 455m^3 reservoir
  - Community is presently deficient in storage and will require 2,363m^3 by 2028
  - Class EA to commence in late 2009 to address storage deficiency
  - Several areas supplied by single distribution main

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Water Supply & Distribution

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WATER SUPPLY & DISTRIBUTION**
  - Arva
  - Delaware
  - Ilderton
  - **Kilworth-Komoka**
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Kilworth-Komoka Water System
  - Current well supply to be changed over to the LHPWSS in 2010 based on *2007 Kilworth-Komoka Water Supply Class EA Addendum*
  - Upgrades to storage and pumping being undertaken as part of changeover
  - These upgrades should provide adequate service to 20-year horizon
  - Need to ensure adequate looping of distribution system with new development

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Wastewater Collection & Treatment - Overview

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

Community	Collection System	Treatment
Ilderton	Yes	Extended Aeration (EA) Wastewater Treatment Facility (WWTF)
Kilworth	Yes	Membrane Bioreactor (MBR) WWTF
Komoka	Yes	EA WWTF
Arva	Yes	Sewage sent to City of London collection system through Agreement
Delaware	No	Private Sewage Systems
Ballymote	No	Private Sewage Systems
Birr	No	Private Sewage Systems
Bryanston	No	Private Sewage Systems
Denfield	No	Private Sewage Systems
Lobo	No	Private Sewage Systems
Melrose	No	Private Sewage Systems
Poplar Hill-Coldstream	No	Private Sewage Systems

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Wastewater Collection & Treatment

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - **Arva**
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
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- Arva Wastewater System
  - Municipal collection system within existing boundaries sends flows to London up to a maximum of 175m^3/day based on current agreement
  - Current flows have approached 140m^3/day
  - Undeveloped lands within Arva's growth boundary, if developed, would probably exceed the agreed flow rate (175m^3/day)

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Wastewater Collection & Treatment

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - **Arva**
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Arva Wastewater System
  - Preliminary options for servicing undeveloped lands
    - Do Nothing: restrict growth
    - Increase maximum amount of sewage City accepts through an amended agreement
    - Municipal WWTF (initial phase probably to be in order of 250-500m^3/day for economy of scale)

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Wastewater Collection & Treatment

- INTRODUCTION
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- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - **Delaware**
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Delaware
  - *Komoka-Delaware Municipal Servicing Class EA* provides long term plan for sanitary servicing of Delaware when trigger point is reached
  - Wastewater servicing plan:
    - Collection system for existing development
    - Trunk sewers for future development
    - Sanitary pumping station
    - Sanitary forcemain to Komoka WWTF

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Wastewater Collection & Treatment

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- GUIDING / SERVICING PRINCIPLES
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  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
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  - Arva
  - **Delaware**
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Delaware
  - Trunk sanitary sewer routes and sizing should be developed to minimize requirements for pumping

Stantec

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- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - **Ilderton**
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Ilderton Wastewater System
  - Committed capacity approaching the rated plant capacity (1,120m^3/day)
  - Ilderton split between two drainage areas which has made gravity sewage collection problematic (currently 5 pumping stations)

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Wastewater Collection & Treatment

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - **Kilworth**
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Kilworth Wastewater System
  - Existing WWTF expanded in 2008 to service existing and future growth within its service boundary until 2028

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Wastewater Collection & Treatment

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - **Komoka**
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Komoka Wastewater System
  - *Komoka-Delaware Municipal Servicing Class EA* provides plan to expand Komoka WWTF to 20-year horizon
  - Komoka WWTF to service Komoka, Kilworth (areas not serviced by Kilworth WWTF) and Delaware (future)

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Wastewater Collection & Treatment

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - **Komoka**
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Komoka Wastewater System
  - Post 2028 Kilworth WWTF to be decommissioned and flows directed to Komoka WWTF
  - Komoka Wastewater PS upgrades and routing of trunk sewers through future development will need to be determined based on expected community growth

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Wastewater Collection & Treatment - Biosolids

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - **Biosolids**
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Sewage sludge are solids separated during the treatment of municipal wastewater including septage from septic tanks
- Biosolids refers to treated sewage sludge that meets Ontario's pollutant and pathogen requirements for land application and surface disposal
- Currently, all three WWTF's aerobically digest and store biosolids onsite
- Application of biosolids is governed by the Nutrient Management Act (NMA)

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Wastewater Collection & Treatment - Biosolids

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - **Biosolids**
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Over MSP horizon, current biosolids management plan may need to be reviewed if:
  - Costs increase substantially
  - There is a regulatory change
  - Septage is received into WWTF's
- MSP will review and confirm when a trigger point could be reached for a Biosolids Management Master Plan to be initiated

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Stormwater Management

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- **STORMWATER MANAGEMENT**
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- General standards of design are based on MOE Stormwater Management Planning and Design Manual
- Presently Middlesex Centre's SWM requirements are placed with terms and conditions of the subdivision agreements
- Each SWM Facility is a unique system designed to provide water quality treatment and quantity control to its drainage area
- Third party review through UTRCA is used to evaluate proponent's SWM facility design based on criteria set by UTRCA

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Stormwater Management

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- **STORMWATER MANAGEMENT**
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Often there is a period of several years between when SWM facility is constructed and when it is assumed by the Municipality
- Municipality becomes responsible for the terms and conditions of the permit
- Existing Municipality owned SWM facilities are approaching 20-years in age and may require significant maintenance
- As SWM facilities age, their treatment volumes may be constrained due to sediment build up and vegetative growth

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Stormwater Management

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- **STORMWATER MANAGEMENT**
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- SWM facilities may over time become home to fish and other wildlife which may impair function and impose constraints on maintenance activities
- Agencies such as MNR and CA's may have interests due to naturalization
- Public may view SWM facilities as recreational or natural feature rather than as a treatment system for stormwater

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Stormwater Management - Recommendations

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- **STORMWATER MANAGEMENT**
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

1. Minimize the number of SWM Facilities by ensuring area of SWM facility is sized to allow for ultimate drainage area
2. Municipality should establish a policy on safety and risk issues of adjoining residential lots and general public access

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Stormwater Management - Recommendations

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- **STORMWATER MANAGEMENT**
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

3. Due to vegetative growth and naturalization, SWM facilities should be designed with a factor of safety (i.e. 10% volume and 0.6m freeboard above regulatory storm)
4. Inlet, forebay and outlet structure should be designed to Municipality standard to allow for periodic inspection and maintenance

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Stormwater Management - Recommendations

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- **STORMWATER MANAGEMENT**
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

5. Municipality should develop its own SWM Facility Requirements covering role of proponents, municipal role, design, infill situation, monitoring, assumption, operation, maintenance and risk management
6. Recommend that stormwater systems and SWM Facilities once assumed by the Municipality be funded on a user pay system similar to water/sewage rates

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Traffic and demographic data assembled from various sources such as:
  - Middlesex Centre Average Annual Daily Traffic Counts (AADT), County, etc.
- Approach
  - Identify existing 2009 traffic conditions and confirm existing deficiencies at a strategic network level
  - Develop area growth rates
  - Identify 20 year traffic conditions and future deficiencies
- Assessment
  - Identify problems and opportunities for network
  - Assess role and function of transportation infrastructure and service
  - Identify priorities consistent with municipal community goals and objectives

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Transportation – Existing Conditions

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Analysis undertaken to determine corridor and roadway link level performance
- Capacity analysis was undertaken to determine level of service provided by existing transportation network
- Assessment of the existing condition identified the following:
  - Municipal screenlines operating well within accepted levels of service
  - Richmond Street (Highway 4) operating at threshold of capacity north of Middlesex Centre/City of London Boundary
- The following local areas of concern were noted:
  - Richmond Street in communities of Birr and Arva
  - Ilderton Road and Hyde Park Road in community of Ilderton
  - Ilderton Road and Egremont Drive in community of Coldstream
  - Egremont Drive in communities of Lobo and Melrose

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Transportation – Future 20-year Conditions

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Capacity analysis was undertaken to determine level of service provided by transportation network in the long term planning horizon
- Assessment of the future condition identified the following:
  - Municipal screenlines operating well within accepted levels of service with the exception of the north of Middlesex Centre/City of London Boundary (between Hyde Park and Clarke Road)
  - Highbury Avenue, Richmond Street (Highway 4) operating above the threshold of capacity north of Middlesex Centre/City of London Boundary

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Transportation – Future 20-year Conditions

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Assessment of the future condition identified the following:
  - Fanshawe Park Road, Oxford Street West and Longwoods Road approaching capacity threshold west of City of London limits
  - Highbury Avenue at north limits of Middlesex Centre approaching capacity threshold
- County Roads through local communities will continue to be an issue as traffic volumes increase as a result of area growth (auto and commercial vehicle

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Transportation – Problems & Opportunities

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Issues identified in the Middlesex Centre transportation network:
  - Capacity / Level of Service
    - Short term capacity issue on Richmond Street at south boundary with City of London
    - Long term corridor condition at south boundary with City of London
    - Majority of individual links within Middlesex Centre will continue to operate at good levels of service
  - Network
    - Identification of truck routes
    - Increased focus on transit connections to London

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Transportation – Problems & Opportunities

- Issues identified in the Middlesex Centre transportation network:
  - Safety
    - Traffic speeds in local communities
    - Inadequate sight lines due to skewed intersections, horizontal and vertical curves
    - Potential need for additional turn lanes
    - Poor pavement and shoulder condition
    - Potential illumination needs
    - Inconsistent pavement markings, delineation and signage
    - Lack of clarity at some stop-controlled intersections
    - Discontinuous sidewalks
    - At-grade rail crossings

Transportation – Problems & Opportunities

- Other Issues
  - Truck traffic volume and speeds through communities
  - Pedestrians – provision of consistent network of sidewalks
  - Cyclists – provision of paved shoulders and/or pathways for high use roads
  - Agricultural vehicle use of road network
  - Parking for carpool and transit pick-up at City of London boundary
  - Emergency response times
  - Ensuring adequate funding to maintain the existing road system and additional needs/priorities
  - Opportunity to plan for growth ahead of development pressures

Solid Waste Management

- Municipal wide service provided for:
  - Solid waste and recycling
  - Household hazardous waste
  - Heavy items
  - Yard waste

Solid Waste Management

- Solid Waste and Recycling
  - Provided through Blue Water Recycling Association (BWRA) since 1998
  - BWRA responsible for residential and small institutional/commercial/industrial waste
  - Middlesex Centre is a member municipality of BWRA
  - There are 21 municipalities who are part of the BWRA

Solid Waste Management

- Solid waste collection is operated on a user pay system with weekly pick up
- Cost per bag/container is $ 1.75
- Middlesex Centre generates 357 kg of waste per household/year (kg/hhld/yr)
- This rate is somewhat higher than neighbouring rural BWRA municipalities reflecting higher proportion of urban development
- Solid waste is currently sent to the Twin Creeks Landfill in Warwick Township by BWRA

Solid Waste Management

- Middlesex Centre generates recycling at rate of 261kg/hhld/yr
- Costs of recycling currently funded 50/50 between municipality and industry
- Current recyclable recovery rate is estimated to be 90% by BWRA
- *Cost of overall solid waste program can offset by revenue from material recycling depending upon commodity prices* **– Check!**

Solid Waste Management

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- **SOLID WASTE MANAGEMENT**
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Household Hazardous Waste
  - Service provided through County
  - Utilize the City of London's Household Special Waste Drop Off

Solid Waste Management

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- **SOLID WASTE MANAGEMENT**
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Heavy Items
  - Middlesex Centre operates a Clean Up Day for residents to bring in heavy items
- Yard Waste
  - Middlesex Centre has two yard waste depots

Solid Waste Management

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- **SOLID WASTE MANAGEMENT**
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Trend in Solid Waste is toward more regulation to divert more materials from waste streams (i.e. organic matter)
- Recycling is mandated by the province but is subject to changes in agreements with regard to funding levels between the province and industry
- The "economics" of recycling are subject to the commodity prices for the recovered material
- Residents have a certain expectation for the level of service provided while having adapted well in the past to programs to improve waste diversion and reduction rates

Solid Waste Management

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- **SOLID WASTE MANAGEMENT**
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Solid waste issues such as waste reduction, diversion and landfill operation are complex, controversial and costly especially for smaller municipalities to deal with
- Presently, Middlesex Centre utilizes other organizations to deal with the two major aspects of solid waste management: Solid Waste and Recycling through BWRA and Household Hazardous Waste through the County

Solid Waste Management - Recommendations

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- **SOLID WASTE MANAGEMENT**
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

1. Middlesex Centre should continue to utilize other organizations to deal with the major aspects of solid waste management
2. Council should ensure these organizations provide the necessary information needed for Middlesex Centre to understand evolving solid waste issues through continued participation in their oversight
3. Council should be engaged with the Province to ensure that the perspectives of the municipality and their rate payers who are stakeholders are relayed in future Solid Waste policy and regulation

Next Steps (September 2009 forward)

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- **NEXT STEPS**
- COMMUNICATIONS
- QUESTIONS?

- Review comments from agencies and public following PIC 2
- Complete technical review of the five municipal service components (water, wastewater, SWM, transportation, solid waste)
- Confirm preferred servicing plan and identify any trigger points for each component
- PIC 3 to review preferred solution (November 2009)
- Finalize MSP
- Council Review and endorsement (January 2010)
- MSP Complete (February 2010)

Communications

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- REVIEW OF SETTLEMENT AREAS
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth
  - Komoka
  - Biosolids
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- **COMMUNICATIONS**
- QUESTIONS?

- Stantec Consulting Limited will be the point of contact for queries regarding the MSP
- Due to the potential volume, complexity and sensitivity of some issues, we would request that all questions and comments are to be received in writing to:

  Cameron Gorrie, E.I.T.

  Fax: (519) 645-6575

  Email: cameron.gorrie@stantec.com
- Correspondence received will be reviewed periodically by the Steering Committee and will be responded to accordingly

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Questions & Answers

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Master Servicing Plan
Class Environmental Assessment

Public Information Meeting #2
Tuesday September 29, 2009

COMMENT SHEET

Name:
Mailing Address:
Interest (*i.e.* property owner, agency):
Comments:

Please place comments in the comment box provided or submit comments to the following:

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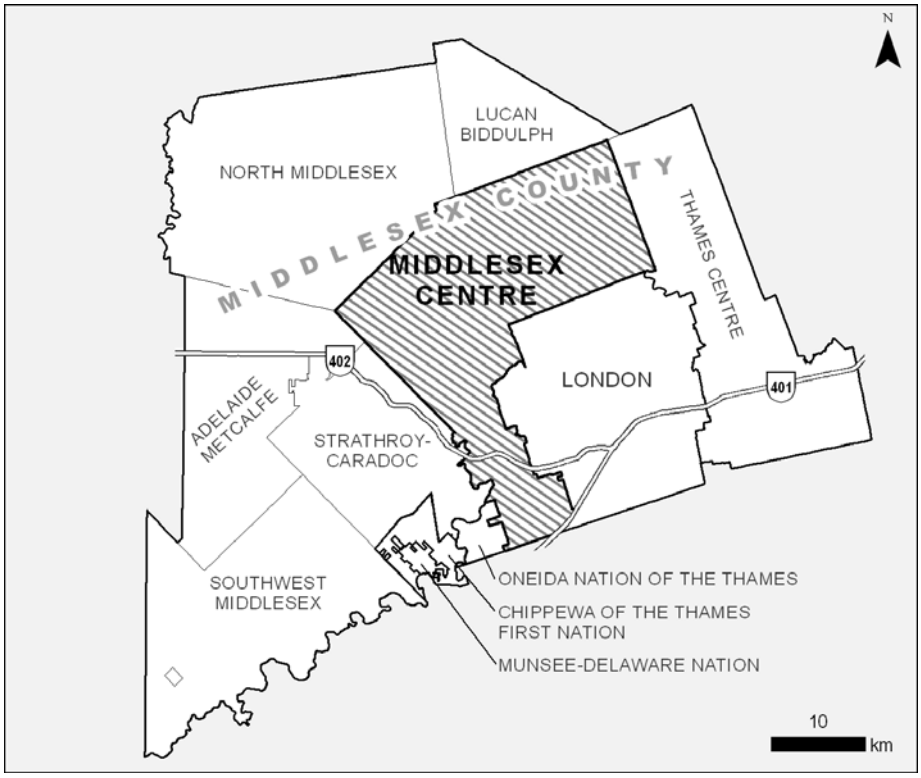
Middlesex Centre Master Servicing Plan
Class EA
Public Information Meeting #2 Attendance
September 29, 2009
Municipality of Middlesex Centre



Stantec Consulting Ltd.
800 – 171 Queens Avenue
London, ON N6A 5J7
Tel: 519-645-2007
Fax: 519-645-6575

File: 1655-00584

Stantec

Master Servicing Plan
Class EA

Public Information Meeting
Tuesday September 29, 2009

Attendance Sheet

Name (please print)	**Mailing Address (including postal code)** (please print)	**Interest in Project (*i.e.* property owner, business owner, agency)**
Todd Powell	TODD POWELL	
Cole Powell	COLE POWELL	
Albert Bannister	RR#3 Ilderton Albert Bannister	Deputy Mayor
Ron Watson		
Brian Atkinson	22862 Komoka Rd, Komoka	Councillor Ward 4
Wayne Crowder	Box 249 Delaware Ont N0L 1E0	
JOE MEYER	BOX 365 - 71 ATKINSON DELAWARE ONT N0L 1E0	
RICK DYKSTRA	553 Southdale Rd E London N6E 1A2	
JERRY RYCHLO	MIDDLESEX COUNTY	—
LARRY & DONNA SLATER	BOX 42 KOMOKA N0L 1R0	residents
John Lucas	City of London	—
Anthony Gubbels	Stantec Consulting	
James & Sylvia Brown	10379 Ilderton Rd	
BILL VEITCH	NSR/LMA Developments	

Public Information Meeting #1
Thursday, May 14, 2009

Attendance Sheet Cont'd

Name (please print)	**Mailing Address (including postal code)** (please print)	**Interest in Project (*i.e.* property owner, business owner, agency)**
DARYL BYCRAFT	RR#1, 1106 2 SINCLAIR DR ILDERTON NOM 2J0	BYCRAFT GARDENS
Ed. Baker	6477 Carriage Rd Southwold ON N0L 2G0	Waste-[neither] live within 2 km of Town's landfill
Graeme Lowry	90 Sir James Court Arva	Property Owner.

Gorrie, Cameron

From: Tyrrell, John
Sent: Monday, September 28, 2009 2:21 PM
To: Gorrie, Cameron
Subject: FW: Municipality of Middlesex Centre Master Servicing Plan

FYI

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Maureen Looby [mailto:loobym@middlesexcentre.on.ca]
Sent: Monday, September 28, 2009 2:14 PM
To: Rob Hern
Cc: Tyrrell, John
Subject: RE: Municipality of Middlesex Centre Master Servicing Plan

Ron –

I will pass your name on to Stantec for addition..

Maureen A. Looby, M.Eng., P.Eng.
Director, Public Works and Engineering
Municipality of Middlesex Centre
phone : 519-666-0190 ext.233
fax : 519-666-0271

From: Rob Hern [mailto:rhern@truelineservices.ca]
Sent: September 28, 2009 12:56 PM
To: Maureen Looby
Subject: FW: Municipality of Middlesex Centre Master Servicing Plan

Hi Maureen:

I am a resident of Middlesex Centre. Could I be added to the study mailing list.

My home address is

45 Baron Crescent
RR5 Komoka ON
N0L 1R0

Home Ph: 226-663-8377

Regards,

Rob Hern

Rob Hern, A.Sc.T, President

Trueline Services Inc.
101-630 Colborne St.
London, Ontario
N6B 2V2

Ph: 519-963-0741
Fax:519-963-0302
Email: rhern@truelineservices.ca

truelineservices.ca

Gorrie, Cameron

From: Tyrrell, John
Sent: Friday, October 02, 2009 1:49 PM
To: Gorrie, Cameron
Subject: FW: Delaware EA

Please forward Bob a copy of the MSP PIC 2 and confirm if he needs PIC 2 from 558.

Thanks.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Bob Stratford [mailto:bob.stratford@rwsconsultinc.ca]
Sent: Friday, October 02, 2009 1:47 PM
To: Tyrrell, John
Subject: Delaware EA

Hi John
I'm told that I might have missed a recent EA public meeting re Delaware servicing.
Any chance I could get a copy of the handouts if still available.
Please let me know.
Thanks
Bob

R.W. Stratford Consulting Inc.
650 Waterloo Street, Ste. 101
London, ON, N6B 2R4
T: 519-857-8806, F: 1-888-536-8304
bob.stratford@rwsconsultinc.ca

Gorrie, Cameron

From: Tyrrell, John
Sent: Wednesday, January 20, 2010 8:13 AM
To: Bob Stratford
Cc: Maureen Looby; Gorrie, Cameron; Oliveira, Nelson
Subject: RE: Ilderton
Attachments: PIC2.MSP.29Sept2009 Sept 28 09 JT.pdf

Bob,

We are looking at having a third PIC for the Master Servicing Plan which is to be announced for February 16, 2010 at the Coldstream Community Centre. At this meeting there will be some discussion in the presentation on the issue of the potential serviceability of lands around the current growth boundary of Ilderton. This discussion will be based on the previous mapping presented in PIC 2 that is attached. At this meeting I can take some time to discuss with you any specific questions you may have on particular lands.

With regard to capacity at the Ilderton WWTF, the Municipality has retained Stantec to undertake a Schedule C Class EA for the Ilderton WWTF in order to allow for sufficient servicing capacity available for future residential and non-residential growth. Completion of this Class EA allows for all required planning and associated study work to have been completed and to allow for a 10 year implementation window which will allow for the timely implementation of any capacity expansion when Council deems that a trigger point is reached.

We are presently starting the four season receiving stream sampling program as part of the Assimilative Capacity report required by the MOE to set any future discharge limits for an expanded plant and we would expect notice for this project and the first PIC on this project in the spring of this year. We can also discuss WWTF capacity issues at the Master Servicing Plan PIC 3 if you wish as well.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Bob Stratford [mailto:bob.stratford@rwsconsultinc.ca]
Sent: Tuesday, January 19, 2010 1:10 PM
To: Tyrrell, John
Subject: Ilderton

Hi John

Maureen Looby told me to meet with you to discuss some general servicing potential questions for lands immediately east of the built-up areas of Ilderton, noting that you are preparing the Strategic Servicing Plan for the municipality.

I would like to met with you briefly to discuss the current and future capacity of the local sewage treatment plant in Ilderton – the meeting would be brief. Can you advise of a suitable time that I could come to your office to discuss the issue.

Regards

Bob Stratford

R.W. Stratford Consulting Inc.
650 Waterloo Street, Ste. 101
London, ON, N6B 2R4
T: 519-857-8806, F: 1-888-536-8304
bob.stratford@rwsconsultinc.ca

Gorrie, Cameron

From: Sergio E. Pompilii & Assoc. Ltd. [sergio@sepompilii.on.ca]
Sent: Friday, October 02, 2009 1:08 PM
To: Gorrie, Cameron
Subject: Re: Municipality of Middlesex Centre Master Servicing Plan

Cam,

I appreciate the information and the fact that my firm has been added on the mailing list.

Sergio

----- Original Message -----
From: Gorrie, Cameron
To: sergio@sepompilii.on.ca
Sent: Friday, October 02, 2009 8:39 AM
Subject: FW: Municipality of Middlesex Centre Master Servicing Plan

Sergio,

Please find attached the digital version of the presentation from earlier this week as requested.

Cam

From: Tyrrell, John
Sent: Thursday, October 01, 2009 7:05 AM
To: Gorrie, Cameron
Subject: FW: Municipality of Middlesex Centre Master Servicing Plan

Please add to list and provide handout.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Senior Environmental Engineer
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Sergio E. Pompilii & Assoc. Ltd. [mailto:sergio@sepompilii.on.ca]
Sent: Wednesday, September 30, 2009 4:39 PM
To: Tyrrell, John
Subject: Municipality of Middlesex Centre Master Servicing Plan

John,

Would it be possible to receive an email which summarizes your presentation at last night's meeting?

Was intending to attend last night's meeting, however something came up and I was unable to be present.

As you can appreciate, my firm has some interest in Middlesex Centre.

Thanks,

Sergio

Sergio E. Pompilii M.A., Dipl. A.A. Urban Design
MCIP, RPP

Sergio E. Pompilii & Assoc. Ltd.
URBAN, REGIONAL & RURAL PLANNERS
301 Oxford St. W., Suite 24158
London, ON N6H 5C4
Tel.: (519) 473-4273
Fax: (519) 473-9917
E-mail: sergio@sepompilii.on.ca

Gorrie, Cameron

From: Gorrie, Cameron
Sent: Tuesday, October 06, 2009 4:15 PM
To: 'hshnider@mhbcplan.com'
Subject: RE: Middlesex Centre Master Servicing Study, Presentations from PIC 1 and 2
Attachments: Handout.PIC1.MSP.15May2009.pdf; PIC2 MSP Sept 29 2009.pdf

Harry,

Please find attached the digital version of PIC 1 and PIC 2 for the Master Servicing Plan.

Cam

From: Harry Shnider [mailto:hshnider@mhbcplan.com]
Sent: Tuesday, October 06, 2009 3:56 PM
To: Gorrie, Cameron
Subject: FW: Middlesex Centre Master Servicing Study, Presentations from PIC 1 and 2

Good Afternoon,

I had sent an email in error to John Tyrell. Could you please send digital copies of the presentations John made at PIC1 and PIC2?

Thanks in advance,

Harry Shnider, MCIP, RPP
MHBC Planning
630 Colborne St., #202
London, Ontario N6B 2V2
hshnider@mhbcplan.com
Ph: 519.858.2797
Toll Free: 866.889.8828
Cell: 226.268.5555
Fx:519.858.2920

From: Harry Shnider [mailto:hshnider@mhbcplan.com]
Sent: Tuesday, October 06, 2009 3:05 PM
To: 'john.tyrell@stantec.com'
Cc: 'loobym@middlesexcentre.com'
Subject: Middlesex Centre Master Servicing Study, Presentations from PIC 1 and 2

Good Afternoon John,

Would it be possible to get copies of the handouts from the first two PICs for the Middlesex Centre Servicing Study?

Thanks in Advance,

Harry Shnider

Harry Shnider, MCIP, RPP
MHBC Planning
630 Colborne St., #202
London, Ontario N6B 2V2
hshnider@mhbcplan.com
Ph: 519.858.2797
Toll Free: 866.889.8828
Cell: 226.268.5555
Fx:519.858.2920

Gorrie, Cameron

From: Graeme Lowry [powerhouse.energy@sympatico.ca]
Sent: Sunday, October 25, 2009 5:20 PM
To: Gorrie, Cameron
Subject: MCMSP
Attachments: Stantec Letter October 2009.pdf; Planning Report April 23, 2008 Email Version.pdf; Summary of Sewage Treatment Agreements.doc; TMC Letter, April 6, 2009.pdf; TMC Letter, July 16, 2008.pdf

Good Morning Cameron,

As instructed, I attach my comments on the status and future of the Middlesex Centre Master Servicing Plan and Phases 1 and 2 of the Municipal Servicing Class Environmental Process.

Thank you in advance for bringing our comments forward, and we welcome any questions you may have.

Graeme Lowry
President: North Shore Power Group Inc., Powerhouse Energy Inc.
90 Sir James Court, Box 213
Arva, Ontario N0M 1C0

☎ Tel: 226-374-5040
Fax: 519-679-5816
Email: powerhouse.energy@sympatico.ca

St. John Woods Development Ltd.
90 Sir James Court
Box 213
Arva, Ontario, Canada
N0M 1C0

Tel.: (226) 374-5040
Fax: (519) 679-5816
Email: powerhouse.energy@sympatico,ca

October 25, 2009

Stantec
171 Queens Avenue
8th Floor
London, Ontario
N6A 5J7

Attention: Mr. Cameron Gorrie, E.I.T.

Dear Mr. Gorrie:

We write to provide our comments arising from the information disclosed at Public Information Centre 2 on September 29th, 2009.

Please accept our thanks for the Public Information Centre as we have wanted to meet with you for some time. Your sensible approach to all of the issues, and the clarity and transparency with which the issues were presented, are all very helpful.

Our Interest

Our land is the western part of the Arva Settlement Area, both north and south of Medway Road. The development of these lands will be completed by our company St. John Woods Development Limited. The subject land is approximately 100 acres, of which 60 is above the flood plain and divisible into housing lots. We have spent a considerable sum assembling an application for subdivision approval on these lands, which information has been submitted to the Township and the County.

As you are aware from discussions with me and with the Master Servicing Plan Steering Committee, our Application for Draft Plan Approval of a subdivision in Arva is currently being held in abeyance further to Council's Resolution of April 1, 2009, which stated that our Application is premature until adequate sanitary sewer servicing capacity is available to service the proposed subdivision. (Attachment: Letter of April 6, 2009)

Our company and Middlesex Centre are well aware of this issue and the possible options for addressing it, as far back in time as the mid-1990's. (Attachment: Letter of July 16, 2008)

The Master Servicing Plan

We were informed that this issue would be addressed by way of a Long Term Master Servicing Plan for the entire Municipality, which thrust our issue in the Village of Arva into a much larger

scope. We were assured that our local issue would be specifically addressed, and we were provided with the Terms of Reference under which an outside consultant would be hired.

Section 3.5 states that the Middlesex Centre Master Servicing Plan ("MCMSP") will contain the preferred alternative for every servicing component for every community, for the present and the future.

Section 4.0 states that Stantec's Responsibility is to complete an evaluation of these alternatives and select the preferred alternative, and that the final MCMSP will identify the servicing strategies for each component for each community area.

In your presentation of September 29th, 2009, you state:

> Arva Wastewater System
> - Municipal collection system within existing boundaries sends flows to London up to a maximum of 175 c.m. per day based on current agreement
> - Current flows have approached 140 c.m./day
> - Undeveloped lands within Arva's growth boundary, if developed, would probably exceed the agreed flow rate of 175 c.m. per day.
> - Preliminary options for servicing undeveloped lands:
>   - Do Nothing: restrict growth
>   - Increase maximum amount of sewage City accepts through an amended agreement
>   - Municipal WWTF(initial phase probably to be in the order of 250-500 c.m. per day for economy of scale)

With wish to comment on the existing Agreement, and on the Options you are reviewing.

<u>The Existing Sewage Treatment Agreement</u>

History of the Servicing Issue

In the 1990's, the then-hamlet of Arva had insufficient servicing. Issues of watershed pollution arose in connection with the Thames Valley District School Board (Medway High), and two new subdivisions, Croydon and St. John's Estates.

The issue was studied by Dillon Engineering. Dillon planned to provide sufficient servicing for all of the probable development within the Settlement Area. This planning included the servicing sufficient for 490 residents on the St. John Woods land, which happens to be the population density of the plans submitted by us this year.

This first Agreement of April 3rd, 2000, limited the total volume of sewage permissible at the Arva Pumping Station in Weldon Park to 175 cubic meters per day, on a two-month rolling average, in Article 24. The Arva Sewage Service Area Map as attached to the Agreement clearly shows the St. John Woods Development lands within the agreed service boundary.

Article 25 expressly provides for expansion of this allowance by mutual consent, as such was plainly contemplated at that time.

Subsequent Agreements limited the Residential and Commercial pace at which this allocation could be connected. (Attachment: Summary of Sewage Treatment Agreements). Interestingly, the Amendments provide no allocation for institutional uses such as schools.

Difference between Capacity and Restrictions

There is no mechanical constraint that would prevent the Arva sewer from handling the output generated by the St. John Woods development. This issue is addressed by Eng Plus in our submission.

The real issues are those of volume and pace restrictions under the Agreements.

The Options Presented by Stantec

Do Nothing: Restrict Growth

We do not believe this to be a logical option, for the following reasons:

1. The St. John Woods Development lands have been designated Residential in the Official Plans for as long as we have knowledge, and have been within the historical settlement area of Arva for more than 100 years. It is not logical for the Municipality to designate lands as Residential and then fail to take the steps necessary to facilitate the Use designated by them.
2. The existing Arva Sewage Treatment Agreement was intended to service our lands, but clearly the original capacity was insufficient even to fulfill the agreed-upon intent of the original agreement. It would be inconsistent to pursue an Agreement to service our lands in 2000 and then elect not to do so in 2009.
3. We have been paying for the Arva Sewer Debenture as part of our tax remittances for 9 years. It would seem inconsistent to charge us for a utility to which we are being denied access.
4. The existing capacity has been partly consumed by Medway High School, which is a multi-municipality institutional use, and where enrolment has doubled in the last 60 days. Many of these students are from London. It would seem unwise to "do nothing" when we are not certain if the existing allocation is sufficient for the existing commitments in Arva. The High School expansion was recommended by IBI on the basis that nothing more be approved "until such time that the current approved developments are fully built out and flows can be monitored." The High School expansion would have been an ideal cause to have pursued an Amended Agreement with London. In any event, given the current circumstances, we recommend to the Steering Committee that the Master Servicing Plan review the current daily flows at the Arva Pumping Station and estimate the contingent additional flows if all buildings with the right to connect were to do so.

Increase Maximum Amount of Sewage City accepts through an Amended Agreement

For all of the reasons enumerated, we think something ought to be done about the level of available wastewater treatment in the Village of Arva. It is inadequate to meet the growth in our Official Plan.

We recognize that there is a political dimension to this issue, but there are many reasons why an Amendment makes sense:

1. Connecting to an existing wastewater treatment network has the least incremental environmental impact of any conceivable alternative.
2. The original agreement was intended to service the lands, but wastewater treatment demand in Arva has grown much faster than originally anticipated.
3. An Amendment will not lead to unbridled growth nor to Urban Sprawl. There are only two undeveloped parcels of land remaining within the Arva settlement area: St. John Woods Development's land and some land to the north of Medway Creek. The sewer does not reach the land to the north of Medway Creek, so this other land cannot be serviced without further infrastructure including a sewer bridge.
4. The Municipalities are neighbours. By legislative intent (St. John Woods Planning Justification Report, April 2008 [Attached]), the municipalities should be cooperative in resolving this issue by Amendment.
5. The sewer trunk is already laid within our land for the servicing of all of the St. John Woods land.
6. The landowners have been paying the Arva Sewer Debenture since 2000, which was created to defray the capital costs of the sewer, including the payment to London of $130,000 which was the sum paid by Middlesex Centre in 2000 to reserve this capacity for the Township. It would appear that we have paid to reserve capacity which has been allocated elsewhere in the Village, which leads us to conclude that an Amendment would be the equitable solution.
7. The St. John Woods land is the last currently developable land within the settlement area. Unless and until this land is developed, there is little or no chance that any authority will allow an expansion of the village boundaries. Thus all other development is stymied.
8. An Amendment will earn money for both municipalities and the tax revenue from the resulting development will be considerable.
9. The Municipalities can use the opportunity of an Amendment to correct the Agreement to provide for institutional connections such as schools, which service both Municipalities.
10. The Amendment presents the opportunity to complete an Agreement which fulfills the original purpose, which was to service the entire Village of Arva, fully developed as officially planned, which was the exact intent of the Agreement in the year 2000.

Municipal WWTF
(Initial phase probably to be in the order of 250-500 c.m. per day for economy of scale)

We wish to recommend to the Steering Committee that this option be preserved in tandem with the pursuit of an Amendment. This is Middlesex Centre's only way of preserving their right to plan the future of our municipality.

At an average wastewater generation per day per dwelling of 1 cubic meter, as estimated by Stantec, the St. John Woods development could produce 180 c.m. per day. Combined with the other undeveloped land north of Medway Creek, the undeveloped lands within the Settlement Area may produce enough volume to meet the lower end of the economy of scale which is recommended by Stantec.

Furthermore, if the City refuses to implement an Amendment to the existing Agreement, then they may force Middlesex Centre and our company to pursue this option. The interesting question arises as to whether the existing sewer connection to London would eventually have any customers left.

We believe a municipal WWTF may be entirely feasible and should be preserved as a second option if London is not cooperative in concluding an adequate Amendment, for the following reasons:

1. Kilworth has just installed a Membrane Bioreactor, which meets all the Guiding and Servicing Principles presented by Stantec at the Public Information Center 2. This technology may be ideal for Arva, and three councillors suggested this to us at the PIC 2.
2. Arva may have enough volume coming on-stream to justify the investment.
3. It preserves the right of Middlesex Centre to plan its own future, by giving it an option that is not dependent upon London. The City of London has stated to us in writing that an Amendment to the existing Agreement is a planning issue for the City. The City appears to be operating in a silo. Planning in the Township by the City would not seem particularly useful without the Township involved.
4. This option conforms to all of the Guiding and Servicing Principles.
5. A WWTF for Arva could be planned in conjunction with all other services for our development as part of an integrated sustainable systems plan for Green Communities within Middlesex Centre including geothermal heat, grey water separation, measures for domestic water economy of use and waste, and energy preservation and generation systems from insulation technology to photovoltaic cells. It could be demonstrated that a new Membrane Bioreactor for Arva is more environmentally responsible than delivering additional wastewater to London's system which includes some relatively antique facilities and technologies. With a Sustainability Plan that integrates all utility and service systems in an environmentally advanced package, the Township is showing vision and leadership and will find solutions applicable and repeatable throughout its jurisdiction.
6. A WWTF for Arva will allow the Municipality to preserve and respect our rural values of treading lightly on the environment by the design and technology choices it makes.

Conclusion

The Master Servicing Plan also comprises Phases 1 and 2 of the Municipal Servicing Class Environmental Assessment Process.

Accordingly, and we imagine predictably, we recommend to the Steering Committee that if the Master Servicing Plan concludes that an Amendment to the existing Wastewater Treatment Agreement between Middlesex Centre and the City of London is the optimal alternative, then the Master Servicing Plan should contain the information needed by Middlesex Centre to present a persuasive case to the City for this Amendment.

We recommend also that the option of a municipal WWTF for Arva be preserved as a secondary option for the reasons presented.

Please accept our appreciation for providing us with an opportunity and venue to present our comments.

Yours truly,

Graeme Lowry
President, St. John Woods Development Limited

Summary of Sewage Treatment Agreements, City and Township

1st Agreement, April 3rd, 2000

- Servicing only for existing development, and staged future development, in the "Arva Sewage Service Area" or ASSA
- The staged future development to be agreed upon by June 2000
- The St. John Woods lands are inside the boundary map of the Arva Sewage Service Area as attached to the Agreement
- Township supplies and maintains the trunk main and the pumping station, complete with meters
- Rate is $.0224 per c.f. of sewage
- City not required to receive more than 175 c.m. per day and reserves this capacity for the Township in consideration of $130,000
- The parties may mutually agree to increase this limit

2nd Agreement, June 21, 2000

- Future development within the ASSA defined as: a max of 10 New Residential units per year and Commercial up to 1,000 s.m. of New Commercial floor space per year to a max of 4,500 s.m. over a 10 year period.

3rd Agreement, August 15, 2001

- Residential further defined as an average equivalency of 10 New Residential per year and not more than 50 per 5 year period.
- It defines "people per dwelling unit", or "p.p.u.", which allows smaller houses and town homes in greater numbers than 10 per year.
- Commercial remains unchanged.

Discussion of Capacity and Allocation

- According to Eng Plus, there is no technical Capacity Constraint to handling the output from St. John Woods.
- Therefore we have only an Allocation Constraint pursuant to these Agreements.

MIDDLESEX CENTRE

July 16, 2008

RECEIVED
JUL 21 2008

Alan R. Patton
PATTON CORMIER & ASSOCIATES
1512 – 140 Fullarton Street
London, ON N6A 5P2

Dear Sir:

Re: St. John Woods Development – Arva Plan of Subdivision

Due to existing pollution problems in Arva identified in the mid-1990s and the immediate need for corrective action an agreement was struck between London and Middlesex Centre for the treatment of communally collected wastewater within London's system. In brief the agreement allows Middlesex Centre to pump for treatment up to 175 cubic metres/day based on a two month rolling average.

In their review of the development application for the Medway Secondary School in September, 2007 IBI advised the municipality:

> *" Our analysis would indicate that there is sufficient capacity within the system to accommodate the school addition, the municipality is approaching the limits of the servicing agreement and it is suggested that no further development within Arva be approved until such time that the current approved developments are fully built out and flows can be monitored."*

At the pre-consultation meeting of November 6, 2007 the municipality's position on wastewater servicing, notably treatment, was expressed as needing to see the treatment alternatives updated and reviewed which comes under the requirements of an environmental assessment process.

Your request for "flow records" from the Arva pumping station is acknowledged and the attached table is provided.

Yours truly,

Maureen A. Looby

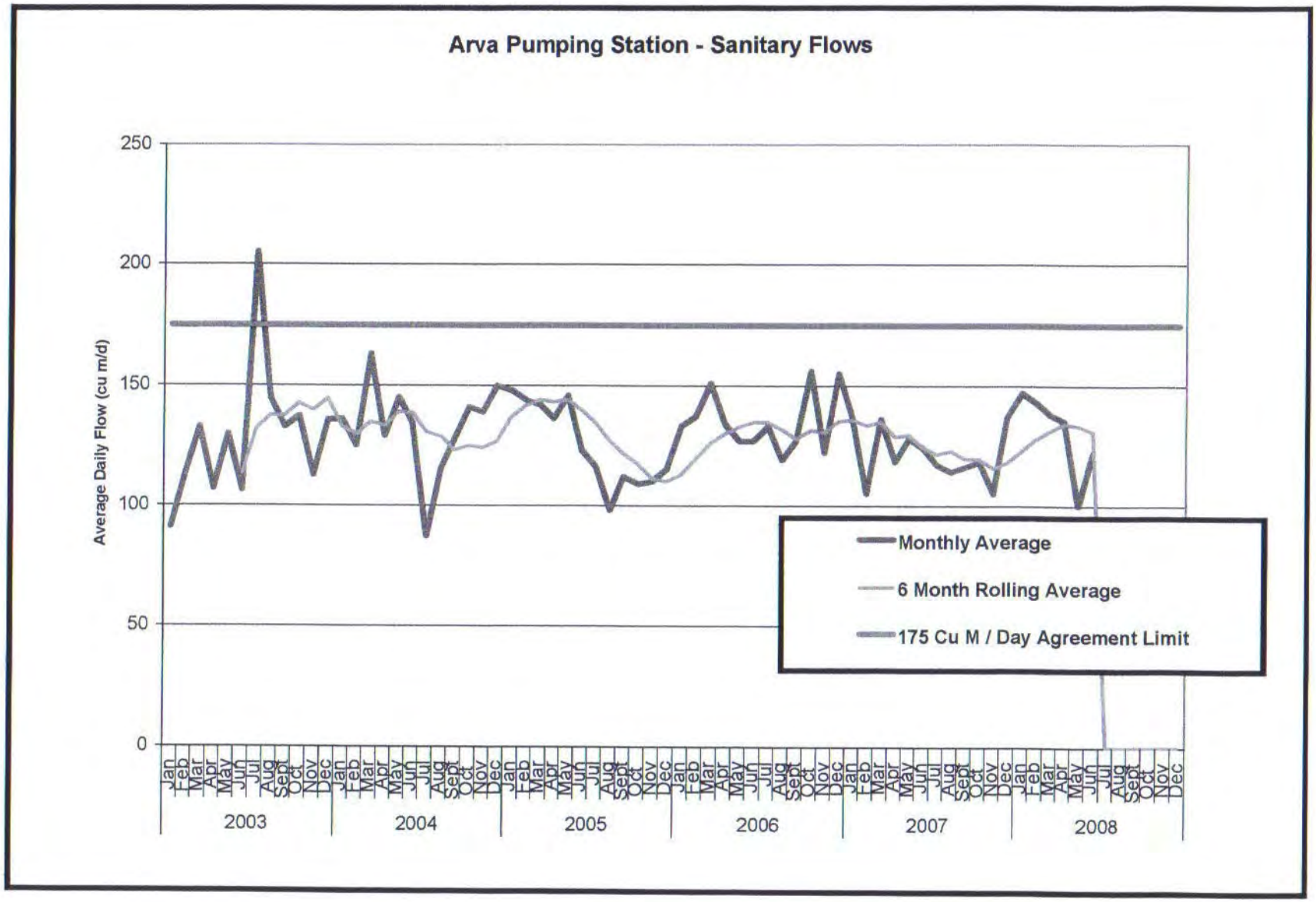
Maureen A. Looby, M.Eng., P.Eng.
Manager, Public Works and Engineering

c. Cathy Saunders, CAO/Clerk
Marc Bancroft, Senior Planner

10227 Ilderton Road, RR 2, Ilderton, ON N0M 2A0 Telephone: 519 666 0190 Facsimile: 519 666 0271
www.middlesexcentre.on.ca

Arva Pumping Station - Average Daily Flows 15/07/08
(cu m/d)

Month	2003	2004	2005	2006	2007	2008
Jan	91	136	148	133	136	147
Feb	113	125	144	137	105	143
Mar	133	163	142	151	136	138
Apr	107	129	136	134	118	135
May	130	145	146	127	128	100
Jun	106	134	123	127	124	122
Jul	205	87	116	133	117	0
Aug	145	115	98	119	114	0
Sept	133	128	112	127	116	0
Oct	137	141	109	156	118	0
Nov	113	139	110	122	105	0
Dec	136	150	115	155	137	0
Annual Average	129	133	125	135	121	131


Arva Pumping Station - Sanitary Flows
Average Daily Flow (cu m/d)
250
200
150
100
50
0
Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec
2003
2004
2005
2006
2007
2008
Monthly Average
6 Month Rolling Average
175 Cu M / Day Agreement Limit

MIDDLESEX CENTRE

April 6, 2009

County of Middlesex
399 Ridout Street N.
London, Ontario
N6A 2P1

Att: Steve Evans, MCIP, RPP

Dear Sir:

RE: **Application for Draft Plan of Subdivision and Rezoning**
Hal Gould, Graeme Lowry and Douglas Weldon
Zelinka Priamo Ltd. (Agent)
Part of Lot 17, Concessions 6 and 7 (geographic Township of London)
Municipality of Middlesex Centre
County File No. 39T-MC0901

The following resolution was passed at the April 1, 2009 regular meeting of Municipal Council:

> *THAT the County of Middlesex be advised that the Municipality of Middlesex Centre is of the opinion that the consideration of the Draft Plan of Subdivision prepared by Zelinka Primo Ltd. dated April 7, 2008 for lands described as the Part of Lot 17, Concessions 6 and 7 (geographic Township of London), Municipality of Middlesex Centre; County File No. 39T-MC0901; is premature at this time until adequate sanitary sewage servicing capacity is available to service the proposed subdivision; and*
>
> *FURTHER THAT consideration of the application for a Zoning By-law Amendment for property owned by Hal Gould, Graeme Lowry and Douglas Weldon and described as Part of Lot 17, Concessions 6 and 7 (geographic Township of London) Municipality of Middlesex Centre is premature until draft plan approval has been granted.*

If there are any questions or concerns, please do not hesitate to contact the undersigned.

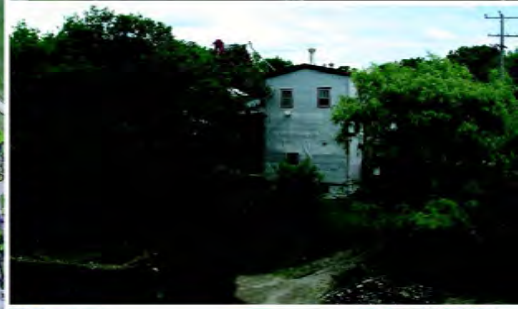
Yours truly,

Marc Bancroft, MPL, MCIP, RPP
Senior Planner

cc. Zelinka Priamo Ltd. (Michael Hannay)
MHBC Planning (Carol Wiebe)
Sunningdale (David Schmidt)
Eleanor Schnall
R. I. Morrison
Roy and Joanne Carter
Aida and Charles Gatfield
L. D. Holmes
Peter and Margie Chelonis

St. John Woods

Planning Justification Report



Township of Middlesex Centre

April 2008

TABLE OF CONTENTS

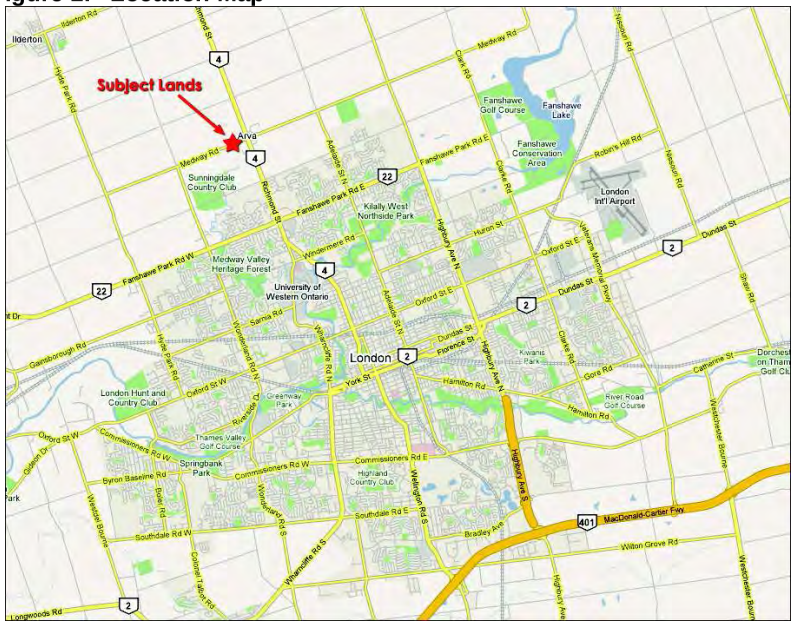
Figures

1.0 Introduction

Zelinka Priamo Ltd. has prepared this report in support of the subdivision application for St John Woods, located in the Village of Arva, in the Municipality of Middlesex Centre in Middlesex County. The purpose of this report is to show that the proposed draft plan of subdivision is consistent with the Provincial Policy Statement 2005, is in conformity with the Middlesex County Official Plan and the Municipality of Middlesex Centre Official Plan. This report also contains proposed amendments to the Municipality of Middlesex Zoning By-law that are intended to implement the proposed draft plan of subdivision.

The Village of Arva is located in Middlesex County in the Municipality of Middlesex just north of the urban boundary of the City of London. Arva has a population of approximately 530 people.

Figure 1. Location Map



This report should be read in conjunction with the following reports which were also prepared in support of the application:

- St. John Woods Urban Design Guidelines (Zelinka Priamo Ltd., April, 2008)
- Issues Scoping Report (Biologic, February, 2008)
- Archaeological Assessment (Stages 1, 2 & 3) (Archaeologix Inc., June, 2006)
- Preliminary Servicing Report (ENG PLUS, final March, 2008)
- Traffic Report Proposal (F. R. Berry Associates, April, 2008)

2.0 The Draft Plan of Subdivision

The Draft Plan of Subdivision is shown on Figure 2. The subject lands have an area of 21.66 ha. The draft plan proposes a mix of housing types including single family, townhouses, and townhouse live-work dwelling units, a naturalized storm water management facility and parkettes connected by walkways, served by a grid pattern of Municipal roads and lanes. Road widenings are proposed on Medway Road. These widenings are intended to provide a road width to satisfy County requirements. Design standards have been incorporated into the proposed zoning to improve the overall look and feel of the streets by prohibiting projecting garages and requiring garages to be set back from the main face of dwelling units. Some lots and blocks are served by rear laneways presenting the option of constructing garages in rear yards.

Figure 2. Draft Plan of Subdivision

The draft plan features:

- 122 single family low density residential lots (12.68 ha);
- one live-work townhouse medium density block (18 units/0.57 ha);
- three townhouse medium density blocks (44 units/1.35 ha);
- one walkway/emergency access block to Croydon Drive (0.16 ha);
- five park blocks (1.45 ha which exceeds the 1.1 ha required in connection with the 5% parkland dedication);
- one naturalized storm water management block (0.49 ha);
- six road widening blocks along Medway Road (County Road 28) (0.36 ha);
- local roads (3.89 ha);
- laneways (0.73 ha); and
- 0.3m (1 ft.) reserves abutting Richmond Street (Provincial Highway 4).

The draft plan was prepared in accordance with the requirements of Sections 51(17) and 51(24) of the Planning Act.

3.0 Provincial Policy Statement 2005 (PPS 2005)

This section addresses the relevant policies from the PPS 2005 including Definitions, Section 1.0 Building Strong Communities, Section 2.1, Natural Heritage and Section 3.0 Protecting Public Health and Safety.

1. The proposal is consistent with the definitions of Settlement Areas, Designated and Available, and Designated Growth Area.

   Settlement Areas:
   means urban areas and rural Settlement Areas within municipalities (such as cities, towns, villages and hamlets) that are:

   a. built up areas where development is concentrated and which have a mix of land uses; and
   b. lands which have been designated in an Official Plan for development over the long term planning horizon provided for in policy 1.1.2. In cases where land in Designated Growth Areas is not available, the Settlement Area may be no larger than the area where development is concentrated.

   Designated and Available:
   for the purposes of policy 1.4.1(a), means lands designated in the Official Plan for urban residential use. For municipalities where more detailed Official Plan policies (e.g., secondary plans) are required before development applications can be considered for approval, only lands that have commenced the more detailed planning process are considered to be designated for the purposes of this definition.

   Designated Growth Areas:
   means lands within Settlement Areas designated in an Official Plan for growth over the long-term planning horizon provided in policy 1.1.2, but which have not yet been fully developed. Designated Growth Areas include lands which are Designated and Available for residential growth in accordance with policy 1.4.1(a), as well as lands required for employment and other uses.

2. The proposal is consistent with Section 1.1 Managing and Directing Land Use to Achieve Efficient Development and Land Use Patterns over the long term. The development proposes a mix of single detached and freehold townhouse dwelling units (including live-work townhouse units), recreational and park use. A naturalized storm water management facility is integrated into a linked system of parks to encourage cycling and walking. Full municipal water service is available. Sewage treatment can be provided by utilizing available sewer capacity from the City of London through the existing sewers and pumping station in Arva. Public service facilities including postal, fire protection and a secondary school are in place.

3. The proposal is consistent with policy 1.1.2 in that it is located in a Designated Growth ***A***rea***,*** intended to accommodate a range and mix of land uses to meet projected needs for the planning periods stated in the County of Middlesex and the Town of Middlesex Official Plans.

4. The proposal is consistent with policies 1.1.3.1 and 1.1.3.2 under Subsection 1.1.3 Settlement Areas. Arva is a Designated Settlement Area consistent with the PPS 2005 definition and is designated a Settlement Area in both the County and Municipal Official Plans. Both Plans direct growth to Settlement Areas. Policy 1.1.3.2 a. requires that land use patterns within Settlement Areas be based on densities and a mix of land uses that efficiently use land and resources, infrastructure and public service facilities and minimize negative impacts on air quality and climate change. Proposed densities are marginally greater than existing densities in

Arva and the mix of single and townhouse dwelling units and parks extend from the Village Centre to the westerly boundary of the designated Arva Settlement Area.

Factors contributing to promoting vitality and regeneration in accordance with policy 1.1.3.1 and which, as stated in policy 1.1.3.2 a. 3., require regeneration and minimizing the negative impacts to air quality and climate change and promoting energy efficiency in accordance with Subsection1.8, include:

- enhanced tree planting;
- opportunities for walking and cycling;
- a naturalized storm water management facility;
- preservation of natural features associated with the Medway Creek and its hazard area;
- north south orientation of the majority of lots maximizing the use of solar energy; and
- providing opportunities in a medium density block to live-work in the community.

5. The proposal is consistent with policy 1.1.3.7 that states that new development taking place in Designated Growth Areas should occur adjacent to the existing built-up area. The proposal is adjacent to Arva Village Centre and abuts an existing single family subdivision located on lands south of the proposal.

6. The proposal is consistent with policy 1.1.3.8 which requires phasing where appropriate. Development will be phased consistent with the provision of services.

7. The proposal is consistent with Subsection 1.2, Coordination, to the extent that there is an opportunity to utilize City of London's sewage treatment and water infrastructure.

8. The proposal is consistent with policies 1.4.1 and 1.4.1 a. and 1.4.3 c., under Section 1.4 Housing. The development will provide a range of housing types and densities. The subdivision is located on lands that are Designated and Available for development and are part of the projected population and housing for the regional housing market in accordance with the projections in the County and Municipal Official Plans. Arva is a location where appropriate levels of infrastructure and public service facilities are or will be available to support current and projected needs.

9. The proposal is consistent with Subsection 1.5 Public Spaces, Parks and Open Space. The proposal incorporates streets, spaces and facilities to meet the needs of pedestrians and non-motorized movement. An important feature of the subdivision is a linked system of parkettes, parks, and a naturalized storm water management facility.

10. The proposal is planned to proceed on full municipal water and sewer services, consistent with policy 1.6.4.1 a. found under Subsection 1.6 Infrastructure and Public Service Facilities. Subsection 1.6 provides direction in connection with planning for sewage and water services. Municipal water service is available. Provision of full municipal sewage service is based upon the servicing agreement with the City of London an approach consistent with policies 1.6.1 and 1.6.2 which require co-ordination, efficiency, cost effectiveness and optimization in the use of existing infrastructure.

11. The proposal is consistent with Subsection 2.1, Natural Heritage. Development is proposed on tableland and will not impact on features and functions described in Section 2.1 of the PPS 2005. The Issues Scoping report by Biologic states that features and functions will not be impacted.

12. The proposal includes a naturalized storm water management facility which will minimize storm water volumes and contaminant loads and increase the extent of vegetative cover consistent with policy 2.2.1 (g), under Subsection 2.2 Water.

13. The proposal is consistent with Subsection 2.6 Cultural Heritage and Archaeology. Stage 1, 2 & 3 archaeological assessments have been completed. The assessments revealed no significant pre-contact aboriginal locations. Six locations producing 19th century Euro-Canadian cultural material were found. These materials are being conserved.

14. The proposal is consistent with policy 3.1.1 b. found under Subsection 3.1, Natural Hazards. Policy 3.1.1 b. requires that development generally be directed away from hazard lands adjacent to rivers and streams. Development is directed to the tableland away from hazard lands adjacent to the Medway Creek.

3.1 Summary

Applicable policies from the PPS 2005 are found in Subsections 1.1 Managing and Directing Land Use to Achieve Efficient Development and Land Use Patterns, 2.1 Natural Heritage, 2.6 Cultural Heritage and Archaeology and 3.1 Natural Heritage. The

subdivision is proposed in a Settlement Area consistent with definitions found in the PPS 2005.

The proposed mixed use (linked parks, singles, townhouses) subdivision will proceed on full municipal services and provide housing for projected population growth. Design includes features that will minimize the negative impacts on air and water quality. Nineteenth century Euro-Canadian cultural material was found and is being conserved. Development will not impact on natural heritage features and functions and is directed away from hazard lands associated with the Medway Creek.

The proposed subdivision is consistent with the PPS 2005.

4.0 Middlesex County Official Plan

The policies of the Middlesex County Official Plan which apply to this proposal relate primarily to growth management, servicing, natural and built heritage, hazard lands and transportation. The County Plan relies on more detailed policies found in the Municipal Official Plans. The following sections conforms to these policy directions.

1. The lands are designated Settlement Area (Urban and Community) on Schedule "A", Land Use, shown on Figure 3.

2. Section 2.3.2, Growth Management Hierarchy, identifies the types of Settlement Areas including Urban Areas, Community Areas, and Hamlets in Agricultural Areas. The County Plan relies on Municipal Official Plans regarding the designation of Urban Areas and Community Areas.

   Arva is designated a Community Area in the Middlesex Centre Official Plan. Section 2.3.2 b) in the Middlesex County Official Plan states: "Community Areas shall demonstrate the potential to accommodate future growth through population projections, must currently serve a community function and must demonstrate the potential to provide a level of service necessary to support future growth through a master servicing component of a Settlement Capability Report and/or completion of an Environmental Assessment (EA) pursuant to the Environmental Assessment Act. Arva demonstrates
   the characteristic of a Community Area and has been planned to accommodate future growth on full municipal services."

3. A servicing report prepared by ENGPLUS describes existing services. Reference should be made to this report in connection with municipal services and storm water management.

4. The proposal conforms to Section 2.3.5 General Policies. Section 2.3.5 states that growth shall be directed to the Settlement Areas conceptually identified on Schedule A, Land Use. Arva is designated a Community Settlement Area in the Town of Middlesex Official Plan.

Figure 3. Schedule A Land Use, Middlesex County Official Plan

5. Section 2.3.7 Housing policies encourages a wide variety of housing by type, size and tenure to meet projected demographic and market requirements. A variety of single family lots varying in size (700m^2+ to 2079m^2) with freehold townhouse dwelling units (34 % of the lots in the proposed plan) maintains the intent of this County Plan policy.

6. Policy 2.3.7.2 Number, Range and Mix of Housing Units projects a County wide population increase of 17,394 persons and 6560 dwellings to the year 2026. Appendix B from the County Plan contains population projections for the local municipalities in the County. The 2006 Statistics Canada population for Middlesex Centre is 15,589 with 5,235 private dwelling units. County population projection for Middlesex Centre to 2026 is 22,939. The proposal will fulfill the purpose of providing housing to accommodate a part of the planned population over the planning period.

7. Section 2.3.8, Settlement Areas, states that Municipalities have the primary responsibility for detailed planning policy within Settlement Areas and that Community Areas are a focus of growth. The proposal is directed to the Community Settlement Area of Arva. The Town of Middlesex Centre has detailed planning policy for the Settlement Area. Arva is a focus for future growth including residential, commercial and industrial development and is characterized by a range of land uses. Full Municipal services are proposed for this development. The Town of Middlesex Centre has defined the limits of Arva in its Official Plan and the proposal is within the defined limits.

8. Section 2.3.8.2, Community Areas contains provisions in connection with the function of Community Areas and full municipal servicing and the role Community Areas have in connection with accommodating a portion of the County's future growth. Arva is a designated Community Area. The proposal builds on and strengthens these functions.

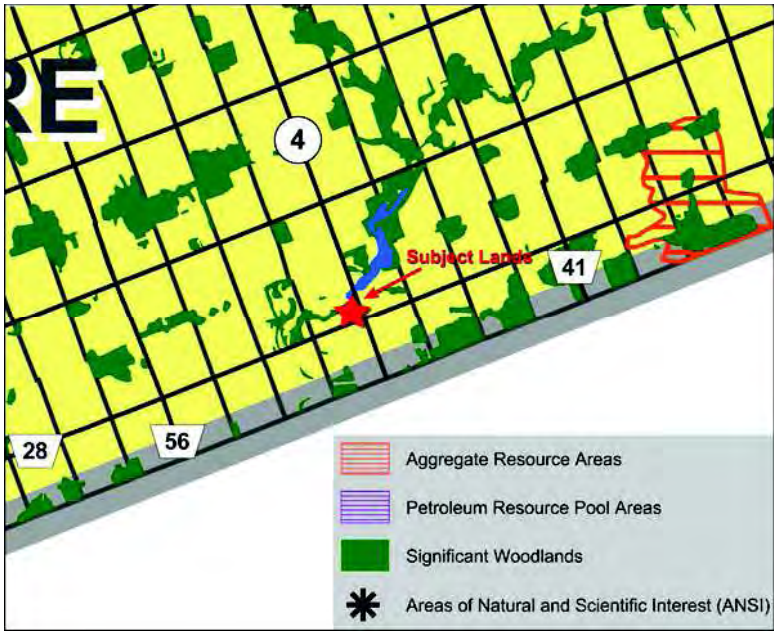
9. Schedule "C", Natural Heritage Features is shown on Figure 4. Applicable policies are found in Section 2.3.10 Natural Heritage Features. Lands abutting the proposed development which have natural environment functions and significance include the Medway Creek and its associated flood plain.

10. The County Official Plan (and the Town's Official Plan) requires a Development Assessment Review (DAR) where proposed development is located within distances from Natural System Elements. The lands proposed to be developed are within 50m of an area regulated by the Upper Thames River Conservation Authority and lands designated Significant Woodland on Schedule C and consequently a DAR is required. The County Plan provides for the option of a DAR being prepared for a Municipality provided the DAR meets County and Conservation Authority requirements.

11. An Issues Scoping Report, focusing on Provincial, County, Municipal, and Upper Thames River Conservation Authority Natural Heritage Policy Considerations has been prepared by BioLogic. The Scoping report provides an overview of existing information and the general scope of a DAR, to be prepared subject to consultation with Middlesex Centre, the County and the Upper Thames River Conservation Authority. Highlights from this report include:

- the identification of the lands to be developed as primarily active agriculture and grazing land;
- the proposed development is setback from Medway Creek and would have no direct impacts on the watercourse;
- the slopes along the north western boundary are gentle and based on work prepared by Trow Associates Inc. (a geotechnical investigation) the existing stable slope line should be removed from this area;

Figure 4. Schedule C Natural Heritage Features, County of Middlesex Official Plan



Further consideration in a DAR (to be determined in consultation with review agencies) includes:

- suitable setbacks from the Medway Creek vegetation;
- naturalization plans to expand and protect the Medway corridor;
- storm water management and outlet treatment; and
- protection of recharge areas.

12. Part of the area is subject to the Conservation Authority Fill, Construction and Alteration to Waterways Regulations and are subject to section 2.3.11, Natural Hazards policies. No buildings or structures, nor the placing or removal of fill of any kind whether originating on the site or elsewhere, nor grading is permitted in an area subject to the Conservation Authorities Fill, Construction and Alteration to Waterways Regulations except for flood or erosion control or maintenance and management of the natural environment, recreational purposes. No development is proposed on hazard land.

13. Schedule "B" Transportation shows the transportation network within the County.

Highway 4 is a Provincial Highway. This leg of Highway 4 functions as a main street through the Centre of the Village. One Municipal street will connect to Highway 4 located opposite to St. John's Drive. This access will require the approval of the Province. No direct private access is proposed to Highway 4.

County Road 28, Medway Road, is designated as an Arterial Road on Schedule B Transportation. Section 2.4.2,Transportation Network, contains provisions regarding the road system in the County. The proposal conforms to Policies 2.4.2.2 e), f) and g) related to safety, convenience, visually appealing pedestrian facilities, limiting access to County Roads, and the requirement of a transportation study. The Design Guidelines illustrate the function of the laneways and the Municipal streetscapes with respect to providing pedestrian and vehicular safety, convenience and visual appeal. No direct private access is proposed to Medway Road (and Richmond Street). The transportation impact study confirms that the development will generate acceptable impacts on the transportation network, including Medway Road and Richmond Street or impacts on surrounding land use.

Policy 2.4.2.3, County Roads Right-of-Way Widths, requires a minimum width of 30 m constructed to an urban standard for the leg of Medway Road serving the subdivision. Six road widening blocks are shown on the proposal to widen Medway Road to 30 m.

14. Sections 2.2.5, Cultural Heritage and Archaeology and 2.4.5 Sanitary Sewers and Water are addressed in above sections and further in the following sections.

15. Section 2.4.5 Sanitary and Water states that although the County does not fund or maintain sanitary sewer or water systems, the County promotes efficient and environmentally responsible development. Section 2.4.5.1c) encourages development on full municipal services, including the installation of new systems in Settlement Areas where technically and financially feasible. The proposed subdivision is planned to proceed on full municipal services.

16. The proposal is in conformity with relevant policies from Section 3.0, Detailed Land Use Policies. The proposal is proceeding by way of Plan of Subdivision in accordance with policy 3.2.2, Development Policies. The proposed uses are permitted in accordance with policy 3.2.5.1 Permitted Uses (under Community Areas). The Draft Plan identifies boundaries and the extent of the elements of the designated natural system (shown on Schedule 'A', Land Use and Schedule C, Natural Heritage System). Consultation with the County, Middlesex Centre and the Conservation Authority will determine the scope of a DAR.

17. The proponents will enter into appropriate agreements as required and abide by reasonable conditions of approval in accordance with Section 4.5, Development Applications.

4.1 Summary

Applicable policies from the County Official Plan are found in Schedule 'A', Land Use, Schedule 'B' Transportation, Schedule 'C' Natural Heritage Systems, Sections and associated subsections 2.3.2 Growth Management Hierarchy, 2.3.5 General Policies,2.3.7 Housing, 2.3.8 Settlement Areas, 2.3.10 Natural Heritage Features, 2.3.11 Natural Hazards, 2.4.2 Transportation Network, 2.2.5 Cultural Heritage and Archaeology, 2.4.5 Sanitary Sewers and Water, 3.0 Detailed Land Use and 4.5 Development Applications.

Arva is a designated Settlement Area (Urban and Community) in the County Plan. The County Plan directs growth to Settlement Areas. Development will proceed on full municipal services, in conformity with the County Plan. The proposal provides a range of

housing by type and size to meet projected population as contained in the County Plan. The County Plan relies on local plans for detailed settlement area planning policies. The municipality has prepared an Official Plan which designates the lands for residential development. Medway Road is proposed to be widened and no direct private driveway access is proposed to this County Road in conformity with the County Plan requirements for road right of way widths and requirements for limiting access to County Roads. Policies in the County Plan require identification and protection of Natural Heritage functions and features and Cultural and Archaeological features. The proposed plan will not impact natural heritage functions and features and artifacts are being conserved. Development is directed to tablelands, away from hazard lands in accordance with County Plan policy. The proponents are proceeding by way of plan of subdivision in accordance with the County Plan and are willing to enter into agreements as required.

The proposed plan of subdivision is in conformity with the Middlesex County Official Plan.

5.0 Municipality of Middlesex Centre Official Plan

The Middlesex Centre Official Plan contains detailed land use policies substantially in conformity with the County Official Plan and consistent with the PPS 2005. The following sections address how the proposal conforms to these policies.

1. Section 1.8, Major Land Use Concept, describes the Town's long term land use concept. Section 1.8 b) states "The structure of Settlement Areas within this Plan establishes a hierarchy of Settlement Areas that includes Urban Settlement Areas; Community Settlement Areas; and Hamlets." Section 1.8 c) states "The majority of growth within the Township will be directed to Urban Settlement Areas as established in this Plan. Such areas will accommodate growth on full municipal servicing, with such growth being permitted where adequate servicing capacities are established. More limited growth will be permitted within Community Settlement Area, subject to issues of servicing availability and other policies of this Plan." Section 1.8 e) states "Development within Urban Settlement Areas, and limited development within Community Settlement Areas and Hamlets, is expected to provide an opportunity for a full range of housing opportunities at varying densities and levels of affordability, in a manner that is compatible with existing neighbourhoods, and the traditional character of the Township's Settlement Areas."

2. Schedule 'A', Land Use Plan refers to a more detailed land use plan of Arva, shown on Schedule A-3. The Medway Creek corridor is designated Floodplain on Schedule 'A'. Figure 5 shows Schedule 'A' and Figure 6 shows Schedule A-3.

Figure 5. Schedule A Land Use Plan, Middlesex Centre Official Plan

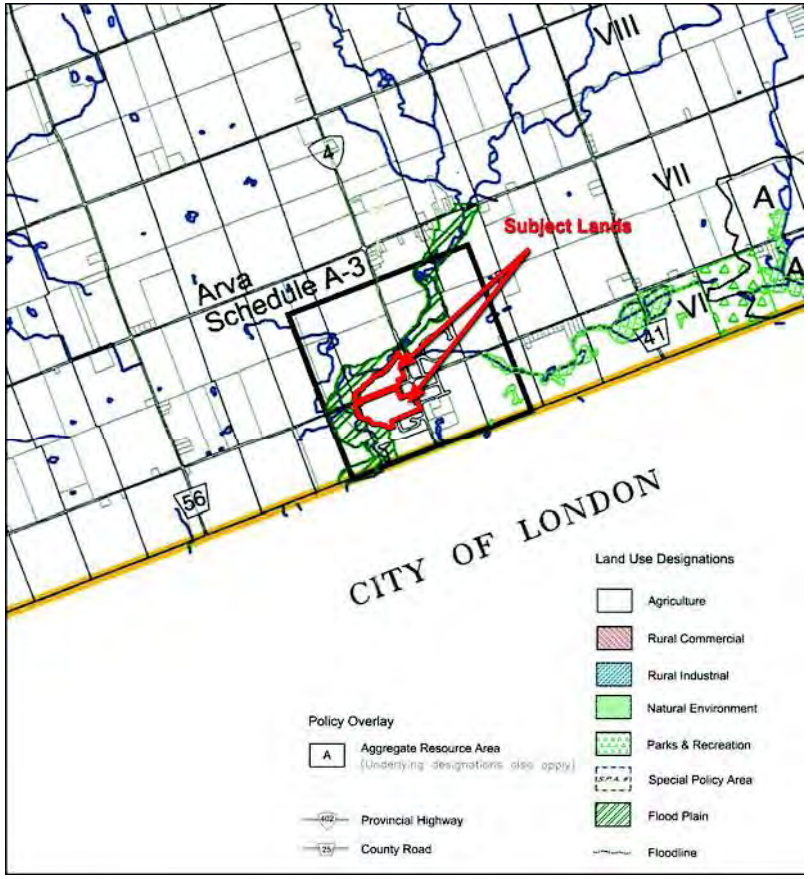
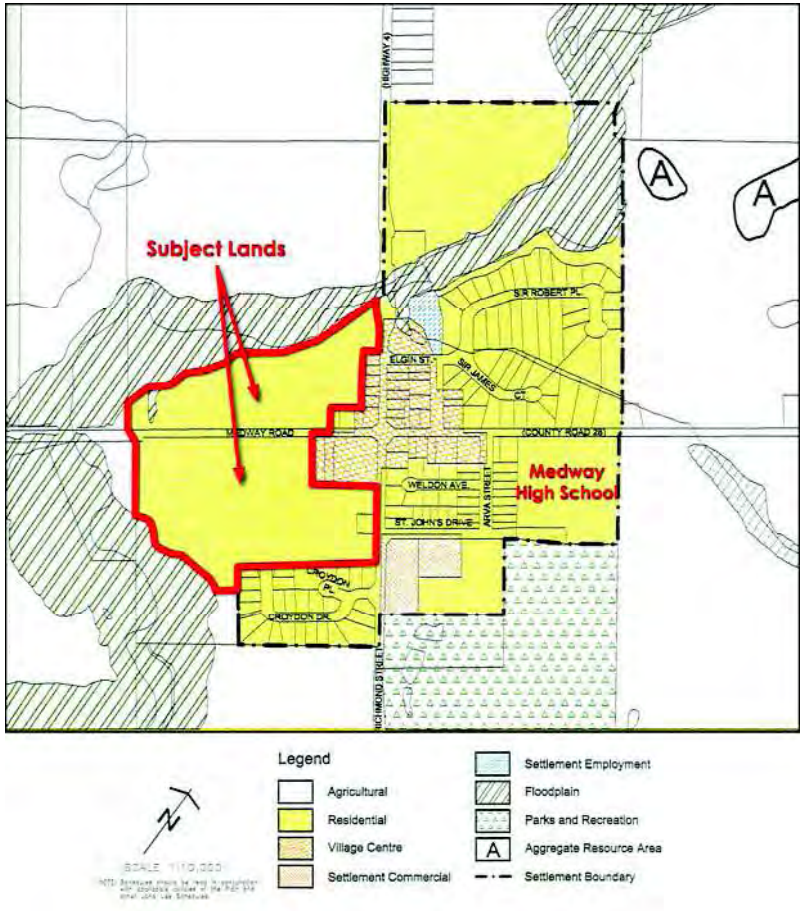


Figure 6. Schedule A-3, Arva Community Area, Middlesex Centre Official Plan



3. The lands are designated Residential and Agriculture on Schedule A-3, Arva Community Settlement Area. Surrounding lands are designated Village Commercial, Settlement Commercial, Residential and Floodplain.

4. Section 5.1, Settlement Area Structure, lists Arva as a Community Settlement Area with an estimated 1998 population of 350. Population and housing projections are also found in Section 5.1. The projected population and dwelling units to the year 2019 are 22,600 Persons and 7403 dwelling units. The completed project will accommodate approximately 500 persons in 188 dwelling units. The proposed development will accommodate projected population and dwelling units found in Section 5.1 of the Municipal Official Plan.

5. In Section 5.1.2, Community Settlement Areas, Arva is designated a Community Settlement Area in conformity with the County Official Plan. New development is intended to take place on full municipal. The development is proposed to proceed on full municipal services.

6. Section 5.1.2 requires consideration of the design policies contained in Section 6.0 and Cultural Heritage policies referred to in Section 9.5 of the Plan.

7. The St. John's Wood Urban Design Guidelines demonstrates how the proposal conforms to the goals and policies of Section 6.0, Township Design Policies. The Design Guidelines establish objectives for the community, details the treatment of streetscapes, identifies priority lots, shows a linked park system, addresses views and vistas, community architecture and outlines a privately administered design control process to assist in implementing the Design Guidelines.

8. The treatment of cultural and heritage features has been addressed in previous sections of this report. Features have been identified and conserved in accordance with section 9.5.2 c). An archaeological assessment is nearing completion in compliance with this policy.

9. The proposed single detached, townhouse, parks and pathways and naturalized storm water management facility are permitted uses in the Residential Areas designation in conformity with Section 5.2.2, Permitted Uses.

10. The townhouse blocks are subject to the policies in Section 5.2.3, Policies For Multiple Dwellings In Residential Areas. The townhouse blocks are clustered around the Village Square at the east end of the proposal. The blocks are in close proximity to the Village Centre and in close proximity to planned parks and open space. The proposed townhouse blocks conform to the location policies in Section 5.2.3.

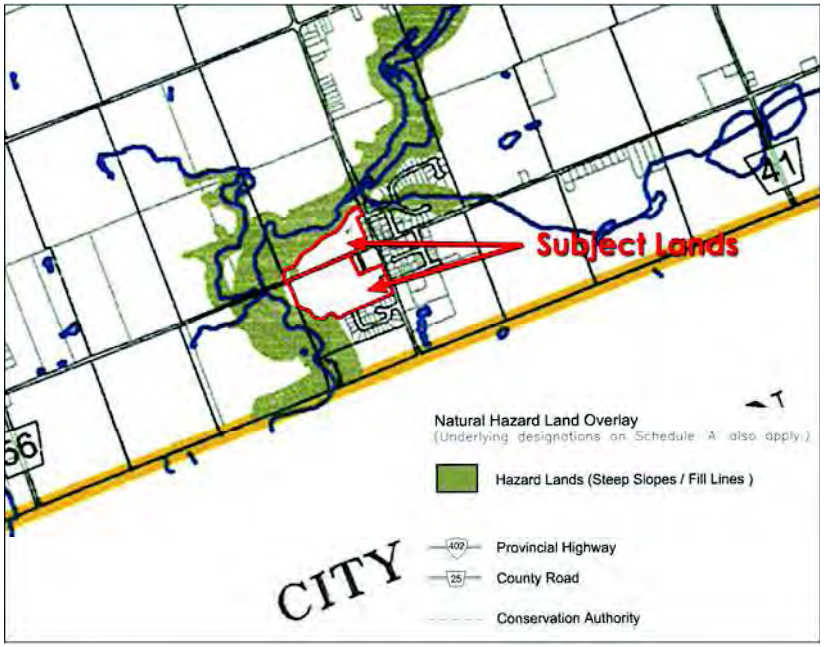
11. Lands abutting the north and west end of the proposal, which are associated with Medway Creek floodplain, are designated Woodlot

on Schedule 'B' Greenlands System, Floodplain on Schedule 'A' Land Use and Schedule A-3 Arva Community Settlement Area and Hazard Lands (Steep Slopes/Fill Lines) on Schedule 'C' Natural Hazard Lands. Schedule 'B' Greenlands System is shown on Figure 6 and Schedule 'C' Natural Hazard Lands is shown on Figure 7.

The proposal is subject to policies in Section 3.0, Natural Area Policies. All the lands proposed for development are designated Residential Area. A small finger shaped section of lands designated Residential Area, located in the northwest part of the proposal is recommended for removal from the Floodplain designation based on geotechnical study prepared by Trow Associates. The draft plan shows a Top of Stable Slope line incorporating the Trow recommendation. No amendment is required to the Official Plan to accommodate this minor change.

Figure 7. Schedule B Greenlands System, Middlesex Centre Official Plan

Figure 8. Schedule C Hazard Lands (Steep Slopes/Fill Lines), Middlesex Centre Official Plan



12. Section 3.2, Township Natural Area and Natural Hazard Policies states that the natural area policies of the Plan relate to an overall Town natural system, including Natural Areas and Natural Hazard Areas. The Medway Creek corridor has Woodlot and Hazard Land designations. The intent of the Official Plan is to direct development away from these areas. The development will not impact the woodlot (0.7 ha) or the hazard lands.

13. The Middlesex Centre Official Plan requires that development on lands adjacent to environmental features are subject to completion of a DAR acceptable to the Town of Middlesex. A DAR will be prepared, subject to consultation with approval agencies to determine the scope of the study.

14. In the preparation of the draft plan consideration was given to Section 9.4.3, Policies Relating to Transportation System. A transportation study has been prepared to assess impacts in accordance with section 9.4.3 a. The study demonstrates no adverse impacts on the existing circulation system and surrounding land uses. All of the development fronts on public roads as shown

on the draft plan in accordance with policies 9.4.3 b and 9.4.3 c. Setbacks were carefully considered having regard for requirements of the Zoning By-law and implementation of the Design Guidelines in accordance with policy 9.4.3 d. Road widening dedications are made to meet County minimum road width requirements in accordance with policy 9.4.3 e. Individual private access to Medway Road and Richmond Street are prohibited to avoid potential traffic hazards and to ensure the continued safe and efficient movement of traffic to satisfy the requirements of policy 9.4.3 f.

15. Section 10.4, Plan of Subdivision Policies was considered in the preparation of the draft plan. In summary: the lands are Designated and Available in accordance with the PPS 2005 definition for Designated and Available. The lands are designated in Official Plans and services are in place or will be made available. Design Guidelines have been prepared in accordance with Municipal Official Plan policy. A mixture of housing types and levels of affordability are incorporated in the draft plan. All lots have access to a public road and will be constructed to municipal standards. Heritage features are preserved and hazard lands avoided; the development will be phased as required; the proponents will enter into agreements as required by the municipality and abide by reasonable conditions; and parkland exceeding the maximum of 5% dedication is planned in consideration of trends favouring walking and bicycling.

16. Section 9.2.2 Home-based Businesses states that it is the policy of the plan to permit home based businesses in dwelling units within or outside of settlement areas. The Middlesex Centre Zoning By-law permits home occupations in the Agricultural (A1), Restricted Agricultural (A2), Urban Residential Second Density (UR1), Urban Residential (UR2), Community Residential First Density (CR1), Community Residential Second Density (CR2), and Hamlet Residential First Density (HR1) zones. Permission for home based use is needed to allow the live-work medium density townhouse block proposal to function as planned.

5.1 Summary

Applicable policies from the Town of Middlesex Official Plan mirror the requirements of the PPS 2005 and the Middlesex County Official Plan. These policies are found in Schedule 'A' Land use Plan, Schedule 'A-3' Arva Community Area, Schedule 'B' Greenlands System, Schedule 'C' Hazard Lands, sections and associated subsections 1.8 Major Land Use Consent, 3.2 Township Natural Area and Hazard policies, 5.1, Settlement Area Structure, 5.2.2 Permitted Uses, 5.2.3, Policies for Multiple Dwellings in Residential Areas, 6.0 Design Policies, 9.2.2 Home-based business, 9.4.3 Policies Relating to Transportation System, 9.5 Cultural Heritage, and 10.4 Plan of Subdivision Policies.

Arva is a designated Community Settlement Area in the Town of Middlesex Centre Official Plan. The Plan directs growth to Settlement Areas. The proposed uses are in conformity with uses permitted in the Official Plan. Development will proceed on full municipal services, in conformity with the Official Plan. The proposal provides a range of housing by type and size to accommodate projected population as contained in the Town Official Plan and the County Plan and required by the PPS 2005. Design guidelines have been prepared in conformity with the policies in the Municipal Official Plan. Natural heritage functions and features and cultural artifacts have been identified and protected. The proposed plan will not impact natural heritage functions and features and artifacts are being conserved. Development is directed to tablelands, away from hazard lands in conformity with Town Plan policy. The proponents are proceeding by way of plan of subdivision in accordance with the Plan of Subdivision policies and are willing to enter into agreements as required.

The proposed plan of subdivision is in conformity with the Town of Middlesex Official Plan.

6.0 Proposed Amendments to the Zoning By-law

1. The zoning on the lands (and the surrounding lands) is shown on Figure 9. The lands are zoned Existing Use (EU). The EU Zone permits any use existing on the date of the passing of the By-law. Lands to the north, west and southwest are zoned Open Space (OS) and (OS-4).

2. The OS Zone permits agricultural use excluding buildings and structures, conservation use, forestry use nursery and public or private park. The OS-4 is a special provision zone that permits uses permitted in the OS zone and a golf course, excluding a golf driving range. The approximate extent of hazard lands are delineated by shading and also illustrated on Figure 8.

3. Lands to the south of the site are zoned Urban Residential First Density (UR1). The UR1 zone applies to a fully developed 27 lot single family subdivision on full municipal services. Lands to the

east are zoned Village Commercial (C1) and (C1-3) zones, Urban Residential First Density (UR1) zone, Institutional (I) zone, Urban Residential Third Density UR3.

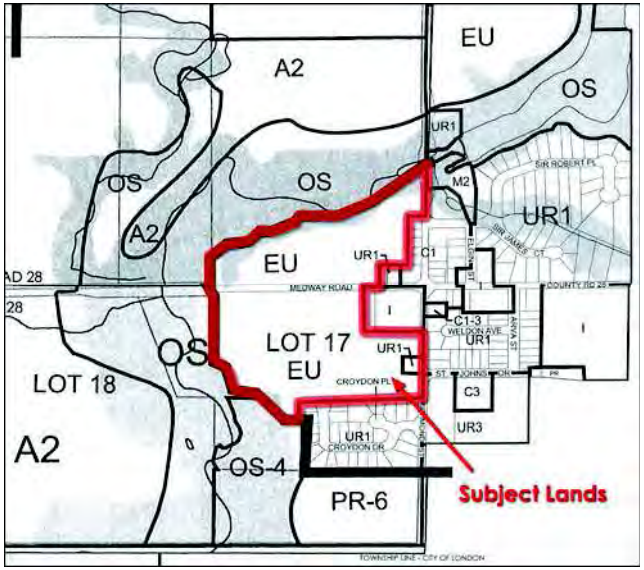
4. The following exceptions for defined areas are required to implement the proposal.

Exceptions to Defined Area Urban Residential First Density (UR1) zone

Minimum front yard	4.5m (14.76 ft.)
Minimum interior side yard	1.2m (4 ft.)
Minimum exterior yard	4.5m (14.76 ft.)
Minimum front and exterior side yard for garages	6.0m (19.7 ft.)

For single detached dwelling unit lots abutting lanes, detached accessory garages having coverage of not more than 6% of the lot area may be erected in the rear yard, no nearer the rear lot line than 0.5m (1.6 ft).

Figure 9. Existing Zoning



No garage shall be closer to an intersection than the habitable area of a dwelling unit

The front wall of an attached garage may not have a setback less than that of the front façade of the ground floor main building.

Structures listed in Section 4.32(a)(vi) including stoops, sun decks, balconies, open roofed porches and verandas, balconies on top of porches or verandas, uncovered terraces and exterior steps providing access between finished grade and either the basement or the first storey of a building, where such structures project not more than 2.0m (6.0 ft.) into any required front yard, exterior side yard, or rear yard, and which do not project into any required sight visibility triangle.

Individual private driveway access to Medway Road (County Road 28) and Richmond Street (Provincial Highway 4) is prohibited.

Exceptions for Defined Area Urban Residential Third Density (UR3) Zone

Medium density townhouse units are proposed on 4 blocks including one live-work block. Requested amendments follow.

Medium density live-work units are proposed on Block 123. To implement the proposal, a provision is required to allow Home-based business uses in the UR3 zone, with greater floor areas, a range of office and commercial uses at grade and residential living space on the upper floors. Access to the home occupation uses would be at grade and separated from access to the residential uses. The businesses must be operated by one or more people who live in the unit.

Requested exceptions to the home occupation provisions of the By-law (applicable to Bock 123 only) are to permit home occupation in street townhousing, restricting dwelling units to the second floor and above, with home occupation uses restricted to the ground floor to a maximum of 106m^2 (1140 ft.^{2}).

Requested amendments common to all the street townhouse blocks include:

Minimum lot area	240.0m^2 (2583.42 ft.^{2})
Minimum lot depth	30.0 m (98.43 ft.)
Maximum front yard	4.5m (14.76 ft.)
Minimum side yard	0.6m (2 ft.) for an end unit
Minimum exterior yard or corner lot	4.5 m (14.76 ft.)
Maximum density	36 units per hectare (14.4 units per acre)
Maximum lot coverage	55%

Access shall be separated between dwelling units and other uses.

No side yard shall be required between the common wall dividing individual units.

Structures listed in Section 4.32(a)(vi) including stoops, sun decks, balconies, open roofed porches and verandas, balconies on top of porches or verandas, uncovered terraces and exterior steps providing access between finished grade and either the basement or the first storey of a building, where such structures project not more than 2.0m (6.0 ft.) into any required front yard, exterior side yard, or rear yard, and which do not project into any required sight visibility triangle.

All parking and garages attached or detached shall be located in rear yards and accessed only by rear lanes.

Garages

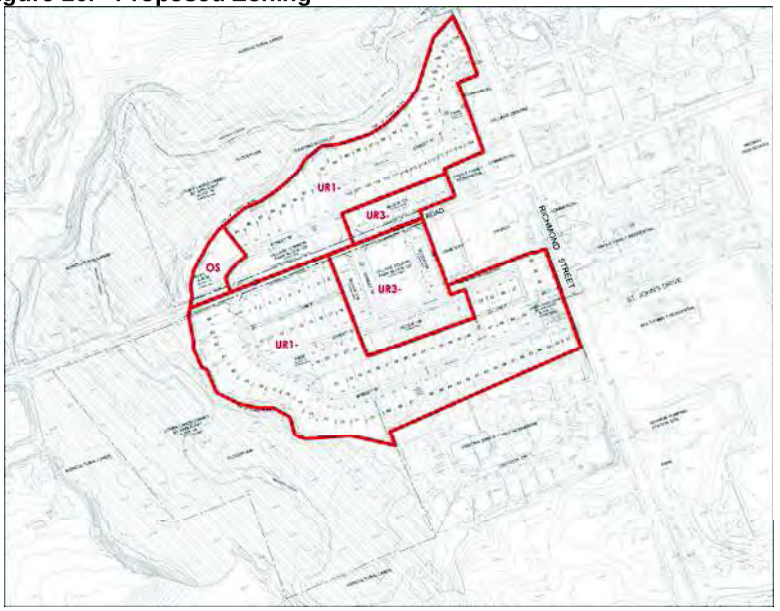
Minimum exterior yard	4.5m
Maximum coverage	15%

A garage may be erected on an interior lot line if abutting or attached to a garage on the adjoining lot no nearer the rear lot line than 0.5m (1.5 ft).

Storm Water Management Facility

Amend the Existing Use (EU) Zone to Open Space (OS) Zone

Figure 10. Proposed Zoning



7.0 Conclusion

The proposed development is consistent with the PPS 2005, the policies of the Official Plans for the County of Middlesex and in conformity with the goals, objectives and policies of the Middlesex Centre Official Plan.

St. John Woods brings forward new use and new development standards for the Municipality and requires amendments to the Zoning By-law to allow and regulate the proposed development. The proposed zoning is in conformity with Official Plan policies and is consistent with the PPS 2005. The proposed zoning together with the Design Guidelines ensures a high standard of design.

Gorrie, Cameron

From: Gorrie, Cameron
Sent: Wednesday, September 30, 2009 9:38 AM
To: 'davejohnsonjto@gtn.on.ca'
Subject: minutes or handouts from Sept. 29th meeting Komoka
Attachments: PIC2 MSP Sept 29 2009.pdf

Dave,

Please find attached the digital version of the presentation from last night as requested.

Cam

From: Maureen Looby [mailto:loobym@middlesexcentre.on.ca]
Sent: Wednesday, September 30, 2009 8:39 AM
To: D&J Johnson
Cc: Tyrrell, John; Gorrie, Cameron
Subject: RE: minutes or handouts from Sept. 29th meeting Komoka

Dave –

By copy of this e-mail to Stantec they will provide you with last night's presentation.

The Environmental Assessment for the Komoka – Delaware wastewater and water projects is being completed and there were similar public consultation meetings held which you may have attended at which attendees were updated.

The timing of moving forward to a water supply change for Delaware and the addition of a communal wastewater treatment system for Delaware is a Council decision. At the time of the completion of the EA projects overall costs review are expected to be reviewed. No assessment has yet been undertaken regarding the individual taxpayer.

Maureen A. Looby, M.Eng., P.Eng.
Director, Public Works and Engineering
Municipality of Middlesex Centre
phone : 519-666-0190 ext.233
fax : 519-666-0271

From: D&J Johnson [mailto:davejohnsonjto@gtn.on.ca]
Sent: September 29, 2009 7:52 PM
To: Maureen Looby
Subject: minutes or handouts from Sept. 29th meeting Komoka

Could you please forward me a copy of the report for the master plan and minutes from meeting .

Specifically I would like to know implications for village of Delaware as far as servicing of water and sewer .

What stage is sewer and water proposal in and what will be costs to individual taxpayer.

Thank you

Dave Johnson
PO Box 281

Delaware, Ont
N0L1E0

fax 519-652-5774

Gorrie, Cameron

From: Graeme Lowry [powerhouse.energy@sympatico.ca]
Sent: Sunday, October 25, 2009 5:20 PM
To: Gorrie, Cameron
Subject: MCMSP
Attachments: Stantec Letter October 2009.pdf; Planning Report April 23, 2008 Email Version.pdf; Summary of Sewage Treatment Agreements.doc; TMC Letter, April 6, 2009.pdf; TMC Letter, July 16, 2008.pdf

Good Morning Cameron,

As instructed, I attach my comments on the status and future of the Middlesex Centre Master Servicing Plan and Phases 1 and 2 of the Municipal Servicing Class Environmental Process.

Thank you in advance for bringing our comments forward, and we welcome any questions you may have.

Graeme Lowry
President: North Shore Power Group Inc., Powerhouse Energy Inc.
90 Sir James Court, Box 213
Arva, Ontario N0M 1C0

☎ Tel: 226-374-5040
Fax: 519-679-5816
Email: powerhouse.energy@sympatico.ca

St. John Woods Development Ltd.
90 Sir James Court
Box 213
Arva, Ontario, Canada
N0M 1C0

Tel.: (226) 374-5040
Fax: (519) 679-5816
Email: powerhouse.energy@sympatico,ca

October 25, 2009

Stantec
171 Queens Avenue
8th Floor
London, Ontario
N6A 5J7

Attention: Mr. Cameron Gorrie, E.I.T.

Dear Mr. Gorrie:

We write to provide our comments arising from the information disclosed at Public Information Centre 2 on September 29th, 2009.

Please accept our thanks for the Public Information Centre as we have wanted to meet with you for some time. Your sensible approach to all of the issues, and the clarity and transparency with which the issues were presented, are all very helpful.

Our Interest

Our land is the western part of the Arva Settlement Area, both north and south of Medway Road. The development of these lands will be completed by our company St. John Woods Development Limited. The subject land is approximately 100 acres, of which 60 is above the flood plain and divisible into housing lots. We have spent a considerable sum assembling an application for subdivision approval on these lands, which information has been submitted to the Township and the County.

As you are aware from discussions with me and with the Master Servicing Plan Steering Committee, our Application for Draft Plan Approval of a subdivision in Arva is currently being held in abeyance further to Council's Resolution of April 1, 2009, which stated that our Application is premature until adequate sanitary sewer servicing capacity is available to service the proposed subdivision. (Attachment: Letter of April 6, 2009)

Our company and Middlesex Centre are well aware of this issue and the possible options for addressing it, as far back in time as the mid-1990's. (Attachment: Letter of July 16, 2008)

The Master Servicing Plan

We were informed that this issue would be addressed by way of a Long Term Master Servicing Plan for the entire Municipality, which thrust our issue in the Village of Arva into a much larger

scope. We were assured that our local issue would be specifically addressed, and we were provided with the Terms of Reference under which an outside consultant would be hired.

Section 3.5 states that the Middlesex Centre Master Servicing Plan ("MCMSP") will contain the preferred alternative for every servicing component for every community, for the present and the future.

Section 4.0 states that Stantec's Responsibility is to complete an evaluation of these alternatives and select the preferred alternative, and that the final MCMSP will identify the servicing strategies for each component for each community area.

In your presentation of September 29th, 2009, you state:

> Arva Wastewater System
> - Municipal collection system within existing boundaries sends flows to London up to a maximum of 175 c.m. per day based on current agreement
> - Current flows have approached 140 c.m./day
> - Undeveloped lands within Arva's growth boundary, if developed, would probably exceed the agreed flow rate of 175 c.m. per day.
> - Preliminary options for servicing undeveloped lands:
>   - Do Nothing: restrict growth
>   - Increase maximum amount of sewage City accepts through an amended agreement
>   - Municipal WWTF(initial phase probably to be in the order of 250-500 c.m. per day for economy of scale)

With wish to comment on the existing Agreement, and on the Options you are reviewing.

<u>The Existing Sewage Treatment Agreement</u>

History of the Servicing Issue

In the 1990's, the then-hamlet of Arva had insufficient servicing. Issues of watershed pollution arose in connection with the Thames Valley District School Board (Medway High), and two new subdivisions, Croydon and St. John's Estates.

The issue was studied by Dillon Engineering. Dillon planned to provide sufficient servicing for all of the probable development within the Settlement Area. This planning included the servicing sufficient for 490 residents on the St. John Woods land, which happens to be the population density of the plans submitted by us this year.

This first Agreement of April 3rd, 2000, limited the total volume of sewage permissible at the Arva Pumping Station in Weldon Park to 175 cubic meters per day, on a two-month rolling average, in Article 24. The Arva Sewage Service Area Map as attached to the Agreement clearly shows the St. John Woods Development lands within the agreed service boundary.

Article 25 expressly provides for expansion of this allowance by mutual consent, as such was plainly contemplated at that time.

Subsequent Agreements limited the Residential and Commercial pace at which this allocation could be connected. (Attachment: Summary of Sewage Treatment Agreements). Interestingly, the Amendments provide no allocation for institutional uses such as schools.

Difference between Capacity and Restrictions

There is no mechanical constraint that would prevent the Arva sewer from handling the output generated by the St. John Woods development. This issue is addressed by Eng Plus in our submission.

The real issues are those of volume and pace restrictions under the Agreements.

The Options Presented by Stantec

Do Nothing: Restrict Growth

We do not believe this to be a logical option, for the following reasons:

1. The St. John Woods Development lands have been designated Residential in the Official Plans for as long as we have knowledge, and have been within the historical settlement area of Arva for more than 100 years. It is not logical for the Municipality to designate lands as Residential and then fail to take the steps necessary to facilitate the Use designated by them.
2. The existing Arva Sewage Treatment Agreement was intended to service our lands, but clearly the original capacity was insufficient even to fulfill the agreed-upon intent of the original agreement. It would be inconsistent to pursue an Agreement to service our lands in 2000 and then elect not to do so in 2009.
3. We have been paying for the Arva Sewer Debenture as part of our tax remittances for 9 years. It would seem inconsistent to charge us for a utility to which we are being denied access.
4. The existing capacity has been partly consumed by Medway High School, which is a multi-municipality institutional use, and where enrolment has doubled in the last 60 days. Many of these students are from London. It would seem unwise to "do nothing" when we are not certain if the existing allocation is sufficient for the existing commitments in Arva. The High School expansion was recommended by IBI on the basis that nothing more be approved "until such time that the current approved developments are fully built out and flows can be monitored." The High School expansion would have been an ideal cause to have pursued an Amended Agreement with London. In any event, given the current circumstances, we recommend to the Steering Committee that the Master Servicing Plan review the current daily flows at the Arva Pumping Station and estimate the contingent additional flows if all buildings with the right to connect were to do so.

Increase Maximum Amount of Sewage City accepts through an Amended Agreement

For all of the reasons enumerated, we think something ought to be done about the level of available wastewater treatment in the Village of Arva. It is inadequate to meet the growth in our Official Plan.

We recognize that there is a political dimension to this issue, but there are many reasons why an Amendment makes sense:

1. Connecting to an existing wastewater treatment network has the least incremental environmental impact of any conceivable alternative.
2. The original agreement was intended to service the lands, but wastewater treatment demand in Arva has grown much faster than originally anticipated.
3. An Amendment will not lead to unbridled growth nor to Urban Sprawl. There are only two undeveloped parcels of land remaining within the Arva settlement area: St. John Woods Development's land and some land to the north of Medway Creek. The sewer does not reach the land to the north of Medway Creek, so this other land cannot be serviced without further infrastructure including a sewer bridge.
4. The Municipalities are neighbours. By legislative intent (St. John Woods Planning Justification Report, April 2008 [Attached]), the municipalities should be cooperative in resolving this issue by Amendment.
5. The sewer trunk is already laid within our land for the servicing of all of the St. John Woods land.
6. The landowners have been paying the Arva Sewer Debenture since 2000, which was created to defray the capital costs of the sewer, including the payment to London of $130,000 which was the sum paid by Middlesex Centre in 2000 to reserve this capacity for the Township. It would appear that we have paid to reserve capacity which has been allocated elsewhere in the Village, which leads us to conclude that an Amendment would be the equitable solution.
7. The St. John Woods land is the last currently developable land within the settlement area. Unless and until this land is developed, there is little or no chance that any authority will allow an expansion of the village boundaries. Thus all other development is stymied.
8. An Amendment will earn money for both municipalities and the tax revenue from the resulting development will be considerable.
9. The Municipalities can use the opportunity of an Amendment to correct the Agreement to provide for institutional connections such as schools, which service both Municipalities.
10. The Amendment presents the opportunity to complete an Agreement which fulfills the original purpose, which was to service the entire Village of Arva, fully developed as officially planned, which was the exact intent of the Agreement in the year 2000.

Municipal WWTF
(Initial phase probably to be in the order of 250-500 c.m. per day for economy of scale)

We wish to recommend to the Steering Committee that this option be preserved in tandem with the pursuit of an Amendment. This is Middlesex Centre's only way of preserving their right to plan the future of our municipality.

At an average wastewater generation per day per dwelling of 1 cubic meter, as estimated by Stantec, the St. John Woods development could produce 180 c.m. per day. Combined with the other undeveloped land north of Medway Creek, the undeveloped lands within the Settlement Area may produce enough volume to meet the lower end of the economy of scale which is recommended by Stantec.

Furthermore, if the City refuses to implement an Amendment to the existing Agreement, then they may force Middlesex Centre and our company to pursue this option. The interesting question arises as to whether the existing sewer connection to London would eventually have any customers left.

We believe a municipal WWTF may be entirely feasible and should be preserved as a second option if London is not cooperative in concluding an adequate Amendment, for the following reasons:

1. Kilworth has just installed a Membrane Bioreactor, which meets all the Guiding and Servicing Principles presented by Stantec at the Public Information Center 2. This technology may be ideal for Arva, and three councillors suggested this to us at the PIC 2.
2. Arva may have enough volume coming on-stream to justify the investment.
3. It preserves the right of Middlesex Centre to plan its own future, by giving it an option that is not dependent upon London. The City of London has stated to us in writing that an Amendment to the existing Agreement is a planning issue for the City. The City appears to be operating in a silo. Planning in the Township by the City would not seem particularly useful without the Township involved.
4. This option conforms to all of the Guiding and Servicing Principles.
5. A WWTF for Arva could be planned in conjunction with all other services for our development as part of an integrated sustainable systems plan for Green Communities within Middlesex Centre including geothermal heat, grey water separation, measures for domestic water economy of use and waste, and energy preservation and generation systems from insulation technology to photovoltaic cells. It could be demonstrated that a new Membrane Bioreactor for Arva is more environmentally responsible than delivering additional wastewater to London's system which includes some relatively antique facilities and technologies. With a Sustainability Plan that integrates all utility and service systems in an environmentally advanced package, the Township is showing vision and leadership and will find solutions applicable and repeatable throughout its jurisdiction.
6. A WWTF for Arva will allow the Municipality to preserve and respect our rural values of treading lightly on the environment by the design and technology choices it makes.

Conclusion

The Master Servicing Plan also comprises Phases 1 and 2 of the Municipal Servicing Class Environmental Assessment Process.

Accordingly, and we imagine predictably, we recommend to the Steering Committee that if the Master Servicing Plan concludes that an Amendment to the existing Wastewater Treatment Agreement between Middlesex Centre and the City of London is the optimal alternative, then the Master Servicing Plan should contain the information needed by Middlesex Centre to present a persuasive case to the City for this Amendment.

We recommend also that the option of a municipal WWTF for Arva be preserved as a secondary option for the reasons presented.

Please accept our appreciation for providing us with an opportunity and venue to present our comments.

Yours truly,

Graeme Lowry
President, St. John Woods Development Limited

Master Servicing Plan
Class Environmental Assessment

Public Information Meeting #2
Tuesday September 29, 2009

Middlesex Centre

COMMENT SHEET

Name:	Rick Dykstra
Mailing Address:	rick@agm.on.ca
Interest (*i.e.* property owner, agency):	Consultant - AGM
Comments:	
	can we get digital version of presentation so that we can see details of plans

Please place comments in the comment box provided or submit comments to the following:

Cameron Gorrie, E.I.T.
Environmental Engineer-in-Training
Stantec Consulting Ltd.
800-171 Queens Ave.
London, ON N6A 5J7
Fax: 519-645-6575
Email: cameron.gorrie@stantec.com

Appendix 2.6:
PIC 3





Middlesex Centre
Master Servicing Plan

Phases 1 and 2 of the Municipal Servicing Class Environmental Assessment Process

Public Information Centre 3

February 16, 2010

One Team. Infinite Solutions

Stantec

Presentation Outline

- Introduction
- Problem Identification
- Servicing Principles
- Servicing Review
  - Wastewater
  - Water
  - Storm Water
  - Transportation
  - Solid Waste
- Next Steps

Stantec

Introduction

- The Master Servicing Plan (MSP) for Middlesex Centre is a strategic document to assist in the overall planning for a period of 20 years
- The MSP will address municipal water, wastewater, stormwater, solid waste and transportation
- The MSP will provide guidance to Council and Staff and is a policy document from which implementation tools will be subsequently developed
- The MSP may identify certain strategic municipal and community level projects

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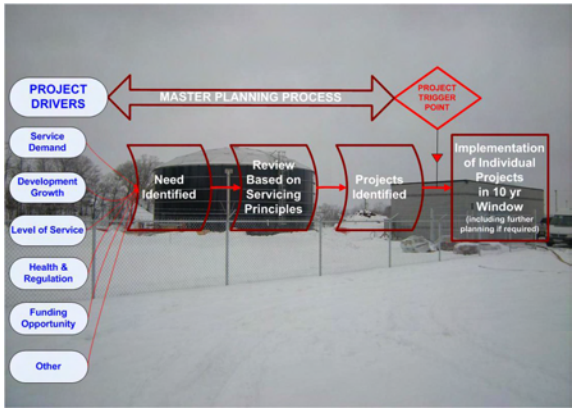

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Problem Identification

"The Municipality of Middlesex Centre is a 588km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, stormwater management, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required."

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Guiding / Servicing Principles

In order to review the issues and opportunities in the Municipality with regards to servicing over the 20-year planning period, the following principles to guide future development were established:

1. The MSP should be informed by the Municipality's Strategic Plan.
2. Servicing solutions should suit the Municipality's Growth Plan - If Middlesex Centre wishes growth in an area, the MSP would not and should not 'veto' it. However, areas that are not readily provided with municipal services would be costly (capital costs and operational costs).
3. Preference should be for long term servicing solutions over interim solutions.
4. All services to be fully funded through adequate planning, budgeting and identified revenue streams.
5. Servicing solutions should be developed which minimize risk to the municipality, users and others.

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Guiding / Servicing Principles

In order to review the issues and opportunities in the Municipality with regards to servicing over the 20-year planning period, the following principles to guide future development were established:

6. Proven, cost effective technologies that should be in long term use and are capable of continuous improvement should be utilized.
7. Middlesex Centre should service Middlesex Centre users, where possible.
8. Recommended servicing solutions should be 20-year solutions and ensure that there is expandability to 40-years, if possible (or to the life expectancy of the infrastructure).
9. Service Extension through Integration - Future growth and servicing should use existing infrastructure as much as possible to promote cost effectiveness.

Stantec

Guiding / Servicing Principles

- INTRODUCTION
- PROBLEM IDENTIFICATION
- **GUIDING / SERVICING PRINCIPLES**
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

In order to review the issues and opportunities in the Municipality with regards to servicing over the 20-year planning period, the following principles to guide future development were established:

10. Network Servicing versus Linear Servicing.
11. Servicing Higher Areas is preferable to Servicing Lower Areas.
12. Minimize Crossings of natural areas, major utility corridors and other physical barriers.
13. Minimize Complexity (Pumping from one PS to another, servicing large Occasional or Seasonal Users, etc.).

Stantec

20-Year Demand Growth & Service Review

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- **SERVICE REVIEW**
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- In general, collection of wastewater flows can be accomplished most economically by the use of relatively shallow gravity sewers
- To better evaluate planning strategies, two concentric rings have been superimposed over each community
  - Note: these rings do not inhibit or directly promote growth in a certain area
- Constraints (shaded grey) include natural areas, utility corridors, minimum distance separations from large agricultural operations

Stantec

Wastewater Collection & Treatment
Arva

Stantec

Wastewater Collection & Treatment
Arva

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
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  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Three sanitary servicing options to be considered by Middlesex Centre for Arva:
  - **Do nothing:**
    - Will not be carried forward as lack of sanitary capacity would not be solved
    - However, if a new municipal WWTF is proposed, the do nothing could be brought back
  - **Amend City of London agreement; or**
    - Approach City of London to ask for an increase in sanitary capacity
      - Potential engineering issues may arise
  - **Construct a new municipal wastewater treatment facility for Arva**
    - Operational efficiency (m^3/d)
    - Economics
    - Expandability
    - Location (buffer area)
    - Technology

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Wastewater Collection & Treatment
Arva

- INTRODUCTION
- PROBLEM IDENTIFICATION
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- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- The *preferred sanitary servicing solution* for Arva appears to be amending the Sanitary Agreement with the City of London
  - The Municipality would be responsible for negotiating the terms of an amended agreement
- If a revised agreement cannot be achieved, then the Municipality should evaluate the option of building a new municipal wastewater treatment facility for Arva
  - This would prompt a Class EA to be completed
  - This process would be *municipally* led, *proponent* funded

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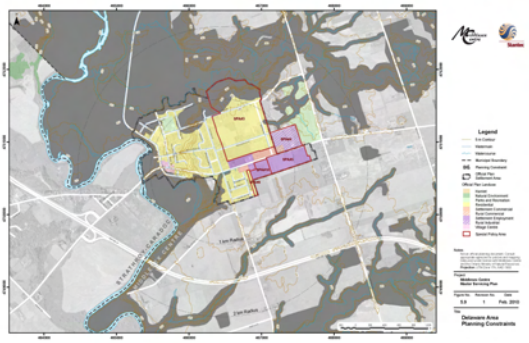
Wastewater Collection & Treatment
Delaware



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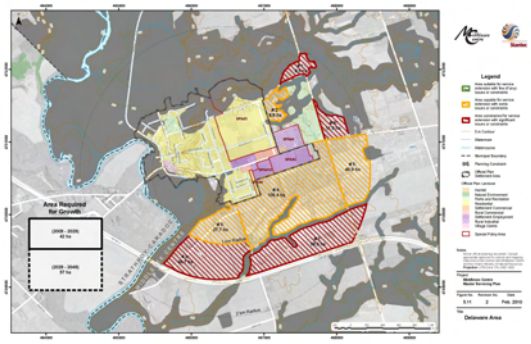
Wastewater Collection & Treatment
Delaware



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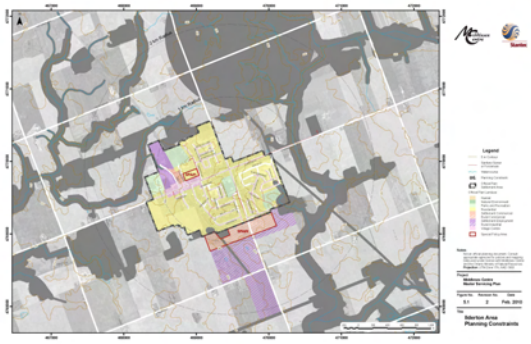
Wastewater Collection & Treatment
Delaware

- Delaware
  - *Komoka-Delaware Municipal Servicing Class EA* provides long term plan for sanitary servicing of Delaware when trigger point is reached
  - Wastewater servicing plan:
    - Collection system for existing development
    - Trunk sewers for future development
    - Sanitary pumping station
    - Sanitary forcemain to Komoka WWTF

Stantec

Wastewater Collection & Treatment
Ilderton



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Wastewater Collection & Treatment
Ilderton

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Wastewater Collection & Treatment
Ilderton

- The Ilderton Water and Wastewater Servicing Class EA is currently underway to allow for future development to proceed based on the provision of wastewater treatment capacity
  - Committed capacity approaching the rated plant capacity (1,120m^3/day)
- Gravity sewage collection is problematic (7 pumping stations)
  - Recommended that if an additional pumping station is necessary, that an existing pumping station should be eliminated
  - Additional pumping stations add complexity to the system in both operations and cost

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Wastewater Collection & Treatment
Kilworth-Komoka

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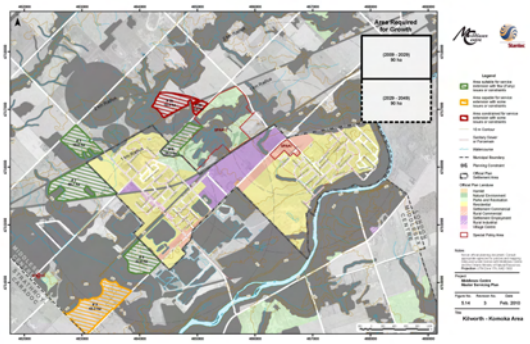
Wastewater Collection & Treatment
Kilworth-Komoka



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Wastewater Collection & Treatment
Kilworth-Komoka

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - **Kilworth-Komoka**
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Komoka-Delaware Municipal Servicing Class EA identified the need to expand the Komoka WWTF to the 20-year horizon
  - Treatment capacity is necessary to service future development and to accommodate future flows from Kilworth and Delaware, if a communal municipal system is eventually constructed
  - Komoka WWTF to service Komoka, Kilworth (areas not serviced by Kilworth WWTF) and Delaware (future)

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Wastewater Collection & Treatment
Kilworth-Komoka

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - **Kilworth-Komoka**
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Appears that sanitary sewer deficiencies exist along Komoka Road (north and south of PS) that would inhibit future flow from outside the existing sewershed area
- Once Komoka sewage flows reach approximately 800 m^3/d, upgrades to capacity necessary at the Komoka PS

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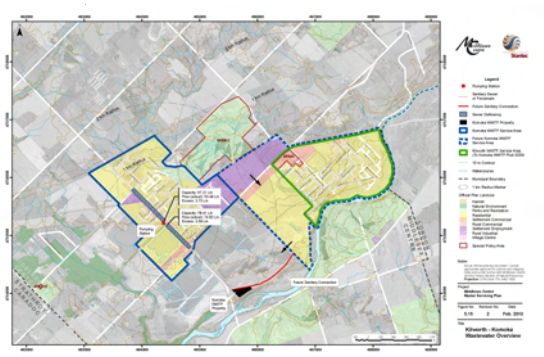
Wastewater Collection & Treatment
Kilworth-Komoka



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Wastewater Collection & Treatment
Kilworth-Komoka

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - **Kilworth-Komoka**
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Previously identified that areas within the growth boundary west of the Kilworth WWTF service area are to be serviced by the Komoka WWTF
- The following is a proposed terms of reference for the municipally led, proponent funded, Kilworth West Sanitary Trunk Connection to Komoka WWTF:
  - Must be in accordance with the MEA Class EA and Class EA for Provincial Parks and Conservation Reserves
  - Should ensure that any conditions or policies outlined within either the MEA or MNR EA, that the most stringent apply
  - One sanitary pumping station should be used for the sanitary collection system
  - Conveyance as well as all wet well and structures should be sized for ultimate flow conditions

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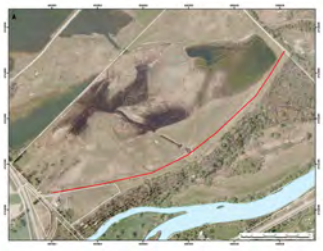
Wastewater Collection & Treatment
Kilworth-Komoka

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - **Kilworth-Komoka**
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Width of easement through Provincial Park will likely restrict depth of sewer or forcemain installed by open cut
- Location of the termination of the easement at the Komoka WWTF does not permit a deep excavation



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Wastewater Collection & Treatment
Biosolids & Septage Handling

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - **Biosolids**
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- All of the WWTFs within the Municipality feature aerobic digestion, liquid biosolids storage, and land application
- Similar practices are expected for the foreseeable future given relatively low cost and large land area
- Planned expansion at Komoka WWTF will include additional storage volume
- Middlesex Centre has been exempted from undertaking a mandatory Bisolids Management Master Plan
- Septage handling is not recommended given the population serviced


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Wastewater Collection & Treatment
Other Areas

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- **WASTEWATER TREATMENT & COLLECTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - **Other Areas**
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- No major findings

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Water Supply & Distribution

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- **WATER SUPPLY & DISTRIBUTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- For Growth Communities, these components are provided by LHPWSS directly or indirectly:
  - Water Source
  - Treatment and Transmission
  - Security/Reliability
  - Maintain service with LHPWSS
- For Growth Communities, these components are provided by the Municipality:
  - Storage and Pumping
  - Distribution
  - Future servicing connections
  - Strengthen distribution system through growth

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Water Supply & Distribution - General

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- **WATER SUPPLY & DISTRIBUTION**
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Komoka – Mt. Brydges Water Transmission Main by LHPWSS
  - To be completed in 2010
  - Single secure source for:
    - Kilworth
    - Komoka
    - Delaware (future)
    - Melrose (future)
    - Extra capacity for further connection(s)
- Non-Municipal Areas
  - No issues identified
  - Increase service where appropriate and feasible

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Water Supply & Distribution

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- **WATER SUPPLY & DISTRIBUTION**
  - **Arva**
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Arva Water System
  - Water is provided via a connection to the City of London's water supply from agreement dating back to 1971 (periodically updated)
  - Service is limited to the community's growth boundary
  - No water storage facility
    - Close proximity to Arva Reservoir (< 2 km)
  - No current water supply issues, however, future agreement changes may require review of water servicing

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Water Supply & Distribution

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- **WATER SUPPLY & DISTRIBUTION**
  - Arva
  - **Delaware**
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Delaware Water System
  - Water provided via a connection to the City of London's water supply from agreement dating to 1982
  - *Komoka-Delaware Municipal Servicing Implementation Study Class EA* identified connection to the Kilworth-Komoka System as the long term strategy
    - Secure source via indirect connection to LHPWSS
  - Class EA also identified need for additional water storage in Delaware
  - No problems foreseen in servicing projected growth areas

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Water Supply & Distribution

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- **WATER SUPPLY & DISTRIBUTION**
  - Arva
  - Delaware
  - **Ilderton**
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Ilderton Water System
  - Water provided via a connection to the LHPWSS Transmission Main
  - Water supplied via a booster pumping station with a 455 m^3 reservoir
  - Community is presently deficient in storage and will require 2,363 m^3 by 2028
    - Class EA to commence to address storage deficiency
  - Through growth, strengthen distribution network with further looping.

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Water Supply & Distribution

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- **WATER SUPPLY & DISTRIBUTION**
  - Arva
  - Delaware
  - Ilderton
  - **Kilworth-Komoka**
- STORMWATER MANAGEMENT
- TRANSPORTATION
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Kilworth-Komoka Water System
  - Current well supply to be changed over to the LHPWSS in 2010 based on *2007 Kilworth-Komoka Water Supply Class EA Addendum*
  - Upgrades to storage and pumping being undertaken as part of changeover
  - Ensure adequate looping of distribution system with new development and growth

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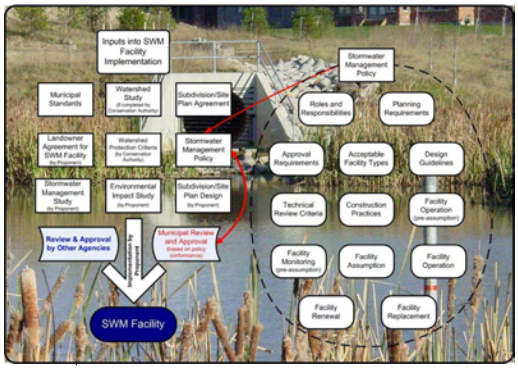
Stormwater Management



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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Determine the long-term (20-year) needs of the Municipal transportation network
- Guide transportation system decision-making over the next 20-years to meet the objectives of the community
- Review components
  - Network performance analysis
  - Identify problems and opportunities
  - Identify policy framework for transportation
  - Develop long term plan
- Assessment
  - Identify problems and opportunities for transportation network
  - Assess role and function of transportation infrastructure and service
  - Identify priorities consistent with municipal community goals and objectives

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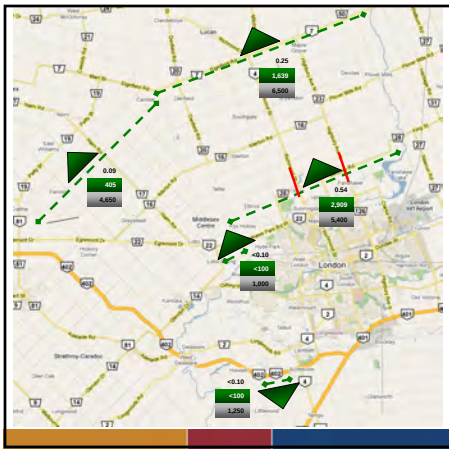

Existing Conditions

P.M. Peak Hour

(North-South Travel)

Level of Service Good
V/C < 0.70

Level of Service Unstable
V/C = 0.70 – 0.89

Level of Service Poor
V/C > 0.90

Direction of Peak Travel

0.13 Volume/Capacity Ratio

405 Volume

4,650 Screenline Capacity

Critical Road Links

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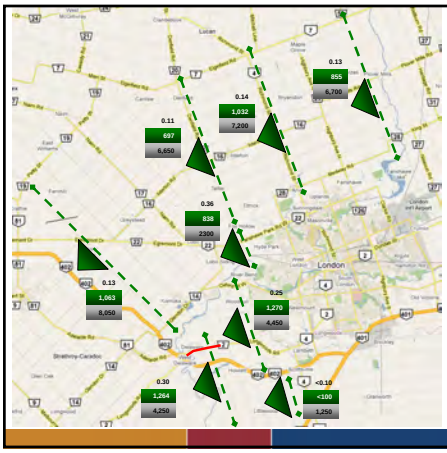

Existing Conditions

P.M. Peak Hour

(East-West Travel)

Level of Service Good
V/C < 0.70

Level of Service Unstable
V/C = 0.70 – 0.89

Level of Service Poor
V/C > 0.90

Direction of Peak Travel

0.13 Volume/Capacity Ratio

405 Volume

4,650 Screenline Capacity

Critical Road Links

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Assessment of the existing condition identified the following:
  - Municipal screenlines operating well within accepted levels of service
  - Richmond Street North (Highway 4) operating at threshold of capacity north of Middlesex Centre/City of London boundary
  - Highbury Avenue operating under unstable conditions
- The following local areas of concern were noted:
  - Richmond Street North in communities of Birr and Arva
  - Ilderton Road and Hyde Park Road in Ilderton
  - Ilderton Road and Egremont Drive in Coldstream
  - Egremont Drive in Lobo and Melrose

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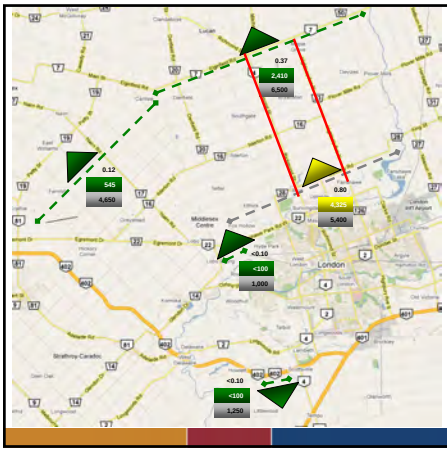

Future Conditions

P.M. Peak Hour

(North-South Travel)

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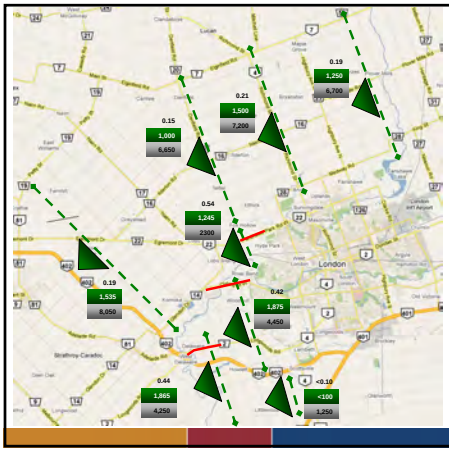

Future Conditions

P.M. Peak Hour

(East-West Travel)

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Assessment of the future condition identified the following:
  - Municipal screenlines operating well with accepted levels of service with the exception of the north of Middlesex Centre/City of London boundary (between Hyde Park and Clarke Road)
  - Highbury Avenue Road and Richmond Street North (Highway 4) operating above the threshold of capacity north of Middlesex Centre/City of London boundary
  - Fanshawe Park Road, Oxford Street West and Longwoods Road approaching capacity threshold west of City of London limits
  - Highbury Avenue at north limits of Middlesex Centre approaching capacity threshold
  - Richmond Street operating under unstable conditions
- County roads through local communities will continue to be an issue as traffic volumes increase as a result of area growth (auto and commercial vehicles)

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Issues identified in the Middlesex Centre transportation network:
  - Capacity / Level of Service
    - Short term capacity issue on Richmond Street at south boundary with City of London
    - Long term corridor condition at south boundary with City of London
    - Majority of individual links within Middlesex Centre will continue to operate at good levels of service
  - Safety
    - Traffic (auto and truck) speeds in local communities
    - Shared use of roadways with farm equipment
    - Inadequate sight lines due to skewed intersections, horizontal and vertical curves
    - Need for additional turn lanes at major intersections
    - Illumination needs at major intersections in urbanized areas
    - Poor pavement and shoulder condition (associated cycling needs)
    - Inconsistent pavement markings, delineation and signage
    - At-grade rail crossings

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Network
  - Identification of truck routes
  - Increased focus on transit connections to London (park and ride potential)
  - Ensuring adequate funding to maintain the existing road system and additional needs/priorities
  - Opportunities to plan for growth ahead of development pressures

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Transportation System Management (Optimize Capacity of Network)
  - Access management
  - Intersection and operational improvements
  - Safety enhancements in communities / residential areas
  - Truck route upgrades
  - Road rationalization
- Transportation Demand Management (fewer vehicles on the road)
  - Cycling and walking
  - Ride-sharing
  - Land use strategies
  - Transit
- Expand and improve the transportation network
  - Widen roads
  - New roads

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Speed management is a significant challenge for rural communities where main roadways through towns serve a dual role:
  - Outside the town: high-speed travel over long distances
  - Within the town: local access, pedestrians, on-street parking, bicycles, and other features unique to the character of the community
- Enforcement alone is expensive and not effective over long term
- Traffic management measures required to modify driver in short and long term
- Techniques are required that:
  - Are low cost
  - Can accommodate larger vehicles (ie. farm equipment, trucks)
  - Are compatible with the rural setting and driver expectations
- Techniques that encourage a change in driver behaviour through a change in driving environment are more effective than traffic control devices (ie. lane widths, side road treatment, markings)
- Stop signs not an appropriate traffic management tool (obeyance issues; speeds are not reduced and can increase; increased noise and pollution)

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

Strategy	Recommendation
Transportation System Management	
Access Management	Moderate: Review access policy to minimize impacts on existing and future high volume roads
Operational Improvements	Moderate: Municipal traffic count program required to monitor traffic volumes at regular intervals (3-5 years). Monitoring program will assist in determining required operational improvements when level of service is approaching capacity
Improved Safety	Moderate to Major: Conduct Municipal-wide assessment of signage, pavement marking and roadside barriers and implement improvements on a priority basis. Assess need for traffic management measures that effectively balance role and function of roadway with user safety. Develop evaluation process (guidelines and criteria) for reviewing control measures on a location by location basis.
Truck Route Designations / Upgrades	Moderate: Confirm by-laws that will stipulate the load factors, axle weight, vehicle height, hazardous goods restrictions and other criteria for municipal roadways to be conformed to by users.
Road Rationalization	Major: Confirm road hierarchy (local, collector, arterial) and designate municipal roadways within hierarchy. Identify appropriate cross section and surface standards for road classes.

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Transportation

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
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- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

Strategy	Recommendation
Travel Demand Management	
Plan Land Use	Moderate: Ensure managed growth. Review traffic impact study for new development.
Public Transportation	Moderate: Support work by others for increasing use of alternative transportation modes. Promote carpool lo use and identify spaces in existing public parking areas lots for commuter use potential.
Promote Cycling and Walking	Moderate: Construct paved shoulders on major roads
Network Expansion / Improvements	
Infrastructure Improvements	Major: Maintain current infrastructure. Support roadwork by others for development. Widen roads that have reached capacity when other solutions are not sufficient.

Stantec

Transportation – Functionality

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

- Functionality of roads (boulevard size, lane width, presence of sidewalks, etc.) are often based classifying it as a rural or urban road and the volume of vehicle traffic
- Within Middlesex Centre some roads may be required to collect and convey vehicles, bicycle and pedestrian traffic similar to roads in larger municipalities which experience more traffic volume
- In addition to standard road classifications based on traffic volume, Middlesex Centre should review and confirm based on the goals and values of their Strategic Plan the functionality it desires for certain roads
- For example, in order to promote safety, to allow for travel to municipal attractions, Middlesex Centre may wish that connecting roads be provided with sidewalks and bicycle paths

Stantec

Transportation – Functionality

- INTRODUCTION
- PROBLEM IDENTIFICATION
- GUIDING / SERVICING PRINCIPLES
- SERVICE REVIEW
- WASTEWATER TREATMENT & COLLECTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
  - Biosolids
  - Other Areas
- WATER SUPPLY & DISTRIBUTION
  - Arva
  - Delaware
  - Ilderton
  - Kilworth-Komoka
- STORMWATER MANAGEMENT
- **TRANSPORTATION**
- SOLID WASTE MANAGEMENT
- NEXT STEPS
- COMMUNICATIONS
- QUESTIONS?

Stantec

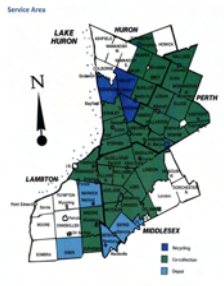
Transportation – Culverts / Bridges

- A 2006 study of Middlesex Centre's existing bridges and culverts found:
  - Over $1 million was required to bring structures up to current standards
  - Approximately $390,000 of annual capital expenditure is required to maintain existing structures
- It is recommended that when new water, wastewater, stormwater and transportation projects are planned that:
  - Consideration be given to proximate structures and the impact of new construction
  - Refurbishment of existing structures should be considered if they are proximate to new work as economies can be realized in construction costs

Stantec

Solid Waste Management

- Solid Waste and Recycling
  - Provided through Bluewater Recycling Association (BRA) since 1998
    - responsible for residential and small institutional/commercial/ industrial waste
  - Middlesex Centre is a member municipality of BRA
  - There are 21 member municipalities in the BRA



Stantec

Solid Waste Management - Recommendations

- Middlesex Centre should continue to utilize other organizations to deal with the major aspects of solid waste management
- Council should ensure these organizations provide the necessary information needed for Middlesex Centre to understand evolving solid waste issues through continued participation in their oversight
- Council should be engaged with the Province to ensure that the perspectives of the municipality and their rate payers who are stakeholders are relayed in future Solid Waste policy and regulation

Stantec

Next Steps (February 2010 forward)

- Review comments from agencies and public following PIC 3
- Finalize MSP
- Council Review and endorsement (Spring 2010)
- MSP Complete (Spring 2010)

Stantec

Communications

- Stantec Consulting Limited will be the point of contact for queries regarding the MSP
- Due to the potential volume, complexity and sensitivity of some issues, we would request that all questions and comments are to be received in writing to:

  Cameron Gorrie, E.I.T.

  Fax: (519) 645-6575

  Email: cameron.gorrie@stantec.com
- Correspondence received will be reviewed periodically by the Steering Committee and will be responded to accordingly

Stantec

Questions
Questions & Answers
Questions & Answers
Questions & Answers
Answers

Stantec

Master Servicing Plan
Class Environmental Assessment

Public Information Meeting #3
Tuesday, February 16, 2010

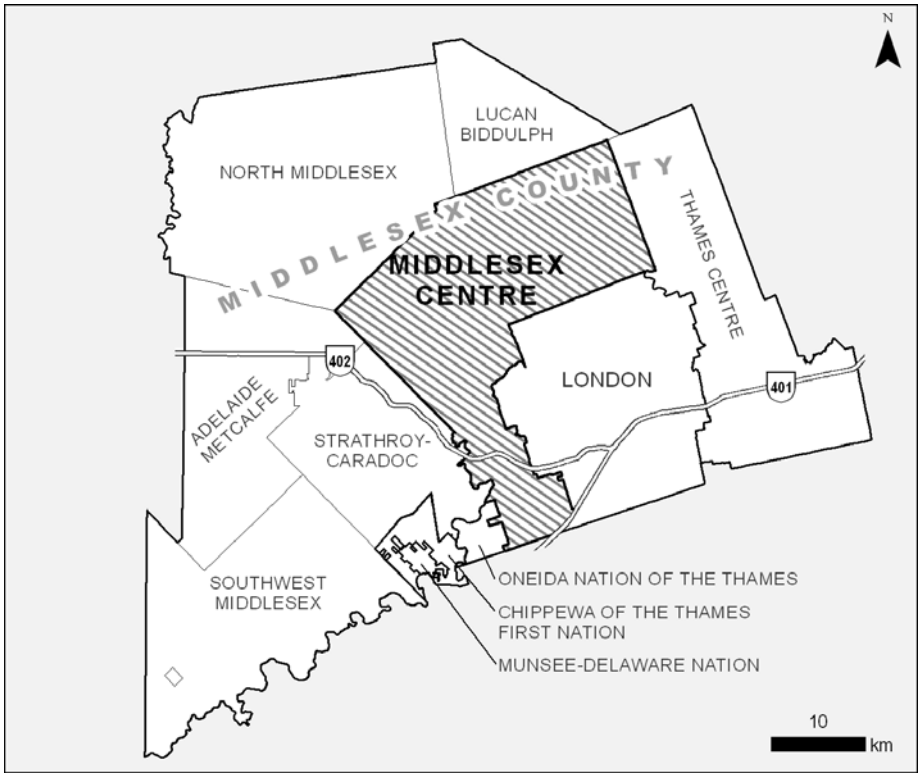
COMMENT SHEET

Name:
Mailing Address:
Interest (*i.e.* property owner, agency):
Comments:

Please place comments in the comment box provided or submit comments to the following:

Cameron Gorrie, E.I.T.
Environmental Engineer-in-Training
Stantec Consulting Ltd.
800-171 Queens Ave.
London, ON N6A 5J7
Fax: 519-645-6575
Email: cameron.gorrie@stantec.com

Middlesex Centre Master Servicing Plan
Class EA
Public Information Meeting #3 Attendance
February 16, 2010
Municipality of Middlesex Centre



Stantec Consulting Ltd.
800 – 171 Queens Avenue
London, ON N6A 5J7
Tel: 519-645-2007
Fax: 519-645-6575

File: 1655-00584

Stantec

Middlesex Centre

Master Servicing Plan
Class EA

Public Information Meeting #3
Tuesday, February 16, 2010

Attendance Sheet

Name (please print)	Mailing Address (including postal code) (please print)	Interest in Project (*i.e.* property owner, business owner, agency)
Graeme Lowry	PO Sir James [illegible]	
Dave Schmidt	379 Sunningdale Road, London N6G 5B9	property owner
[illegible]	RR3 Ilderton	
Sergio Pompili	301 Oxford St. W	Planning Consultant
Rob Pauley	105 Woodhill Rd.	Property Owner
Barry Bloomfield	12955 TEN MILE RD	Property owner.
JIM HEBB	150 PINEWOOD DR. LONDON ONT	AGENT
BOB STRATFORD	650 WATERLOO ST., STE 101 LONDON ON	AGENT.
Clare Bloomfield	12543 Ilderton Rd	Councillor
Anthony Gubbels		Stantec Consult
PETER VANDERWEE	RR#2 LONDON	OWNER
John Lucas	300 Dufferin Ave London	City of London
Albert Bannister	RR#3 Ilderton	Midd Centre
Harry Snider	202-630 Colborne St London ON N6B 2V2	Agent.

Public Information Meeting #3
Tuesday, February 16, 2010

Attendance Sheet Cont'd

Name (please print)	**Mailing Address (including postal code)** (please print)	**Interest in Project (*i.e.* property owner, business owner, agency)**
DAVID JOHNSTONE	22521 KOMOKA RD KOMOKA PO BOX 74. N0L 1R0	

PIC #3
FEB. 16/10

EMAIL FOR PRESENTATION

PETERVW@GTO.NET

bob.stratford@rwsconsulting.ca

nshnider@mhbcplan.com

JIMMEER CONSULTING@ROGERS.COM

Rob Pathy labs@Rogers.com

jlucas@london.ca

John Bulk PH 519.666.1410

Sergio E. Pompilii & Assoc. Ltd.

URBAN, REGIONAL & RURAL PLANNERS

Sergio E. Pompilii, M.A., Dipl. A.A. Urban Design MCIP, RPP

301 Oxford St. W., Suite 24138, London, ON N6H 5C4
Tel.: (519) 473-4273 Fax (519) 473-9917
E-mail: sergio@sepompilii.on.ca

ZELINKA PRIAMO LTD
A Professional Planning Practice

March 3, 2010

Municipality of Middlesex Centre
10227 Ilderton Road
RR#2
Ilderton, ON N0M 2A0.

Attention: Maureen Looby, Director of Public Works and Engineering

Dear Ms. Looby:

Re: Middlesex Centre Master Servicing Plan

We regret that, due to illness, our representative was unable to attend the February 16th public information centre on this matter. On behalf of Gunn Farm Partnership and Hobbs Farm Partnership, we ask that the following comments be considered prior to finalizing the report.

We are disappointed that the Master Servicing Plan (MSP) does not appear to have advanced the resolution of servicing for Arva since our client's St. John Wood Development proposal was put on hold to await this study.

Guiding Principle #7 clearly states that Middlesex Centre should service Middlesex Centre users where possible; yet, the MSP project has provided questions but no answers relating to the possible servicing of Arva with a municipal wastewater treatment facility (WWTF).

This lack of information an analysis also leaves the Municipality in a position of relative weakness if it proceeds to negotiate with the City. The Municipality should know in advance the parameters and implications of a WWTF for Arva, so that it knows what terms it is willing to accept from the City. The City should also know clearly that Middlesex Centre is prepared and able to go it alone, and to redirect flows away from the City system. Indeed, in negotiations, the Municipal WWTF should be seen as an equally valid and equally desirable option. Therefore, care should be taken in crafting the wording of the MSP recommendations for Arva.

As an additional matter, we would point out that the statement that for Arva a Class EA process "would be municipally led, proponent funded", is inappropriate in a situation with the history and complexity of Arva, where our clients have financially contributed to,

318 Wellington Road
London, Ontario N6C 4P4
Tel: 519-474-7137 Fax: 519-474-2284
Email: zp@zpplan.com Website: zpplan.com

but have not benefited from, the current servicing arrangement. Clearly, any future funding arrangements must be the subject of further discussion.

Thank you for your consideration of these comments. We would be pleased to discuss these matters further with you.

Yours very truly,

ZELINKA PRIAMO LTD.

Richard Zelinka, MES, MCIP, RPP
Principal Planner

RZ/ld

Cc Stantec
Clients
Alan Patton

Gorrie, Cameron

From: Tyrrell, John
Sent: Wednesday, February 17, 2010 8:32 AM
To: Bill Veitch
Cc: Maureen Looby; Gorrie, Cameron
Subject: RE: Public Information Centre #3 - Municipal Master Plan

PIC3.MSP.2010Feb 01 handout.pdf...

Please find attached the handout from last night's meeting.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Managing Leader, Environmental Infrastructure
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
www.stantec.com

-----Original Message-----
From: Bill Veitch [mailto:bveitch@norquaydevelopments.ca]
Sent: Tuesday, February 16, 2010 5:24 PM
To: loobym@middlesexcentre.on.ca
Cc: Tyrrell, John
Subject: Public Information Centre #3 - Municipal Master Plan

Maureen;
As you know we are quite interested in the master plan progress and look forward to seeing the final results of this long planning process.
Unfortunately I will be unable to attend the meeting this evening and participate in the public information center.

Could you please provide me with the documentation from the presentation and any additional literature that might be provided this evening? I would appreciate the opportunity to provide comments and suggestions and ask questions of the plans as they will be presented. Does this meeting conclude the Public process?

Thank-you

Bill Veitch, P.Eng.
Norquay Developments Limited
Land Development Manager
301-100 Wellington St.,
London, ON N6B 2K6
1-519-672-4011

St. John Woods Development Ltd.
90 Sir James Court
Box 213
Arva, Ontario, Canada
N0M 1C0

Tel.: (226) 374-5040
Fax: (519) 679-5816
Email: powerhouse.energy@sympatico,ca

February 17, 2010

Stantec
171 Queens Avenue
8th Floor
London, Ontario
N6A 5J7

Attention: Mr. Cameron Gorrie, E.I.T.

Dear Mr. Gorrie:

We write to provide our comments arising from the Public Information Centre 3 of last night.

In short, we agree with the conclusions presented for Arva.

Please accept our gratitude for considering our input.

Our last request is that Stantec ensure that the Master Servicing Plan contains the information needed by Middlesex Centre to present a persuasive case to the City for this Amendment.

In this regard we forwarded certain information for your review on October 25th and November 26th, including our study concluding that there is no mechanical constraint that would prevent the Arva sewer from handling the output generated.

As the Plan also constitutes Phases 1 and 2 of the Municipal Servicing Class Environmental Assessment Process, it would seem logical to conclude that an Amendment with the City is the preferable environmental solution. This was an important consideration in obtaining the first Agreement, and is likely to be helpful in obtaining an Amendment.

Please note also that our Planning Justification Report (Page 4, Section 10) makes the point that the Ministry of Municipal Affairs and Housing in its Provincial Policy Statement issued under the authority of Section 3 of the *Planning Act,* requires co-ordination, efficiency, cost effectiveness and optimization in the use of existing infrastructure by municipalities, and not only the host municipality.

Yours truly,

Graeme Lowry
President, St. John Woods Development Limited

Gorrie, Cameron

From: Tyrrell, John
Sent: Wednesday, February 17, 2010 2:35 PM
To: Graeme Lowry
Cc: Gorrie, Cameron; Maureen Looby
Subject: RE: Arva water supply

The intent of this statement is intended primarily to note the fact that Middlesex Centre monitors the cost of obtaining its water from London as set in their agreement. Should the agreement be amended in the future and the cost of the London water become prohibitive for ratepayers, then Middlesex Centre could look at alternate supply options (from the LHPWSS' Komoka-Mt. Brydges Water Supply for example). As a minor note, in the future an amended agreement could also contain some other clauses that Middlesex Centre may not find to be in their best interests but what these would be or could be is a matter of conjecture. The Master Plan statement is just to keep Middlesex Centre's future options open.

John Tyrrell, M.Sc.(Eng.),P. Eng.
Managing Leader, Environmental Infrastructure
Stantec Consulting Ltd.
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 246
Fx: (519) 645-6575
john.tyrrell@stantec.com
stantec.com

From: Graeme Lowry [mailto:powerhouse.energy@sympatico.ca]
Sent: Wednesday, February 17, 2010 1:04 PM
To: Tyrrell, John
Subject: Arva water supply

Hi John,

One quick question from last night, and sorry I did not think to ask it last night.

Under Arva Water Supply, you wrote, “future agreement changes may require review of water servicing.”

I assumed you meant changes to the existing water supply agreement dating back to 1971 which services the entire Arva growth boundary.

But to be sure, did you mean changes to the existing water supply agreement or changes to the existing sanitary servicing agreement?

Graeme Lowry
90 Sir James Court, Box 213
Arva, Ontario N0M 1C0

☎ Tel: 226-374-5040
Fax: 519-679-5816

Email: powerhouse.energy@sympatico.ca

Gorrie, Cameron

From: Gorrie, Cameron
Sent: Thursday, February 11, 2010 3:56 PM
To: 'kelly.cahill@kandlconstruction.com'
Subject: RE: middlesex centre master servicing plan
Attachments: Notice of PIC 3 16 February 2010.pdf

Kelly,

I have added you to the contact list for the Master Servicing Plan. I have also attached a copy of the Notification of PIC #3 as published in today's London Free Press.

Cameron Gorrie, E.I.T.
Environmental Infrastructure
Stantec
800 - 171 Queens Avenue
London ON N6A 5J7
Ph: (519) 645-2007 Ext. 295
Fx: (519) 645-6575
Cell: (226) 268-4859
cameron.gorrie@stantec.com
stantec.com

From: Kelly Cahill [mailto:kelly.cahill@kandlconstruction.com]
Sent: Thursday, February 11, 2010 12:48 PM
To: Tyrrell, John
Subject: middlesex centre master servicing plan

Hi John
As per ad in paper today can you add me to the study mailing list(email I hope)

Kelly Cahill
K&L Construction (Ontario) Ltd.
1615 North Routledge Park, Unit 27
London, Ontario N6H 5N5
Tel: (519) 472-7164 Ext 22
Fax: (519) 472-9877
email: kelly.cahill@kandlconstruction.com

Gorrie, Cameron

From: Gorrie, Cameron
Sent: Wednesday, February 24, 2010 2:02 PM
To: 'michael.h@zpplan.com'
Subject: RE: Middlesex Centre Master Servicing Plan - Public Information Centre 3
Attachments: PIC3.MSP.2010Feb01_2.pdf

As requested.

Cam

From: Michael Hannay [mailto:michael.h@zpplan.com]
Sent: Wednesday, February 24, 2010 2:01 PM
To: Gorrie, Cameron
Subject: RE: Middlesex Centre Master Servicing Plan - Public Information Centre 3

Cameron,

The whole presentation would be great. Thank you.

Regards

Michael C. Hannay B.E.S., B.Arch., MRAIC, MCIP, LEED® AP

Urban Designer / Principal Planner
Zelinka Priamo Ltd.

London Office
318 Wellington Road
London, Ontario N6C 4P4
P 519.474.7137
F 519.474.2284

Toronto Office
5399 Eglinton Ave W. Suite 202
Etobicoke, Ontario M9C 5K6
P 416.622.6064
F 416.622.3463

From: Gorrie, Cameron [mailto:Cameron.Gorrie@stantec.com]
Sent: Wednesday, February 24, 2010 1:47 PM
To: michael.h@zpplan.com
Subject: RE: Middlesex Centre Master Servicing Plan - Public Information Centre 3

Michael,

I can provide you with a digital copy of the entire presentation (~ 6MB) or I can extract just the slides that pertain to Arva. Let me know which you would prefer.

Thanks,

Cam

From: Michael Hannay [mailto:michael.h@zpplan.com]
Sent: Wednesday, February 24, 2010 1:44 PM
To: Gorrie, Cameron
Subject: Middlesex Centre Master Servicing Plan - Public Information Centre 3

Cameron,

Would it be possible for you to email me a digital copy of your slides that discusses servicing for Arva? The copy I have of your PowerPoint presentation is at a rather low resolution and it is not possible for me to read the ledged on the map. Thank you for your assistance.

Regards

Michael C. Hannay B.E.S., B.Arch., MRAIC, MCIP, LEED® AP

Urban Designer / Principal Planner
Zelinka Priamo Ltd.

London Office
318 Wellington Road
London, Ontario N6C 4P4
P 519.474.7137
F 519.474.2284

Toronto Office
5399 Eglinton Ave W. Suite 202
Etobicoke, Ontario M9C 5K6
P 416.622.6064
F 416.622.3463

Gorrie, Cameron

From: Gorrie, Cameron
Sent: Monday, February 22, 2010 9:42 AM
To: 'Don Ardy'
Subject: RE: Notice of Public Information Centre #3 - Middlesex Centre Master Servicing Plan
Attachments: PIC3.MSP.2010Feb01_2.pdf

Don,

Attached is a copy of the presentation. As the file size is larger, please let me know if you receive it. If it is too large, I can set up an FTP site for you to download the presentation from.

Cam

From: Don Ardy [mailto:drardy@comcast.net]
Sent: Wednesday, February 17, 2010 5:21 PM
To: Gorrie, Cameron
Subject: re: Notice of Public Information Centre #3 - Middlesex Centre Master Servicing Plan

Hi Gorrie,
As I am unable to attend this event, kindly forward the info to me. Thank you. Don Ardy

Appendix 2.7:
Notice of Commencement

NOTICE OF COMMENCEMENT AND PUBLIC INFORMATION CENTRE #1

MUNICIPALITY OF MIDDLESEX CENTRE MASTER SERVICING PLAN

The Municipality of Middlesex Centre is a 588 km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required.

This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act.

Public consultation is a key component of this study. The first public information centre will be held Thursday May 14, 2009. The objective of this information centre is to introduce the Master Planning Process to the public and to solicit input. Future public information centres will be advertised in advance of their occurrence.

Date: Thursday May 14, 2009

Time: 3:00pm to 5:00pm (Presentation at 3:30pm); and
7:00pm to 9:00pm (Presentation at 7:30pm).

Location: Komoka Community Centre

If you have any questions or wish to be added to the study mailing list, please contact by letter, fax, or e-mail:

Municipality of Middlesex Centre
Maureen Looby
Manager – Public Works and Engineering
10227 Ilderton Road RR2
Ilderton, ON N0M 2A0
Fax: (519) 666.0271
Email: loobym@middlesexcentre.on.ca

Stantec Consulting Ltd.
John Tyrrell
Senior Environmental Engineer
800-171 Queens Ave.
London, ON N6A 5J7
Fax: (519) 645-6575
Email: john.tyrrell@stantec.com

Appendix 2.8:
Notice of PIC 2

NOTICE OF COMMENCEMENT AND PUBLIC INFORMATION CENTRE # 2

MUNICIPALITY OF MIDDLESEX CENTRE MASTER SERVICING PLAN

The Municipality of Middlesex Centre is a 588 km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required.

This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act.

Public consultation is a key component of this study. The second public information centre will be held Tuesday September 29, 2009. The objective of this information centre is to describe the Servicing Principles that Master Planning Process has developed to the public and to solicit input. Future public information centres will be advertised in advance of their occurrence.

Date: Tuesday September 29, 2009

Time: 7:00pm to 9:00pm (Presentation at 7:30pm).

Location: Komoka Community Centre

If you have any questions or wish to be added to the study mailing list, please contact by letter, fax, or e-mail:

Municipality of Middlesex Centre
Maureen A. Looby, M.Eng., P.Eng.
Director – Public Works and Engineering
10227 Ilderton Road RR2
Ilderton, ON N0M 2A0
Fax: (519) 666.0271
Email: loobym@middlesexcentre.on.ca

Stantec Consulting Ltd.
John Tyrrell, M.Sc.(Eng.), P.Eng.
Senior Environmental Engineer
800-171 Queens Ave.
London, ON N6A 5J7
Fax: (519) 645-6575
Email: john.tyrrell@stantec.com

48	+.78	Sep	260.10	262.50	260.10	262.50 +2.40
48	+.78	Oct	260.10	262.50	260.10	262.50 +2.40
48	+.78	Dec	274.10	276.50	274.10	276.50 +2.40
48	+.78	Jul	260.10	262.50	260.10	262.50 +2.40
48	+.78	Oct	260.10	262.50	260.10	262.50 +2.40
48	+.78	Dec	260.40	262.80	260.40	262.80 +2.40
48	+.78	**Est. sales 45,303. Mon.'s sales 41,981**				
48	+.78	**Mon.'s open int 156,500**				
48	+.78					
7348						

Farm Summary

CHICAGO - Agriculture futures were mixed Tuesday on the Chicago Board of Trade.

letters of reference to the attention of Kevin McIlmurray, P.Eng., OAA or Amanda Bettridge at the Spriet Associates offices,519-672-4100.

Only Contractors deemed qualified by the Commission and the Architect/Consultant will receive Tender documents when issued.

The Commission reserves the right to accept or reject any submissions received.

London Transit Commission

Middlesex Centre

NOTICE OF COMMENCEMENT AND PUBLIC INFORMATION CENTRE #2

MUNICIPALITY OF MIDDLESEX CENTRE MASTER SERVICING PLAN

The Municipality of Middlesex Centre is a 588 km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required.

This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act. Public consultation is a key component of this study. The second public information centre will be held Tuesday September 29, 2009. The objective of this information centre is to describe the Servicing Principles that Master Planning Process has developed to the public and to solicit input. Future public information centres will be advertised in advance of their occurrence.

Date: Tuesday September 29, 2009

Time: 7:00 p.m. to 9:00 p.m. (Presentation at 7:30 p.m.)

Location: Komoka Community Centre

If you have any questions or wish to be added to the study mailing list, please contact by letter, fax, or e-mail:

The Municipality of Middlesex Centre
Maureen A. Looby, M.Eng., P.Eng.
Director – Public Works and Engineering
10227 Ilderton Road, RR2
Ilderton, ON N0M 2A0
Fax: (519) 666-0271
Email: loobym@middlesexcentre.on.ca

Stantec Consulting Ltd.
John Tyrrell, M.Sc.(Eng.), P.Eng.
Senior Environmental Engineer
800-171 Queens Ave.
London, ON N6A 5J7
Fax: (519) 645-6575
Email: john.tyrrell@stantec.com

637921483

St. Thomas by 2011, shrinking production in Oakville from three shifts to two, and cutting back the workforce at an engine plant in Windsor.

20%

Percentage of Chrysler's assembly operations promised in Canada, in exchange for bailout money

18%

Percentage of GM operations guaranteed by a bailout

but he said Toyota is also hoping to increase its dealerships base in China.

Toyota now has about 550 dealerships in China, including Lexus showrooms. By contrast, the automaker has about 1,400 dealerships in the U.S.

China is proving a lifesaver for all the world's big automakers, which are plowing investment into the country to help offset miseries elsewhere.

"China is one of the few markets worldwide which still keeps growing this year. It's obvious any automaker would like to set up plants here," said Zhang Xin, an analyst at Guotai Junan Securities, in Beijing.

Total auto sales in China so far

Ford Motor Co. chief exe
Ford Mazda in southwes
up production to meet

Automobile Manufactu
In the same period,
plunged 28% to 7.1 mil
according to Autodat
research firm.
U.S. monthly sales f
potary boost in Aug

Appendix 2.9:
Notice of PIC 3

NOTICE OF COMMENCEMENT AND PUBLIC INFORMATION CENTRE # 3

MUNICIPALITY OF MIDDLESEX CENTRE MASTER SERVICING PLAN

The Municipality of Middlesex Centre is a 588 km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required.

This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act.

Public consultation is a key component of this study. The third and final public information centre will be held Tuesday, February 16, 2010. The objective of this information centre is to review the preferred servicing solutions for each component of the study.

Date: Tuesday February 16, 2010

Time: 7:00pm to 9:00pm (Presentation at 7:30pm).

Location: Coldstream Community Centre
10227 Ilderton Road RR2
Ilderton, ON N0M 2A0 (in Coldstream)

If you have any questions or wish to be added to the study mailing list, please contact by letter, fax, or e-mail:

Municipality of Middlesex Centre
Maureen A. Looby, M.Eng., P.Eng.
Director – Public Works and Engineering
10227 Ilderton Road RR2
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Middlesex Centre

NOTICE OF COMMENCEMENT AND PUBLIC INFORMATION CENTRE #3

MUNICIPALITY OF MIDDLESEX CENTRE MASTER SERVICING PLAN

The Municipality of Middlesex Centre is a 588 km^2 municipality with over 15,000 residents. In order to provide an environmentally sound and sustainable framework for the provision of municipal services including water, sanitary, storm, transportation, and solid waste management, for both existing and future development within the municipality for 20-year growth and occupancy projections, a Master Servicing Plan is required.

This study is being conducted in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act.

Public consultation is a key component of this study. The third and final public information centre will be held Tuesday, February 16, 2010. The objective of this information centre is to review the preferred servicing solutions for each component of the study.

Date: Tuesday February 16, 2010

Time: 7:00pm to 9:00pm (Presentation at 7:30pm)

Location: Coldstream Community Centre
10227 Ilderton Road RR2
Ilderton, ON N0M 2A0 (in Coldstream)

If you have any questions or wish to be added to the study mailing list, please contact by letter, fax, or e-mail:

Municipality of Middlesex Centre
Maureen A. Looby, M.Eng., P.Eng.
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business

ercantile

AGO (AP) - Futures trading on the igo Mercantile Exchange Fri:

	Open	High	Low	Settle	Chg.
LE					
00 lbs.; cents per lb.					
	89.47	89.60	89.15	89.37	-.03
	91.60	91.67	90.70	90.77	-.78
	89.17	89.25	88.50	88.55	-.57
	88.02	88.17	87.65	87.72	-.43
	90.70	90.70	90.05	90.22	-.48
	91.90	91.90	91.40	91.55	-.40
	92.90	92.90	92.50	92.65	-.35
	93.40	93.40	93.00	93.15	-.30
		90.10			

ales 36,080. Thu.'s sales 44,075
s open int 289,162, up 6,804

ER CATTLE

00 lbs.; cents per lb.					
	00.40	100.87	99.72	99.75	-.75
	101.50	102.00	100.80	100.82	-.70
	102.40	102.90	101.70	101.87	-.65
	Aug	103.75	104.00	103.05	103.27 -.50
	Sep	103.62	104.00	103.45	103.45 -.52
	Oct	103.50	103.65	103.50	103.50 -.10
	Nov	103.25	103.25	103.25	103.25 -.05
	Jan		101.60		

Est. sales 1,458. Thu.'s sales 6,221
Thu.'s open int 31,897, up 815

HOGS, LEAN

40,000 lbs.; cents per lb.					
Feb	67.50	67.62	67.30	67.45	-.17
Apr	67.62	68.55	67.55	68.20	+.53
May	74.20	75.10	74.10	74.95	+.55
Jun	77.20	78.10	76.95	78.05	+.78
Jul	76.62	77.30	76.45	77.17	+.30
Aug	76.32	76.90	76.00	76.85	+.45
Oct	68.20	68.35	68.05	68.22	
Dec	65.70	65.90	65.50	65.70	-.10
Feb	68.22	68.37	67.90	68.30	+.10
Apr	70.30	70.40	70.30	70.40	+.20
May		74.00			
Jun	75.50	75.50	75.50	75.50	+.10
Jul		74.00			

Est. sales 19,705. Thu.'s sales 23,376
Thu.'s open int 180,206

PORK BELLIES

40,000 lbs.; cents per lb.					
Feb		85.50			
Mar	85.00	86.80	84.00	84.00	-1.00
May	87.00	87.75	86.00	86.00	-.75
Jul		90.75			
Aug	86.00	87.50	86.00	87.50	+2.00

Est. sales 12. Thu.'s sales 55
Thu.'s open int 400

LUMBER

110,000 bd. ft.; $ per 1,000 bd. ft.					
Mar	263.0	271.5	260.8	270.9	+6.9
May	280.2	288.0	278.6	288.0	+6.9
Jul	288.8	296.4	286.9	296.4	+6.6
Sep	282.1	288.0	282.1	288.0	+4.7
Nov		264.0			
Jan		267.0			
Mar		261.0			

Est. sales 41. Thu.'s sales 915
Thu.'s open int 10,248, up 55

LIBOR-1 MONTH

$3 million; pts of 100 pct.			
Feb	99.77	099.770	99.770
Mar	99.75	099.752	99.750
Apr	99.73	099.732	99.722
May	99.710		-2
Jun	99.667		+2
Jul	99.622		+12
Aug	99.570		+20
Sep	99.495		+33
Oct	99.395		+43
Nov	99.325		+48
Dec	99.197		+55
Jan	99.087		+55
Feb	98.977		

Est. sales 4,051. Thu.'s sales 456
Thu.'s open int 48,941

US T. BILLS

$1 million; pts of 100 pct.			
Feb	9.94		
Mar	9.93		
Apr	9.93		
Jun	9.92		
Sep	9.92		
Dec	9.92		

Thu.'s open int n.a.

EURODOLLARS

$1 million; pts of 100 pct.			
Feb	99.74	99.750	99.745 99.747
Mar	99.76	099.780	99.690 99.710
Apr	99.67	599.675	99.670 99.670
May	99.63	599.635	99.625
Jun	99.62	099.640	99.570 99.580 +10
Jul		99.505	+20
Aug		99.425	
Sep	99.35	599.380	99.315 99.350 +40

Est. sales 1,722,537. Thu.'s sales 1,648,461
Thu.'s open int 7,526,853, up 20,062

ain quotations

CAGO - Futures trading:

	Open	High	Low	Settle	Chg.
AT					
00 bu minimum; cents per bushel					
	483¾	493¾	480	486½	-7
	498½	508¾	495	501¼	-7¼
	511	520¾	507¾	514	-7¼
	526¾	535	524¼	529½	-7½
	551½	561¼	550¼	554½	-7¼
	576¼	580¾	575	579½	-7½
	589	598¼	587½	590¾	-7½
	601	611	601	603¾	-8
	617	619¾	617	619¾	-8
	635	638½	633¾	638½	-8
	660½	660½	651½	651½	-9
	670¾	670¾	661	661	-9¾
	Jul	671	675	669	673-10¾

Est. sales 83,446. Thu.'s sales 100,164
Thu.'s open int 446,246, up 11,369

CORN

5,000 bu minimum; cents per bushel

Mar	361¼	364¼	357½	361½	-1¾
May	373	375¾	369	373¼	-1¾
Jul	384	386¼	380	384¼	-1½
Sep	390¾	393	387½	391¼	-1¼
Dec	397	399¼	394	397¼	-1¼
Mar	408	410	405½	408¼	-1¼
May	415	415½	414	415¼	-1¼
Jul	419½	421¾	419	420½	-1¼
Sep	415¼	417½	415½	415¾	-1¾
Dec	412½	414¼	410¾	412¼	-2¼
Mar	418½	421½	418½	419¼	-2¼
May	427½	427½	425¼	425¼	-2¼
Jul	431	431	430¼	430¼	-2¼
Sep	425	425	422	422	-3
Dec	413¼	416	413¼	415	-2½
Jul	435½	435½	433	433	-2½
Dec	427½	427½	425	425	-2½

Est. sales 194,686. Thu.'s sales 261,785
Thu.'s open int 1,167,622, up 14,436

OATS

5,000 bu minimum; cents per bushel

Mar	231¼	237	228¼	232¾	+½
May	240	246¼	237¾	241¾	+¾
Jul	249	252	246¼	250	+¾
Sep	257¼	258	257¼	258	+¾
Dec	272	272	266	269¼	+½
Mar	280¾	281¼	280¾	281¼	+½
May	288¾	289¼	288¾	289¼	+½
Jul	297¼	297¾	297¼	297¾	+½
Sep	306¼	306¾	306¼	306¾	+½

Est. sales 1,237. Thu.'s sales 776
Thu.'s open int 13,860, up 23

SOYBEANS

5,000 bu minimum; cents per bushel

Mar	940¼	948	926	945	+2
May	949¼	957	935¼	954	+2
Jul	956	961¾	942	960¾	+2
Aug	951¾	957	939¾	956	+1¾
Sep	933¾	938	923¾	937½	+1¼
Nov	919	923¾	909½	922	-½
Jan	931½	932½	919½	931½	-½
Mar	938¼	940	929	939½	-½
May	942¼	943	941	943	-½
Jul	945¼	950½	938¼	949	-½
Aug	949	949	948½	948½	-½

Est. sales 166,808. Thu.'s sales 218,116
Thu.'s open int 479,460

oreign Exchange

RONTO - These are indicative olesale rates for foreign cur- cy provided by the Bank of nireal at midday on Friday. ase inquire at any branch ash rates. Quotations in edian funds.

stralia dollar	0.9328
hamas dollar	1.0531
rbados dollar	0.5292
rmuda dollar	1.0531
zilreal	0.5663
garia lev	0.7334
ina renminbi	0.1541
lombia peso	0.000545
sta Rica colon	0.00193
ech Republic koruna	0.0553
Denmark krone	0.1928
Dominican Republic Peso	0.0291
Euro	1.4348
Hong Kong dollar	0.1355
Hungary forint	0.0053
India rupee	0.0227
Indonesia rupiah	0.000113
Israel new shekel	0.2803
Jamaica dollar	0.0119
Japan yen	0.011700
Lebanon pound	0.000703
Malaysia ringgit	0.3080
Mexico peso	0.0812
N.Z. dollar	0.7323
Norway krone	0.1781
Pakistan rupee	0.0124
Philippine peso	0.0227
Poland zloty	0.3567
Romania leu	0.3476
Russia rouble	0.0349
Saudi Arabia riyal	0.2809
Singapore dollar	0.7458
Slovakia koruna	1.4341
South Africa rand	0.1369
Sweden krona	0.1453
Switzerland franc	0.9779
Thailand baht	0.0317
Trin-Tob dollar	0.1693
Turkey lira	0.6935
Ukraine hryvna	0.1315
U.A.E. dirham	0.2867
U.K. pound	1.6500
U.S. dollar	1.0531
Venezuela bolivar	0.245518

Weather

Regional forecasts

London
Cloudy with a few flurries with 40% probability of precipitation. Winds westerly 15km/h becoming northwesterly 20km/h. High -4. Cloudy with a few flurries tonight (40%). Low -7. Tomorrow, cloudy with a few flurries (pop 40%). High -4. Low -8.

Windsor
Variably cloudy in the morning with a few flurries developing in the afternoon. Winds light. High -2. Mainly cloudy with a few flurries tonight (30%). Low -7. Tomorrow, mainly cloudy with a few flurries (pop 40%). High -4. Low -13.

Sarnia
Mainly cloudy with a few flurries ending in the morning, cloudy with

Across Canada

	today		tomorrow	
Banff	p.cloudy	3/-5	rain/snow	3/-8
Calgary	p.cloudy	-4/-9	p.cloudy	0/-6
Charlottetown	flurries	0/-1	flurries	0/-4
Churchill	m.sunny	-15/-20	sunny	-11/-17
Edmonton	flurries	-6/-12	p.sunny	-4/-6
Fredericton	p.cloudy	0/-2	flurries	2/-3
Halifax	p.sunny	0/-2	flurries	1/0
Iqaluit	sunny	-15/-22	sunny	-14/-16
Kenora	m.sunny	-9/-18	sunny	-7/-12
Moncton	p.cloudy	1/-1	snow	1/-3
Montreal	flurries	-3/-6	flurries	-2/-3
North Bay	flurries	-8/-12	flurries	-7/-8
Ottawa	flurries	-5/-8	cloudy	-4/-6
Prince George	m.sunny	6/-3	rain/snow	6/-7
Quebec City	p.cloudy	-2/-4	flurries	2/-2
Red Deer	flurries	-7/-10	p.cloudy	-3/-4
Regina	flurries	-11/-23	m.sunny	-13/-24
Saskatoon	p.cloudy	-13/-19	m.sunny	-10/-17
St. John's	flurries	0/-1	flurries	1/0
S. Ste. Marie	p.cloudy	-6/-11	flurries	-8/-9
Sudbury	flurries	-8/-13	flurries	-7/-9
Thunder Bay	p.cloudy	-8/-12	p.cloudy	-6/-8

London's five-day forecast

The Weather Network

Today	Tomorrow	Monday	Tuesday	Wednesday
High -4	High -4	High -3	High -3	High -3
Low -7	Low -8	Low -7	Low -6	Low -6
40% Probability of Precipitation	40% Probability of Precipitation	30% Probability of Precipitation	40% Probability of Precipitation	40% Probability of Precipitation

Appendix 4.1:
Wastewater Technical Memorandum

Middlesex Centre Master Servicing Plan
Technical Memorandum – Wastewater Collection & Treatment

Technical Memorandum – Wastewater Collection & Treatment

APRIL 2010

Table of Contents

List of Tables

Table of Figures

List of Appendices

1.0 Introduction

The Municipality of Middlesex Centre (Middlesex Centre) has identified a need for Master Servicing Plans for water, wastewater, transportation, solid waste and stormwater services for its settlement areas. This technical memo focuses on wastewater. These plans shall encompass and address servicing for the following communities:

- Ilderton;
- Kilworth;
- Komoka;
- Delaware;
- Arva;
- Ballymote;
- Birr;
- Bryanston;
- Denfield;
- Lobo;
- Melrose; and
- Poplar Hill-Coldstream.

This Master Servicing Plan (MSP) documents existing services, identifies future needs, and recommends alternatives to be implemented. Figure 1.1 illustrates the location of the above listed communities and any major sanitary infrastructure that is present.

N

DENFIELD
BIRR
BRYANSTON
ILDERTON
BALLYMOTE
ARVA
COLDSTREAM
POPLAR HILL
LOBO
MELROSE
KOMOKA
KILWORTH
DELAWARE

ELGINFIELD RD
16 MILE RD
15 MILE RD
14 MILE RD
13 MILE RD
12 MILE RD
ILDERTON RD
10 MILE RD
9 MILE RD
8 MILE RD
MEDWAY RD
PROSPECT HILL RD
CLARKE RD
HIGHBURY AVE N
ADELAIDE ST N
RICHMOND ST
WONDERLAND RD N
HYDE PARK RD
DENFIELD RD
VANNECK RD
NEW ONTARIO RD
BEAR CREEK RD
FERNHILL DR
MCEWEN DR
GREYSTEAD DR
CHARLTON DR
HEDLEY DR
IVAN DR
NAIRN RD
SINCLAIR DR
COLDSTREAM RD
EGREMONT DR
LAMONT DR
GOLD CREEK DR
MELROSE DR
OXBOW DR
KOMOKA RD
AMIENS RD
GLENDON DR
GIDEON DR
LONGWOODS RD
SPRINGER RD
HIGHWAY 402
SHARON DR
WESTMINSTER DR
CARRIAGE RD
BELLS RD
WOODHULL RD
RANGER DR
DECKER DR
WESTDEL BRN
COOK RD
JONES DR
LITTLEWOOD DR
BODKIN RD
LITTLE CHURCH DR
HIGHWAY 401
SOUTHMINSTER BOURNE

Middlesex Centre Communities

Municipality of
Middlesex Centre
Master Servicing Plan

Legend

- Road
- Railway
- Watercourse
- Official Plan Settlement Area

Topographic data used under license with the Ontario Ministry of Natural Resources.
Official Plan Settlement Areas courtesy of Middlesex Centre.
Projection: UTM Zone 17N, NAD 1983

2.5 0 2.5 5 km

2.0 Work Scope

2.1 OVERVIEW

Over the 20-year study period of this Master Servicing Plan, Middlesex Centre's population is expected to grow. This growth will be primarily within those communities which are designated for growth by the Official Plan. As population grows, this will create additional wastewater flow generation.

In order to manage expected additional wastewater flow generation, Middlesex Centre can choose from the following general planning options:

- Do nothing (in which case no development could occur);
- Limited in-fill development based on private sewage services (typically on-site septic systems);
- Conveyance to adjacent Municipalities for treatment through agreements;
- Construct a new wastewater treatment facility (WWTF), or expand existing facilities for a community;
- Create a regional municipal treatment system (multiple communities); or
- Any combination of the above alternatives.

2.2 ASSESSMENT OF EXISTING SERVICING COMPONENTS

This technical memorandum will review the existing level of service and servicing components, as outlined in the original *'Request for Proposal'* by Middlesex Centre, and the following:

- Compile wastewater generation data for each existing system; review unit design criteria based on five year average; review general municipal and provincial criteria and provide recommendations for criteria to be used in Master Servicing Studies; compare and comment on wastewater generation versus water demands;
- Identify capacity of existing treatment facilities and identify excess capacity and/or limitations;
- Review and provide comment on the expandability of existing treatment facilities; comment on potential limiting factors including assimilative capacities of existing receiving water courses;

- Identify areas which are currently serviced on private septic systems; review with input from the Middlesex-London Health Unit and the municipal records, as to the adequacy of private systems in those areas; identify areas where private septic systems should not be allowed due to lot sizing, soil conditions or elevated tables; and

- Provide recommendations as to areas and/or conditions where limited servicing on private systems could be contemplated.

2.3 ASSESSMENT OF SERVICING COMPONENT ALTERNATIVE SOLUTIONS

This technical memorandum will further assess the existing servicing components and alternative solutions, as outlined in the original *'Request for Proposal'* by Middlesex Centre, and the following:

- Provide estimated projected wastewater demands for each growth area over 20-year planning horizon;

- Comment on the adequacy of existing treatment facilities to meet projected 20-year population;

- Develop treatment alternatives including "do nothing" and/or "limit community growth";

- Develop biosolids management alternatives;

- Complete assessment of alternatives and selection of preferred alternative for wastewater treatment;

- Identify logical extensions of wastewater collection systems and/or new sewerage network based on projected wastewater flows to service both currently un-serviced areas within each community as well as future growth and development areas; identify location and approximate sizing of pumping stations. Proposed collection system networks are to be included in the evaluation of wastewater system alternatives;

- Prepare preliminary cost estimates for each alternative; and

- Prepare implementation strategies (i.e. role of existing community and development; identify potential funding alternatives – i.e. capital, user fees, development charges).

3.0 Existing Level of Service

3.1 INTRODUCTION

The Municipality of Middlesex Centre is divided into a three level hierarchy. The three settlement area types, ranging from largest to smallest, are: *Urban Settlement Areas*, *Community Settlement Areas*, and *Hamlets*.

Urban Settlement Areas include Ilderton and Kilworth-Komoka. *Community Settlement Areas* include Arva and Delaware. *Hamlets* consist of Ballymote, Birr, Bryanston, Denfield, Lobo, Melrose, and Poplar Hill-Coldstream.

The following subsections summarize current wastewater servicing in each community.

Table 3.1 provides an overview of wastewater collection and treatment within the Municipality.

3.2 ILDERTON

3.2.1 Population

Ilderton is situated to the northwest of the City of London, near Ilderton Road & Hyde Park Road. It is classified as an *Urban Settlement Area* and has a population of approximately 2,200 people.

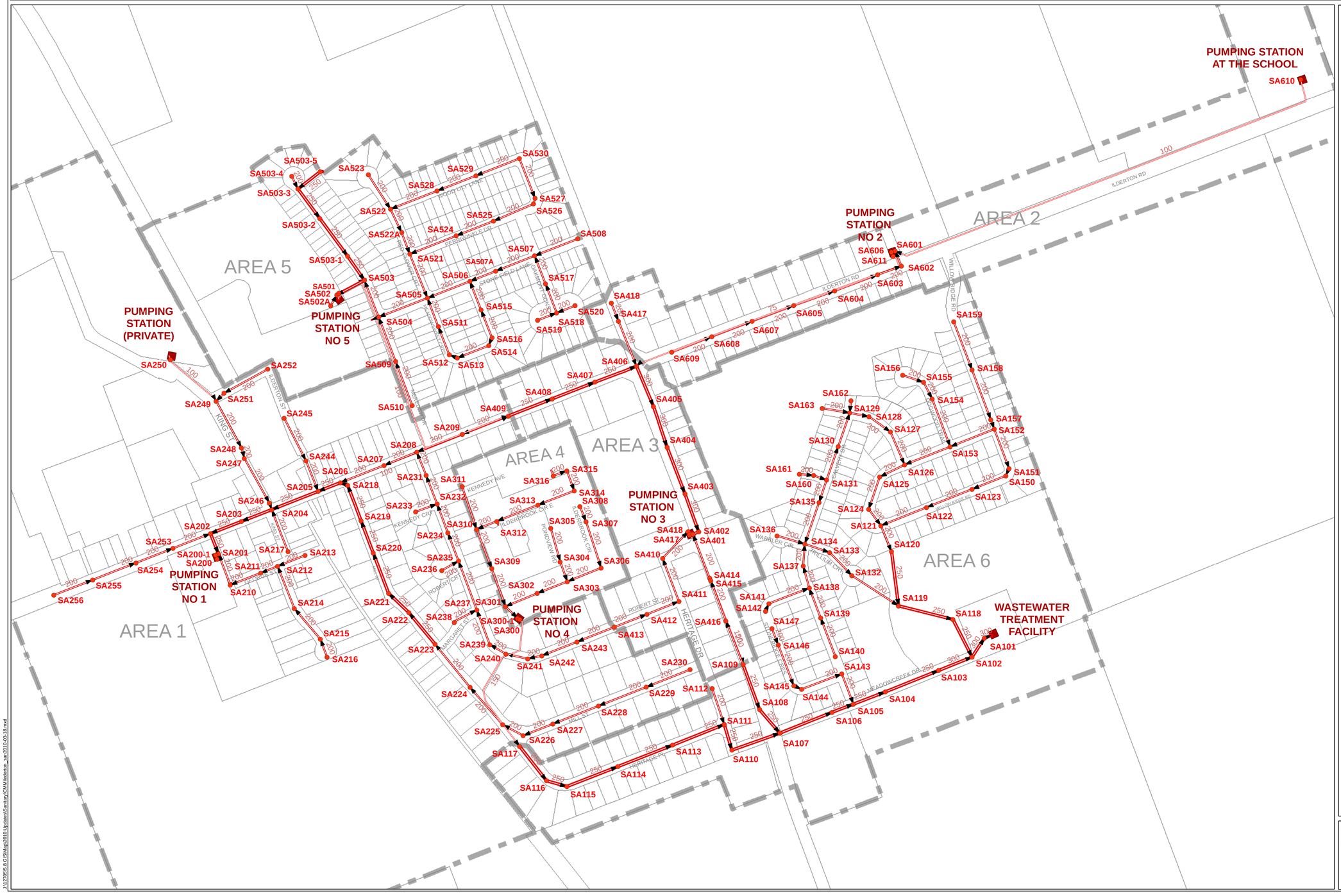
3.2.2 Wastewater Infrastructure

Ilderton's wastewater infrastructure consists primarily of:

- Sanitary sewer collection network;
- Five (5) municipal pumping station and two (2) private pumping stations and respective forcemains, which collect sanitary flow from the collection network and transports it to downstream pumping stations and then to the Ilderton Wastewater Treatment Facility (WWTF); and
- Ilderton WWTF, rated for 1,120 m^3/day, which treats wastewater and discharges sanitary effluent to Ilderton Drain #2 which is a tributary of Oxbow Creek.

A more detailed description of the existing sanitary infrastructure in Ilderton can be found in Appendix 3.2. Figure 3.1 illustrates the sanitary network in Ilderton.

Ilderton Wastewater System



Municipality of Middlesex Centre

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

J:\1127055.6 GIS\Map\2010\Updates\Sanitary\CMMIlderton_san2010-05-18.mxd

3.3 KILWORTH-KOMOKA

3.3.1 Population

Kilworth-Komoka is situated to the west of the City of London, along Glendon Drive. It is considered an *Urban Settlement Area* and Kilworth has a population of approximately 1,900 people and Komoka has a population of approximately 1,500 people.

3.3.2 Wastewater Infrastructure

The present settlement area is serviced by two WWTFs. Kilworth's wastewater infrastructure consists primarily of:

- Sanitary sewer collection network;
- One (1) pumping station and respective forcemain, which collects sanitary flow from a small section of development and pumps into the gravity sewer; and
- Kilworth Wastewater Treatment Facility, rated for 1,280 m^3/day, which treats wastewater and discharges sanitary effluent to the Thames River.

A more detailed description of the existing sanitary infrastructure in Kilworth can be found in Appendix 3.3. Figure 3.2 illustrates the sanitary network in Kilworth.

Komoka's wastewater infrastructure consists primarily of:

- Sanitary sewer collection network;
- One (1) pumping station and respective forcemain, which collects sanitary flow from the collection network and transports it to the Komoka WWTF; and
- Komoka WWTF, rated for 780 m^3/day, which treats wastewater and discharges sanitary effluent to the Thames River.

A more detailed description of the existing sanitary infrastructure in Komoka can be found in Appendix 3.3. Figure 3.3 illustrates the sanitary network in Komoka.

Kilworth Wastewater System

Municipality of Middlesex Centre

LEGEND

- 75mm
- 200mm
- 250mm
- 300mm
- 375mm
- Lateral Service Connection
- Maintenance Holes (e.g. SA115)
- Pumping Station, Wastewater Treatment Facility
- Parcels

0 75 150 300

Metres

(22X34 Layout) 1:3,000

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

J:\127055.8 GIS\Map\2010 Updates\Sanitary\CMM\kilworth_san2010-03-17.mxd

Komoka Wastewater System

MAP A

Municipality of Middlesex Centre

LEGEND

- 200 → 200mm
- 250 → 250mm
- 300 → 300mm
- 375 → 375mm
- Lateral Service Connection
- SA186 ● Maintenance Holes
- ■ Pumping Station, Wastewater Treatment Facility
- Parcels

0 125 250 500 Metres

(22X34 Layout) 1:4,500

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

J:\127059.8 GIS\Map\2010 Updates\Sanitary\CMMkomoka_san2010-03-17.mxd

3.4 ARVA

3.4.1 Population

Arva is situated to the north of the City of London, near Richmond Street North & Medway Road. It is classified as a *Community Settlement Area* and has a population of approximately 430 people.

3.4.2 Wastewater Infrastructure

Arva's wastewater infrastructure consists primarily of:

- Sanitary gravity sewer collection network for the majority of Arva;
- Arva Pumping Station (PS), rated at 30 L/s, which collects sanitary flow from the collection network; and
- Sanitary forcemain (150 mm diameter) from the Arva PS south along Richmond Street North which connects to the City of London sanitary trunk sewer main to a maintenance hole at Plane Tree Drive and Richmond Street North.

A more detailed description of the existing sanitary infrastructure in Arva can be found in Appendix 3.4.

3.5 DELAWARE

3.5.1 Population

Delaware is situated to the west of the City of London, near Longwoods Road & Gideon Drive. It is classified as a *Community Settlement Area* and has a population of approximately 1,600 people.

3.5.2 Wastewater Infrastructure

Delaware does not currently have municipal wastewater servicing. It relies on private sewage services for individual properties.

Table 3.1 : Wastewater Collection & Treatment

Community	Collection System	Treatment
Ilderton	Yes	Extended Aeration (EA) WWTF
Kilworth	Yes	Membrane Bioreactor (MBR) WWTF
Komoka	Yes	Extended Aeration (EA) WWTF
Arva	Yes	Wastewater sent to City of London collection system through Agreement[1]
Delaware	No	Private Sewage Systems
Ballymote	No	Private Sewage Systems
Birr	No	Private Sewage Systems
Bryanston	No	Private Sewage Systems
Denfield	No	Private Sewage Systems
Lobo	No	Private Sewage Systems
Melrose	No	Private Sewage Systems
Poplar Hill-Coldstream	No	Private Sewage Systems

Notes:

1. Sewage Treatment Agreement (April 12, 2000)

3.6 BALLYMOTE

3.6.1 Population

Ballymote is situated to the northeast of the City of London, near Highbury Avenue North & Medway Road. Ballymote is classified as a *Hamlet* and has a population of approximately 130 people.

3.6.2 Wastewater Infrastructure

Ballymote does not currently have municipal wastewater servicing. It relies on private sewage services for individual properties.

3.7 BIRR

3.7.1 Population

Birr is situated to the north of the City of London, near Richmond Street North & Thirteen Mile Road. Birr is classified as a *Hamlet* and has a population of approximately 270 people.

3.7.2 Wastewater Infrastructure

Birr does not currently have municipal wastewater servicing. It relies on private sewage services for individual properties.

3.8 BRYANSTON

3.8.1 Population

Bryanston is situated to the northeast of the City of London, near Highbury Avenue North & Twelve Mile Road. Bryanston is classified as a *Hamlet* and has a population of approximately 200 people.

3.8.2 Wastewater Infrastructure

Bryanston does not currently have municipal wastewater servicing. It relies on private sewage services for individual properties.

3.9 DENFIELD

3.9.1 Population

Denfield is situated to the northwest of the City of London, near Denfield Road & Sixteen Mile Road. Denfield is classified as a *Hamlet* and has a population of approximately 240 people.

3.9.2 Wastewater Infrastructure

Denfield does not currently have municipal wastewater servicing. It relies on private sewage services for individual properties.

3.10 LOBO

3.10.1 Population

Lobo is situated to the northwest of the City of London, near Egremont Drive & Nairn Road. Lobo is classified as a *Hamlet* and has a population of approximately 190 people.

3.10.2 Wastewater Infrastructure

Lobo does not currently have municipal wastewater servicing. It relies on private sewage services for individual properties.

3.11 MELROSE

3.11.1 Population

Melrose is situated to the northwest of the City of London, near Egremont Drive & Vanneck Road. Melrose is classified as a *Hamlet* and has a population of approximately 340 people.

3.11.2 Wastewater Infrastructure

Melrose does not currently have municipal wastewater servicing. It relies on private sewage services for individual properties.

3.12 POPLAR HILL-COLDSTREAM

3.12.1 Population

Poplar Hill-Coldstream is situated to the northwest of the City of London, along Ilderton Road, between Komoka Road and Coldstream Road. Poplar Hill-Coldstream is classified as a *Hamlet* and has a population of approximately 380 and 430 people, respectively.

3.12.2 Wastewater Infrastructure

Poplar Hill-Coldstream does not currently have municipal wastewater servicing. It relies on private sewage services for individual properties.

4.0 Policy Review

4.1 STATUTES & REGULATORY STANDARDS

4.1.1 Ontario Water Resources Act (OWRA)

The purpose of the Ontario Water Resources Act is to provide conservation, protection and management of Ontario's waters and for their efficient and sustainable use in order to promote Ontario's long-term environmental, social and economic well-being.

This Act outlines the following subjects pertaining to Ontario's waters:

- Administration;
- Waters & Water Bodies;
- Wells;
- Sewage Works;
- Water and Sewage Projects;
- Agency Agreements;
- Public Water or Sewage Service Area;
- Regulations;
- Work Done by Ministry;
- Records of Site Condition;
- Special Provisions Applicable to Municipalities, Secured Creditors, Receivers, Trustees in Bankruptcy, Fiduciaries and Property Investigators; and
- Other Miscellaneous Subjects.

The OWRA includes a general prohibition against the discharge of substances or materials into water that may "impair the quality of the water". It also states that "No person shall establish, alter, extend or replace new or existing sewage works except under and in accordance with an approval granted by a Director". Sewage projects undertaken under this Act are also subject to the requirements of the Ontario Environmental Assessment Act.

A copy of the current regulatory requirements are published and explained on the Ontario Government's E-Laws website (www.e-laws.gov.on.ca) and on the MOE website (www.ene.gov.on.ca).

4.1.2 Sustainable Water and Sewage Systems Act (SWSS), 2002

The intent of the Sustainable Water and Sewage Systems Act, 2002 is to ensure that municipalities can finance municipal water and wastewater services. The Act is intended to ensure municipalities have full cost recovery in place for municipal water and wastewater services.

In compliance with this Act, there is a two step process which municipalities must undertake. They must first prepare a full cost report and the second is to prepare and implement a cost recovery plan. The report must contain the following:

- Inventory and management plan for infrastructure;
- Assessment of full costs of providing services, including operating, financing, renewal and replacement, and improvement costs; and
- Revenue obtained to provide services.

The report must be approved by the Minister of the Environment, and once completed, a Cost Recovery Plan must then be drafted and submitted to the Ministry. The regulations under this Act can also limit the maximum increase in rates that a municipality may charge for services.

4.1.3 Environmental Protection Act

In Ontario, the principle legislation governing the environment is the province's Environmental Protection Act (EPA). The purpose of this Act is to provide protection and conservation of the natural environment. A breach of the statute is considered to have occurred if an action or inaction by a person, persons or an organization has resulted in an 'Adverse Effect' on the environment. Water pollution can be defined as any use, discharge or incident involving water which causes an "adverse effect".

An 'adverse effect' on the environment is defined in the Act as one or more of the following:

- Impairment of the quality of the natural environment for any use that can be made of it;
- Injury or damage to property to plant or animal life;
- Harm or material discomfort of any person;
- Adverse effect on the health of any person;
- Impairment of the safety of any person;

- Rendering any property or plant or animal life unfit for human use;
- Loss of enjoyment of normal use of property; and
- Interference with the normal conduct of business.

4.2 POLICIES & GUIDELINES

4.2.1 Ministry of the Environment (MOE)

Two publications issued by the Ministry of the Environment relating to wastewater collection and treatment that could potentially impact development and growth in Middlesex Centre are described in detail below.

4.2.1.1 Guideline D-5, Planning for Sewage & Water Services

This document is intended to guide municipal planning for sewage and water servicing. It describes an approach for municipal planning for sewage 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. (Guideline D-5, Synopsis)

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 the following:

- "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".

  This point correlates best to *Urban Settlement Areas* in Middlesex Centre.

- "In areas lacking full municipal services, communal sewage and water services are to be the preferred mode of servicing multi-unit/lot development".

  This point correlates best to *Community Settlement Areas* in Middlesex Centre.

- "In areas lacking full municipal or communal services where development can be justified consistent with the Provincial Policy Statement, the use of individual on-site sewage and water services, may be considered subject to meeting environmental and public health requirements".

  This point correlates best to *Hamlets* in Middlesex Centre.

4.2.1.2 Design Guidelines for Sewage Works, 2008

This document is a reference for those who are responsible for designing sewage works, ministry engineers responsible for reviewing and approving the designs of such works, and municipalities/owners of the sewage works. There are specific guidelines and procedures related to sewage 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. Also, any legislation or regulations takes precedence over the Design Guidelines and must be followed.

4.2.2 Middlesex Centre

The purpose of the Official Plan is to provide for the orderly growth and development of the Township, and provide guidance in the management of change. In particular, the Official Plan includes goals and policies relating to land use, agricultural and settlement areas, and the classification of a Township natural areas system, economic, social and servicing matters.

The Official Plan uses a 20 year planning horizon, from 1999 to 2019. Official Plan principles and guidelines that are relevant to the formation of the wastewater component of the Master Plan are briefly summarized below. These points are to be read in conjunction with the Official Plan and include, but are not limited to the following:

- To provide adequate land supply and appropriate locations for anticipated and projected growth and development, on lands characterized either by existing municipal services, or by the potential for future municipal services, in keeping with the settlement area hierarchy established in this Plan. – Section 1.7 (g)

- To […] reduce servicing costs. – Section 1.7 (h)

- The structure of settlement areas within this Plan establishes a hierarchy of settlement areas that includes Urban Settlement Areas; Community Settlement Areas; and Hamlets. – Section 1.8 (b)

- The majority of growth within the Township will be directed to Urban Settlement Areas as established in this Plan. Such areas will accommodate growth on full municipal servicing, with such growth being permitted where adequate servicing capacities are established. More limited growth will be permitted within Community Settlement Areas, subject to issues of servicing availability and other policies of this Plan. – Section 1.8 (c)

- […] It is not expected that Hamlet Areas will expand within the planning horizon of this Plan. […] – Section 1.8 (d)

- These [Urban Settlement Areas] either provide or have the potential to provide full municipal services. All new proposed development shall be fully serviced by municipal water and sewage disposal systems. Urban Settlement Areas are expected to have the highest concentration and intensity of land uses, and will be the focus for future growth by accommodating a significant portion of expected growth over the Official Plan's planning period. – Section 5.1.1

- New development in Community Settlement Areas is intended to take place on municipal services. If such services are not available, communal services may be considered if appropriate justification is provided. Further, in areas where municipal or communal services are not available or will not be available in the immediate future, Council and staff may consider the approval of interim development on other than full municipal services, where provided for in a master servicing strategy component of a Settlement Capability Study or Environmental Assessment pursuant to the Environmental Assessment Act. Such development should not preclude the efficient use of land should full services become available in the future and servicing studies shall consider servicing options. – Section 5.1.2

- Except where infilling developments are involved, new developments may require the preparation of a Settlement Capability Study, depending on the scale of development proposed. The requirements of such a study are established in the Middlesex County Official Plan, and apply where new development is proposed within a settlement area which does not provide full municipal water and sanitary sewer systems. New development within Hamlet Areas must be serviced by acceptable servicing standards. Where partial municipal services are considered, supporting studies must address all applicable servicing options and establish that the development may proceed appropriately on partial municipal services. Significant or major new development, such as the development of more than three new lots through plan(s) of subdivision, will require provision of full municipal services. – Section 5.1.3

- Growth shall generally be directed to areas designated as Urban Settlement Areas within this Plan. – Section 5.1.4 (a)

- Wherever possible, development within settlement areas should proceed on full municipal services. In general, the amount, location, and timing of development shall be dictated by the nature and availability of services necessary to support proposed development. – Section 5.1.4 (b)

- […] The establishment of municipal sanitary sewer infrastructure in Arva and Delaware is possible within the planning period of this Plan. – Section 9.3.1 (a)

- It is the policy of this Plan that future development within settlement areas proceed on the basis of full municipal services, with partial services potentially being permitted on an interim basis where proper justification is provided. – Section 9.3.1 (c)

- The principle means of sewage disposal in agricultural areas of the Township is the septic tank and weeping tile system. It is anticipated that such systems will continue to be the principal means of sewage disposal outside of settlements in the foreseeable future, however the consideration of alternative and improved technologies is encouraged. The installation of septic systems is subject to the approval of the authority having jurisdiction. – Section 9.3.2 (a)

4.3 ISSUES OF CONCERN TO REGULATORY AGENCIES

4.3.1 MOE District

As part of the Master Servicing Plan process, the MOE District Office was contacted by Stantec. No specific issues of concern to the MOE were brought forth during this contact.

4.3.2 Health Unit

The Middlesex-London Health Unit (telephone conversation, August 19, 2009) has a general concern if a community with no prior municipal servicing was to be supplied with municipal water but was to remain on private sewage systems. As a general trend, if a household depends on a well as their primary water supply, water conservation would most likely be a priority, to minimize the risk of a well running dry at peak hours or during certain times of the year. By reducing water usage, a household private sewage system, such as a septic bed, is not overloaded. The Health Unit has highlighted this issue if partial servicing was to be put in place. Partial servicing, through the introduction of municipal water, might lead the community to disregard water conservation as they might now deem that they have an 'unlimited supply' of water. Private sewage systems could then become overloaded with the increased sanitary flows resulting from increased water usage, and could lead to negative environmental and health issues.

4.4 ISSUES OF CONCERN TO MIDDLESEX CENTRE

As part of the Master Servicing Plan development process, Middlesex Centre was represented by a Steering Committee to review Stantec's work and to provide guidance to Stantec. The Steering Committee adopted the following principles to guide the Master Servicing Planning process. These principles are intended to address the issues of concern in

A Steering Committee was organized to guide the progress of the study. The members of the Steering Committee are:

- Maureen A. Looby, M.Eng., P.Eng., Director – Public Works and Engineering, Municipality of Middlesex Centre;

- Cathy Saunders, CAO / Clerk, Municipality of Middlesex Centre (until November 2009);

- Marc Bancroft, MPL, MCIP, RPP, Senior Planner, Municipality of Middlesex Centre; and
- Joe Heyninck, P.Eng., Development Advisory, IBI.

Meetings with the Steering Committee were undertaken to present the problem statement, study approach and development of alternative servicing strategies. Through discussions between Stantec and the Steering Committee, a list of guiding principles were developed.

In order to review the issues and opportunities in the Municipality with regards to servicing over the 20-year planning period, thirteen (13) principles to guide future development were established.

1. The Master Servicing Plan should be informed by the Municipality's Strategic Plan.
2. Servicing solutions should suit the Municipality's Growth Plan - If Middlesex Centre wishes growth in an area, the Master Servicing Plan would not and should not 'veto' it. However, areas that are not readily provided with municipal services would be costly (capital costs and operational costs).
3. Preference should be for long term servicing solutions over interim solutions.
4. All services to be fully funded through adequate planning, budgeting and identified revenue streams.
5. Servicing solutions should be developed which minimize risk to the Municipality, users and others.
6. Proven, cost effective technologies that should be in long term use and are capable of continuous improvement should be utilized.
7. Middlesex Centre should service Middlesex Centre users, where possible.
8. Recommended servicing solutions should be 20-year solutions and ensure that there is expandability to 40-years, if possible (or to the life expectancy of the infrastructure).
9. Service Extension through Integration - Future growth and servicing should use existing infrastructure as much as possible to promote cost effectiveness.
10. Network Servicing versus Linear Servicing - A network of streets is more efficiently serviced than the equivalent length of a linear development.
11. High vs. Low - As water servicing is supplied by pressure, development would be preferred at higher elevations to utilize gravity in sanitary and storm services.
12. Minimize Crossings - Where possible, servicing should attempt to avoid crossing physical features such as the Lake Huron Pipeline, hydro corridors, other utilities and naturalized areas.

13. Minimize Complexity – Examples include pumping from one pumping station to another, having two systems service one community, servicing occasional/seasonal users and servicing isolated development.

According to the Guiding Principles outlined above, a 'package plant' is not recommended or supported by the municipality as it would contradict certain elements of the Guiding Principles. A plant of this type could increase risk to the municipality and is more so a short term solution relevant to only one development and would not be beneficial to the community as a whole.

4.5 ISSUES OF CONCERN TO THE PUBLIC

As part of the public consultation process, three (3) Public Information Centres (PICs) were held. Specific issues of concern regarding wastewater servicing are as follows:

In a letter dated on October 25, 2009 from St. John Woods Development Ltd., Graeme Lowry has addressed their concerns regarding sanitary servicing in Arva. Their development is currently being held in abeyance further to Council's Resolution of April 1, 2009 which stated that their Application is premature until adequate sanitary sewer servicing capacity is available to service the proposed subdivision. The letter addresses the opinions of St. John Woods Development Ltd.'s on the servicing alternatives that were presented at PIC 2. A copy of the letter can be found in Appendix 2.5 of the Project File.

In a letter dated June 9, 2009 from AGM Engineering Ltd., Rick Dykstra, P.Eng. has asked that Stantec review their preliminary sanitary servicing options for the specified properties within Ilderton, the Little Farm and the Bulk Farm. Potential options include reduction of flows to existing pumping stations or possible elimination of an existing pumping station. As the Lake Huron Primary Water Supply System Pipeline easement bisects one of the parcels, Middlesex Centre approached the Regional Water Board to determine the constraints that may be imposed on neighbouring development. A copy of the correspondence can be found in Appendix 2.2 of the Project File.

5.0 20-Year Demand Growth & Service Review

5.1 GENERAL

In general, collection of wastewater flows can be accomplished most economically by the use of relatively shallow gravity sewers which are directed to a wastewater treatment facility. More cost and complexity arise when deeper sewers are required and/or pumping stations and forcemains are required to collect wastewater and divert it to a wastewater treatment facility. The capital, operations and maintenance costs for wastewater servicing are very dependent upon topography and constraints of an area being serviced. Therefore in assessing the requirements, opportunities, and relative cost to provide wastewater services, this report will do this on the basis of constraints to the use of relatively shallow gravity sanitary sewers.

To better evaluate planning strategies for each community, two concentric rings have been superimposed over each community, centered on a main intersection. The first ring has a one kilometer radius and the second ring, a two kilometer radius. In terms of growth, it is more viable for future growth and servicing to use existing infrastructure to promote cost effectiveness. Therefore, projecting growth originating from the centre of the community outwards would best meet this objective. It is important to note that these rings do not inhibit or directly promote growth in a certain area, as if Middlesex Centre wishes growth in an area, the Master Servicing Plan would not and should not 'veto' it. However, areas that are not as readily provided with municipal services could be costly to develop.

Middlesex Centre sanitary collection systems are separated by design from conveying storm water. However, non-sanitary flows can be expected to enter. Extraneous flows into the sanitary network from groundwater or stormwater sources are referred to as infiltration/inflow (I/I). Inflow is generally defined as the quick-response entry of stormwater into the sewer system, reflected in sharp peaks in the sewer system and treatment plant flow rate records. Infiltration is generally considered to be the slower and longer-term entry of extraneous water into the sanitary sewer system from saturated soil or from slowly draining pools (above ground or underground) of water that leaks into the sanitary sewer system. Infiltration accompanies inflow, but usually lags behind inflow in time. The amount of I/I will vary depending upon factors such as the age of the piping, the elevation of the water table relative to the pipe, and the presence/absence of connections such as basement drains/roof leader/etc. New sanitary networks are constructed to higher standards to minimize the degree of I/I. This tends to reduce flow peaking factors that result in more cost efficient wastewater treatment design downstream of the collection network. However, as a collection system ages, more I/I is to be expected.

5.2 ILDERTON

5.2.1 Demand Growth

According to the Municipality of Middlesex Centre population forecast, Ilderton's current population is approximately 2,200 people and it is estimated to grow to 3,100 people by the year 2019 and to 3,500 by 2029 (Watson & Associates, 2009). Generally, within the Official Plan growth boundary, there are two areas in the settlement area that could experience residential growth. One area is in the southwest quadrant. The other is to the southeast of Ilderton Road and Hyde Park Road. As these areas fall within the existing boundaries of Ilderton, gravity sewers are preferred over additional pumping stations and forcemains.

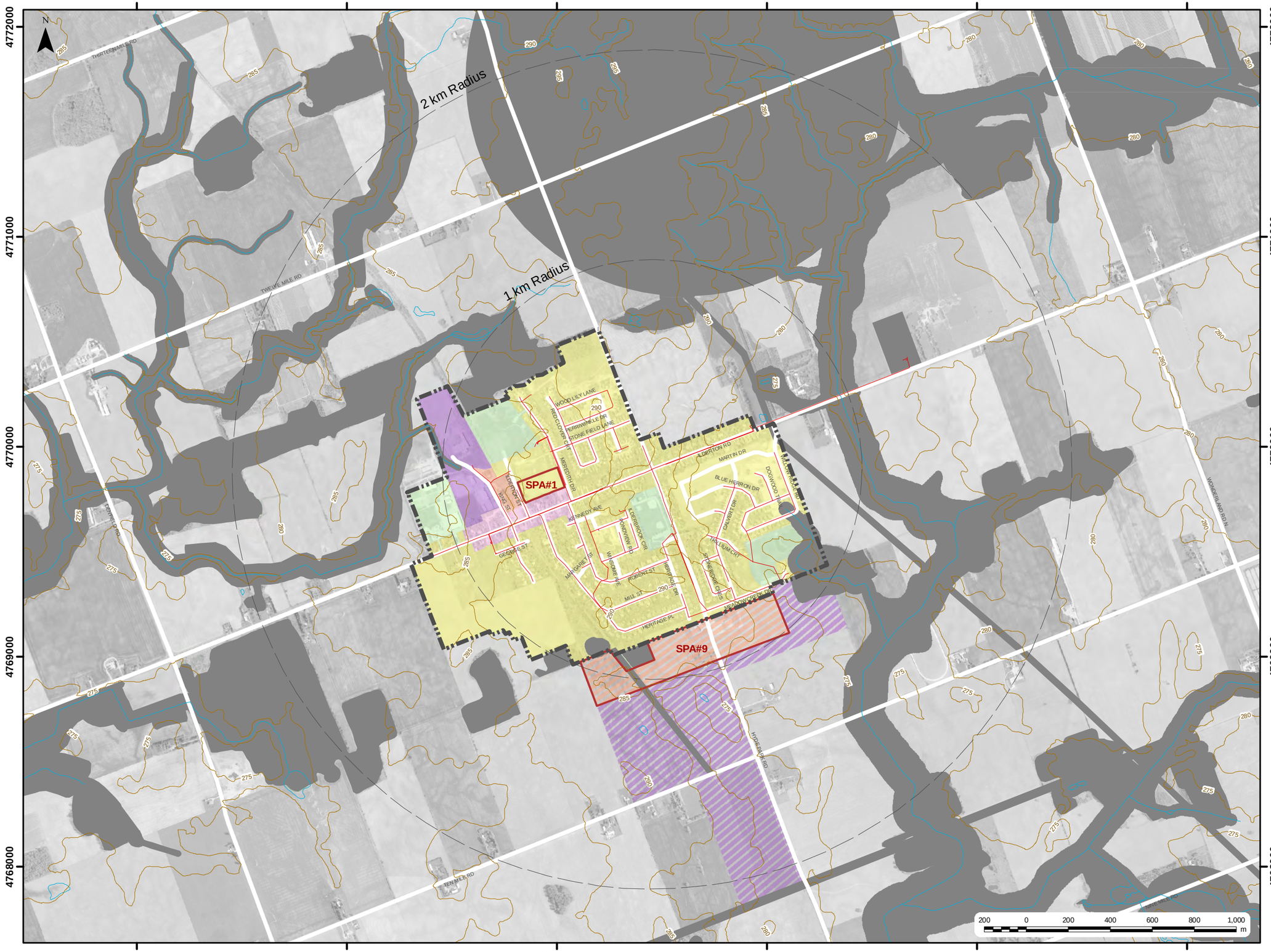
5.2.2 Constraints

As with any community, not all lands can be as easily serviced as others. Identified constraints to servicing in Ilderton are as follows, and are shown in Figure 5.1:

- Upper Thames River and St. Clair Region watershed drainage divide (north-south divide through Ilderton);
- Lake Huron Primary Water Supply System (LHPWSS) Water Transmission Main Corridor (to the east);
- Oxbow Creek (to the southeast);
- Topography: elevation decreases to the south as land slopes towards Oxbow Creek, which hinders gravity servicing to the south;
- Minimum Distance Separation (MDS) as imposed by agricultural operations; and
- Regulated limits and woodlots.

There are areas outside of the existing development boundary that are considered relatively easy to service in the long term based on the servicing principles presented in Section 4.4 of this report. It should be noted that these areas **have not been** selected for actual development, but rather to assist in developing servicing policies for land outside of Ilderton's current growth boundary.

Figure 5.2 illustrates the constraints shown in the previous figure, but provides an explanation or reasoning as to why it has been determined to be a potential constraint.



Middlesex Centre

Stantec

Legend

- 5 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre
- Special Policy Area

Notes

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Projection: UTM Zone 17N, NAD 1983

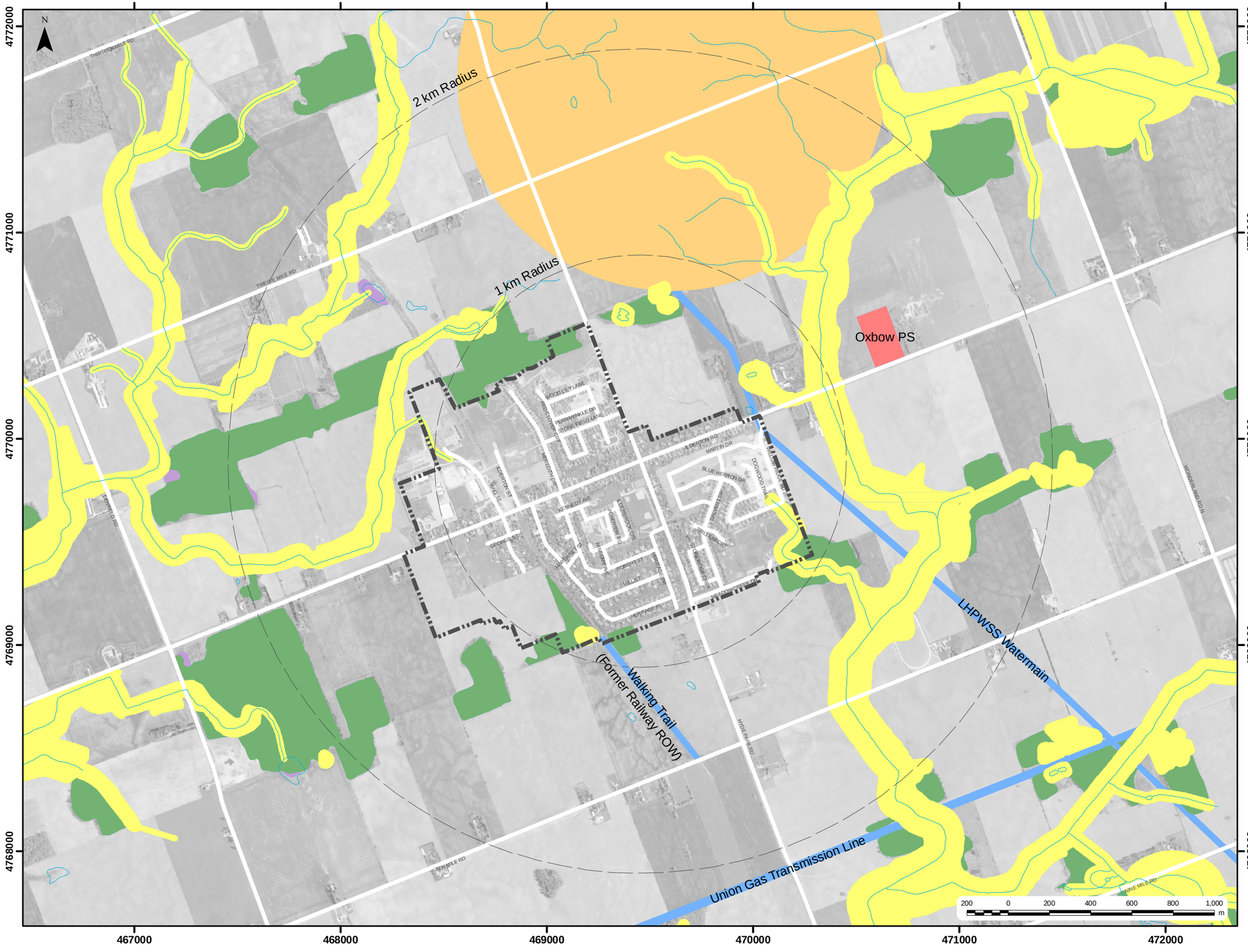
Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.1	**2**	**Feb. 2010**

Title

Ilderton Area Planning Constraints



Middlesex Centre

Stantec

Legend

- Watercourse
- Official Plan Settlement Area
- Significant Site
- Regulation Limit
- Minimum Distance Separation
- Significant Woodland
- Wetland
- Utility

Notes

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Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.2	**2**	**Feb. 2010**

Title

Ilderton Area Planning Constraints Components

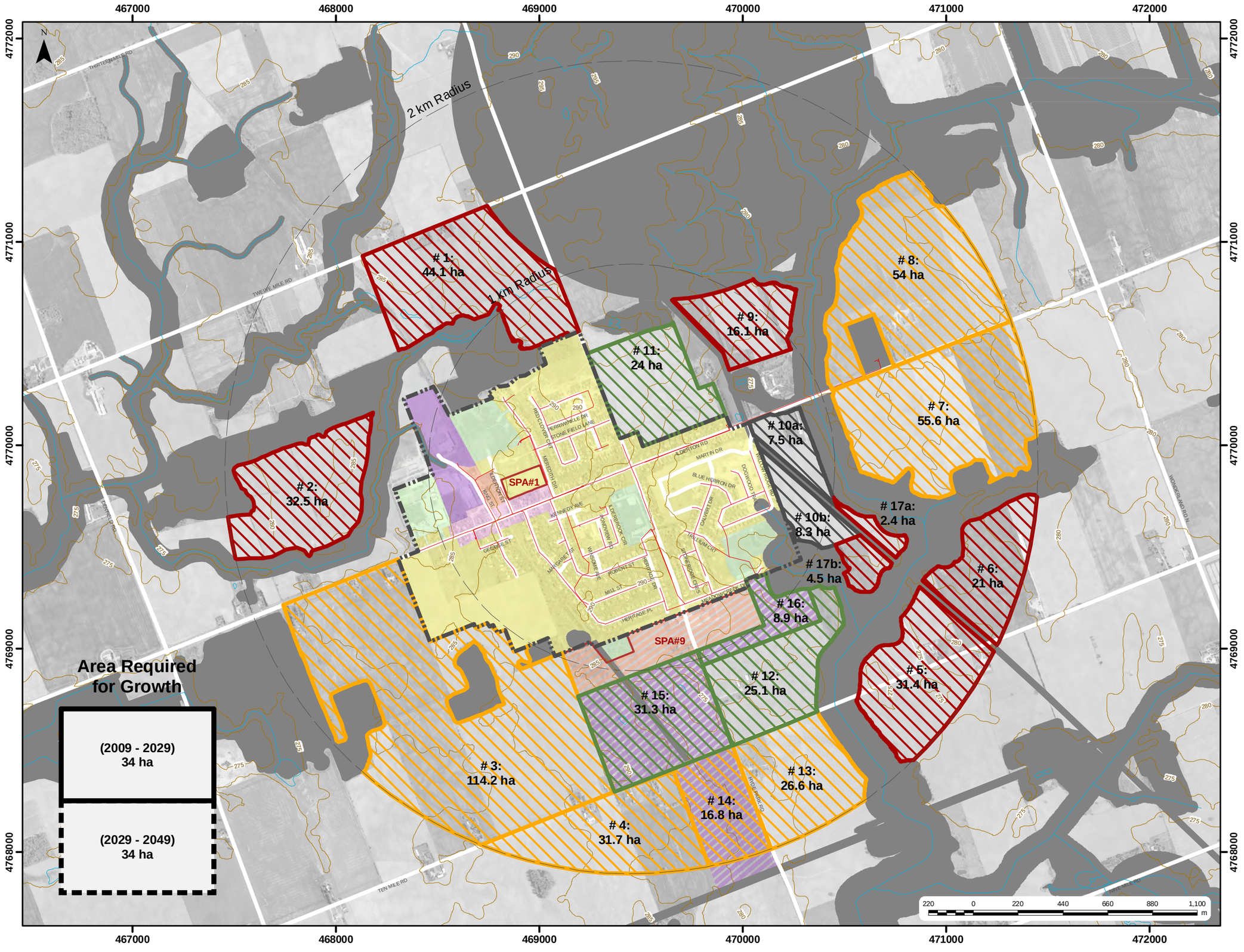
Figure 5.3 shows various undeveloped parcels in Ilderton and each is summarized in Table 5.1. For illustrative reasons, areas are bounded by the concentric rings, but should not be considered as absolute boundaries.

The 24 hectare area to the northeast of Ilderton Road and Hyde Park Road is an ideal location for future growth due to the general simplicity in terms of servicing this land. It is one of a few areas within Ilderton that is not hindered by the drainage divide and could allow for a gravity sewer system. The parcel has nearly no constraints, and would allow for efficient servicing as a block rather than linear development. The area of this parcel would provide an adequate space for sufficient development which could prevent fragmented development and more economically feasible development. Finally, Ilderton is centered around Ilderton Road and Hyde Park Road, and logically, development in the northeast quadrant would promote a sense of community as growth would not sprawl in the opposite direction of its core.

Other areas could also become serviced if they were to develop, however, flow by gravity sewers alone may not be achievable due to various constraints. Refer to Table 5.1 for further details on each individual area.

The area just south of Twelve Mile Road has been eliminated as an option for future development due to the close proximity of a large, intensive livestock operation. This dairy operation requires a setback of 1,041 m from either the nearest livestock building or nearest permanent manure storage. The Minimum Distance Separation (MDS) would restrict neighbouring subdivision development due to odour. This buffer zone is illustrated in Figure 5.2.

“The Provincial Policy Statement, 2005 (PPS) is issued under the Planning Act and provides policy direction on land use planning matters of provincial interest. The PPS provides that the primary purpose and use of prime agricultural land is for agriculture. The PPS sets out policies for prime agricultural areas and rural areas, which ensure that these areas are protected for agricultural uses in the long term. The Planning Act requires that municipal council decisions on land use planning matters be consistent with the Provincial Policy Statement. Municipalities are encouraged to adopt policies in their official plans and zoning by-laws, that are more stringent than the PPS, and that work towards controlling or limiting future development that would not be compatible with agricultural uses and livestock operations. A principle of land use planning is the grouping together of compatible land uses and separating the incompatible land uses. The objective of Minimum Separation Distance (MDS) Formulae is to minimize nuisance complaints due to odour and thereby reduce potential land use conflicts. MDS does not account for other nuisance issues such as noise and dust. The separation distances calculated by MDS will vary according to a number of variables including type of livestock, size of the farm operation, type of manure system and the form of development present or proposed. History shows, that where there has been sufficient separation distance between differing rural uses, there have been few odour complaints.” (MDS Implementation Guidelines, Publication 707, OMFRA).



Middlesex Centre

Stantec

Legend

- Area suitable for service extension with few (if any) issues or constraints
- Area capable for service extension with some issues or constraints
- Area constrained for service extension with significant issues or constraints
- Indetermined
- 5 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Watershed Boundary
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre

- Special Policy Area

Notes

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Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.3	2	Feb. 2010

Title

Ilderton Area

Table 5.1: Ilderton Growth Options

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles (as found on pages 4.7)	Notes
AREAS SUITABLE FOR SERVICE EXTENSION WITH FEW (IF ANY) ISSUES OR CONSTRAINTS						
11	24	919	251	▪ This area is situated in the northeast quadrant of Ilderton ▪ Adjacent to existing development	Advantages ▪ Proximity to existing development would allow for easy integration into existing infrastructure (GP#9) ▪ Sanitary flows could drain by gravity into the existing collection system, and would not require construction of a pumping station to service this area (GP#5,11) ▪ Would provide a sufficient area for efficient growth for 20-year design horizon ▪ Geometry of parcel would promote network servicing (GP#10) ▪ Development of this area would eliminate need to cross various physical features and utilities corridors (GP#12)	▪ Adjacent to existing development allows for easy integration into community, which is centred around Ilderton Road & Hyde Park Road ▪ Very few constraints present ▪ Within 1km radius of centre of community (reduce sprawl)
12, 15, 16	40.3	1544	421	▪ This area is situated on the south side of Ilderton ▪ North of Ten Mile Road, on either side of Hyde Park Road	Advantages ▪ Could potentially service through a gravity sewer to the WWTF (GP#11) ▪ Not constrained by naturalized areas or utility corridors (GP#12) ▪ Close proximity to current growth boundary (GP#9)	▪ Outside of growth boundary, however, it has been zoned for rural/industrial development
INDETERMINED AREAS						
10a	7.5	287	78	▪ This area is situated in the southeast quadrant of Ilderton ▪ South of Ilderton Road, bordering eastern limit of existing development	Advantages ▪ Access to Ilderton Road would allow for ease of integration to existing infrastructure (GP#9)	▪ Proponent would have to approach LHPWSS for permission to develop areas surrounding transmission main corridor
10b	8.3	318	87	▪ This area is situated in the southeast quadrant of Ilderton ▪ South of LHPWSS corridor, bordering eastern limit of existing development	Advantages ▪ Road access to existing development, ease of integration to existing infrastructure (GP#9) ▪ Areas 10a and 10b provide sufficient area for efficient growth for design horizon	▪ Proponent would have to approach LHPWSS for permission to develop areas surrounding transmission main corridor
AREAS CAPABLE FOR SERVICE EXTENSION WITH SOME ISSUES OR CONSTRAINTS						
8	54	2068	564	▪ This area is situated in the northeast quadrant of Ilderton	Advantages ▪ Geometry of parcel would promote network servicing (GP#10) ▪ Gravity sewers could be used to service development and flow could be directed	▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl) ▪ Distance from centre of community may be

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles (as found on pages 4.7)	Notes
				▪ North of Ilderton Road, surrounding Oxbow P.S.	towards Ilderton Road (GP#11) ▪ Although a forcemain and pumping station would be required, parcels 7 and 8, which encompass a large area of land, could utilize this sanitary drainage area to make the construction costs more economical ▪ Could decommission pumping station at Oxbow P.S. (GP#13) Disadvantages ▪ Servicing solution would be similar to that of Oxbow Public School. Forcemain and pumping station would be required to cross Oxbow Creek. (GP#11,12) ▪ Would most likely not be able to reuse existing forcemain that services Oxbow P.S. as it would be undersized. ▪ There is an existing PS ~500m to the west on Ilderton Road, consideration given to decommission and redirect flows (GP#5)	a constraint ▪ Oxbow Creek is main constraint
7	55.6	2130	581	▪ This area is situated in the southeast quadrant of Ilderton ▪ South of Ilderton Road, across from Oxbow P.S.	Advantages ▪ Geometry of parcel would promote network servicing (GP#10) ▪ Gravity sewers could be used to service development and flow could be directed towards Ilderton Road (GP#11) ▪ Although a forcemain and pumping station would be required, parcels 7 and 8, which encompass a large area of land, could utilize this sanitary drainage area to make the construction costs more economical ▪ Could decommission pumping station at Oxbow P.S. (GP#13) Disadvantages ▪ Servicing solution would be similar to that of Oxbow Public School. Forcemain and pumping station would be required to cross Oxbow Creek. (GP#11,12) ▪ Would most likely not be able to reuse existing forcemain that services Oxbow P.S. as it would be undersized. ▪ There is an existing PS approximately 500m to the west on Ilderton Road, future consideration needs to be given to decommission it and redirecting flows (GP#5)	▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl) ▪ Distance from centre of community may be a constraint ▪ Oxbow Creek is main constraint
13,14	43.4	1662	453	▪ This area is situated in both the southwest and southeast quadrant of Ilderton ▪ South of Ten Mile Road	Advantages ▪ Geometry of parcel could potentially promote network servicing (GP#10) Disadvantages ▪ Situated on opposite of drainage divide as the WWTF, area relatively flat, but tends to drop in elevation further to the west (GP#11)	
4	31.7	1214	331	▪ This area is situated in the southwest quadrant of	Advantages ▪ Geometry of parcel could potentially promote network servicing (GP#10)	

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles (as found on pages 4.7)	Notes
				Ilderton ▪ South of Ten Mile Road	Disadvantages ▪ Situated on opposite of drainage divide as the WWTF, area relatively flat, but tends to drop in elevation further to the west (GP#11)	
3	114.2	4374	1193	▪ This area is situated in the southwest quadrant of Ilderton ▪ Between Ilderton Road and Ten Mile Road	Advantages ▪ Geometry of parcel could potentially promote network servicing (GP#10) Disadvantages ▪ Situated on opposite of drainage divide as the WWTF, area relatively flat, but tends to drop in elevation further to the west (GP#11)	▪ Road access to both north and south of parcel ▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl) ▪ Distance from centre of community may be a constraint
AREAS CONSTRAINED FOR SERVICE EXTENSION WITH SIGNIFICANT ISSUES OR CONSTRAINTS						
9	16.1	617	168	▪ This area is situated in the northeast quadrant of Ilderton ▪ North of Ilderton Road, between Hyde Park Road and Oxbow P.S.	Disadvantages ▪ Land slopes rapidly towards Oxbow Creek, could be problematic to service by gravity sewers (GP#11) ▪ To integrate servicing to existing infrastructure crossing of the LHPWSS corridor (high pressure water transmission main) or through naturalized area would be required (GP#12)	▪ Landlocked parcel ▪ Difficult to service as it is bounded by LHPWSS pipeline corridor to the west, MDS buffer to the north, and natural constraints on remaining sides
6	21	804	219	▪ This area is situated in the southeast quadrant of Ilderton ▪ East of Oxbow Creek	Disadvantages ▪ Would require a forcemain and pumping station to service this area to cross Oxbow Creek (GP#12) ▪ Due to distance from existing development, it may be uneconomical to service or tie these lands into existing infrastructure (GP#9)	▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl)
5	31.4	1203	328	▪ This area is situated in the southeast quadrant of Ilderton ▪ East of Oxbow Creek	Disadvantages ▪ Would require a forcemain and pumping station to service this area to cross Oxbow Creek (GP#12) ▪ Due to distance from existing development, it may be uneconomical to service or tie these lands into existing infrastructure (GP#9)	▪ Outside 1km radius, but within 2km radius of centre of community (could induce sprawl)
1	44.1	1689	461	▪ This area is situated in the northwest quadrant of Ilderton ▪ Northwest corner of Twelve Mile Road and Hyde Park Road	Disadvantages ▪ The topography along Hyde Park Road near this area is between two drainage divide and could prevent flows from being transported by gravity sewer. A pumping station and forcemain along Hyde Park Road may be required. (GP#5,11)	▪ Near MDS buffer zone ▪ Constrained by natural areas to the south which is in between future and existing development
2	32.5	1245	339	▪ This area is situated in the northwest quadrant of Ilderton ▪ North of Ilderton Road	Disadvantages ▪ Land slopes away from Ilderton Road and therefore could be problematic to service and integrate into existing infrastructure (GP#9,11)	▪ Landlocked parcel

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles (as found on pages 4.7)	Notes
					▪ Restricted on all sides by natural constraints (GP#12)	

Notes/Comments:

1. **If an area is within the 20-year growth boundary for Middlesex Centre, it is assumed that servicing can be provided (Stantec's approach)**
2. If there is a nearby existing pumping station and a developer requires an additional pumping station to be constructed to service a new development, the Municipality would recommend the decommissioning of the existing pumping station and redirection of flows to the new pumping station. This would be to cap or reduce the number of pumping stations in Ilderton. The cost to decommission, redirect existing flow and construct a new pumping station would be borne by the developer.

5.2.3 Service Assessment

Average and max day wastewater generation rates for the Ilderton WWTF for the past six years can be found in Table 5.6. Within this time period, the average daily flow has remained relatively consistent. There was a significant increase in flow in 2008. However, the average daily flow to date is less than that of the rated capacity of the Ilderton WWTF. Although it appears that there are no capacity issues, much of the current capacity is taken up by the 'reserve capacity' which is set aside for planned development that has not yet occurred.

According to the population projection completed by Watson & Associates to 2029 and further extrapolation to 2049 by Stantec, the land required for growth in Ilderton is shown below in Table 5.2. At the end of the 20-year design horizon, it is estimated that 24 ha will be required to meet the current population projections. Linear extrapolation to the 40-year horizon results in an approximate 68 ha of land to accommodate the future population of Ilderton.

Table 5.2 : Land Required for Growth in Ilderton

Year	Population	Units	Land Required	
2009	2,200		(acres)	(ha)
2019	3,100	290	58	23
2029	3,500	129	26	10
2049	4,800	419	84	34

In 20 years	~ 34	ha required
In 40 years	~ 68	ha total required

Figure 5.3 shows a graphical representation of the approximate area of land required for both the 20 and 40-year design horizon. When reviewing the serviceability of land within Ilderton, it is important to put the area of land required into context. After review, it appears that much of the 20-year growth could be allocated within the current growth boundary, in the southwestern quadrant of Ilderton. Future growth could also be accommodated quite easily just to the east of existing development in Ilderton. By providing a visual representation of the area required, the Municipality can readily examine other potential development areas and determine which is more logical.

According to the method of projecting Ilderton's future population as discussed above, and current WWTF data, the associated flows and peaking factors generated by such growth are illustrated in Table 5.3. The measured average day and max day flows are taken from WWTF data and the peak hour is calculated based on the Harmon Formula.

Table 5.3 : Ilderton WWTF Measured Flows (2009)

	Measured Flow (m^3/day)	Peaking Factor
AADF (m^3/d)	630	1.00
Max Day (m^3/d)	2,700	4.50
Peak Hour (m^3/d)	2,737	4.56

Table 5.4 shows the projected residential sanitary flows. The projections below are based on measured WWTF data, associated peaking factors, and predicted future population growth rates.

Table 5.4 : Projected Residential Sanitary Flows to Ilderton WWTF

	2009	2019	2029	2049
AADF (m^3/d)	630	845	955	1309
Max Day (m^3/d)	2700	3805	4295	5891
Peak Hour (m^3/d)	2737	3857	4354	5972

*Takes into account I/I, but not future commercial/industrial flows

Table 5.5 shows the projected sanitary flows, which includes both residential and industrial/commercial. Full build-out of industrial / commercially zoned areas has been assumed in order to determine a conservative ultimate sanitary flow rate. Within the 20-year design horizon, it has been assumed that full industrial / commercial build-out will occur to the west of Hyde Park Road. During the subsequent 20-year horizon, Ilderton will experience similar build-out on the east side of Hyde Park Road.

Table 5.5 : Projected Ultimate Sanitary Flows to Ilderton WWTF

	2009	2019	2029	2049
AADF (m^3/d)	630	1072	1408	2053
Max Day (m^3/d)	2700	4825	6337	9238
Peak Hour (m^3/d)	2737	4891	6423	9364

*Industrial / Commercial development to occur on west side of Hyde Park Road (20 year)
*Industrial / Commercial development to occur on east side of Hyde Park Road (20-40 year)

The Ilderton WWTF is currently rated for 1,120 m^3/d annual average flow per its C of A. Flows currently average approximately 600 m^3/d as an annual average and reserve capacity has been largely committed to planned residential growth. There is a need to expand wastewater treatment to serve additional future growth within the Ilderton growth area within a 10-year time frame.

Table 5.6 : Ilderton WWTF Historic Flows

	Average Daily Flow (m^3/day)							Maximum Daily Flow (m^3/day)						
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
January	449	506	640	701	657	874	522	697	740	1,877	1,043	1,039	2,034	847
February	471	540	595	625	402	796	960	719	1,107	1,679	1,646	480	2,677	3,624
March	656	837	606	608	711	814	794	1,410	1,983	1,026	2,058	1,774	1,505	1,982
April	606	494	637	525	547	601	872	1,132	839	1,347	784	748	1,529	2,274
May	578	648	471	481	461	513	598	946	1,966	641	635	732	785	1,019
June	432	434	425	421	429	586	576	718	622	723	586	548	1,081	842
July	410	404	373	512	499	477	560	867	737	495	1,183	695	557	1,048
August	408	395	385	459	506	512	490	620	727	750	972	648	1,045	740
September	477	408	426	478	533	655	489	1,003	535	741	686	665	1,284	729
October	541	400	396	842	549	682	558	679	618	535	1,923	691	1,569	968
November	661	455	496	584	635	1022	495	1,919	774	1,193	1,516	1,187	3,251	755
December	714	545	531	839	832	1178	614	2,150	1,109	1,260	1,833	1,606	3,858	1,029
Average	534	506	498	589	563	726	627							
Maximum								2,150	1,983	1,877	2,058	1,774	3,858	3,624

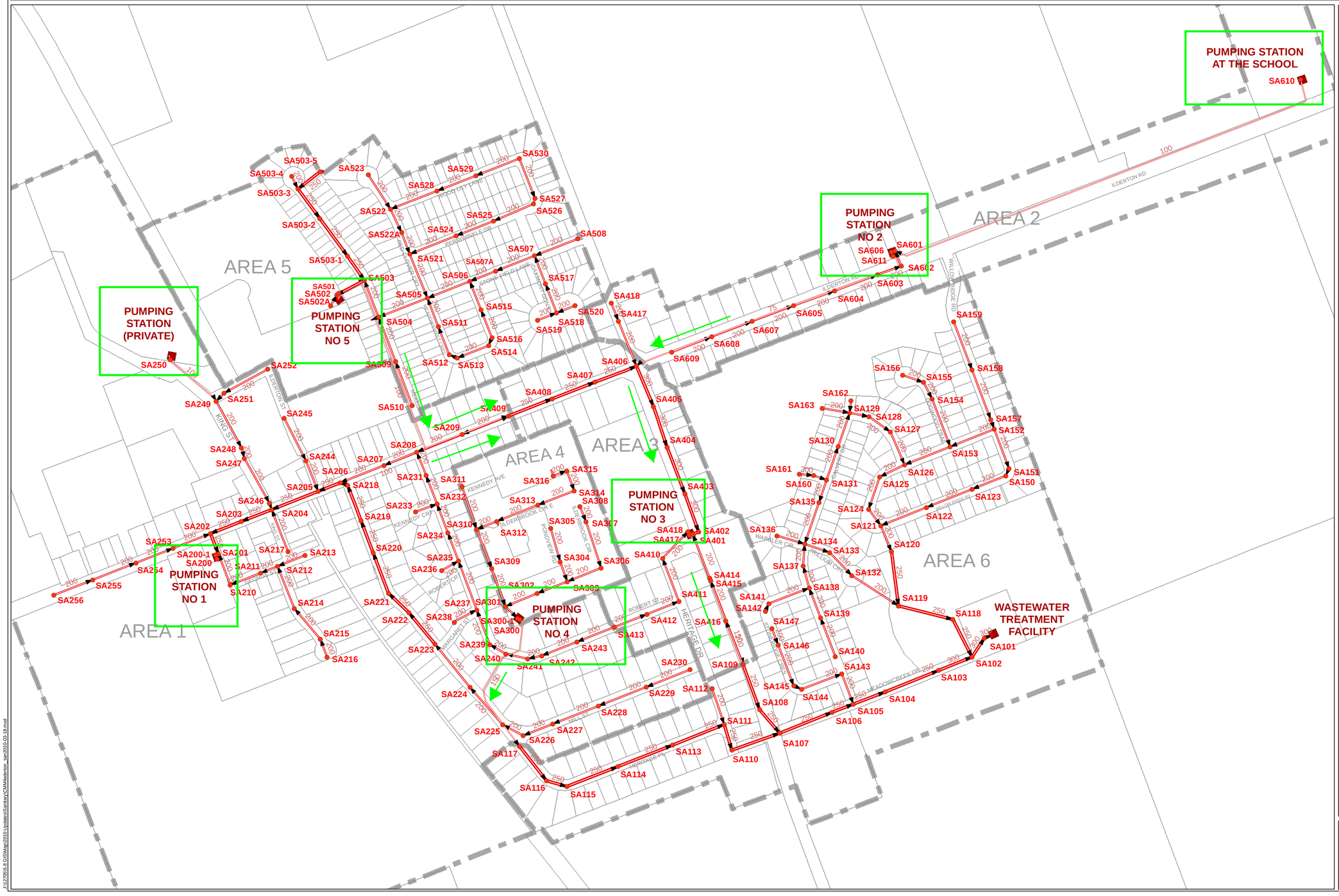
5.2.3.1 Collection

Ilderton's wastewater collection network consists of five pumping stations. A network of gravity sanitary sewers and forcemains collect wastewater from the community and transport wastewater to various pumping stations and then to the Ilderton WWTF. Pipe sizes range from 75 mm (forcemain) to 300 mm.

Figure 5.4 illustrates the location of each pumping station within Ilderton. It also shows the general direction of flow within the community. Future trunk sewers are dependent on development. These routes should either:

- Allow for gravity flow to an existing pumping station; and/or
- Allow for gravity flow to a **temporary** pumping station.

Ilderton Wastewater System



Municipality of Middlesex Centre

LEGEND

- 75mm
- 100mm
- 150mm
- 200mm
- 250mm
- 300mm
- Lateral Service Connection
- SA102 Maintenance Hole
- Pumping Station, Wastewater Treatment Facility
- Ilderton Pumping Station Collection Areas
- Parcels

0 100 200 400 Metres

1:3,500 (22" X 34")

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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5.2.3.1.1 Pumping Stations

The community of Ilderton has a total of seven sanitary pumping stations, five municipally owned and two privately owned.

- Pumping Station #1: Is located on the south side of Main Street, just southeast of the former Fire Hall.
- Pumping Station #2: Is located north of Main Street, west of the water reservoir.
- Pumping Station #3: Is located on the northwest corner of Hyde Park Road and Heritage Drive.
- Pumping Station #4 (Bypass): Is located on Ilderbrook Circle, near Robert Street and Margaret Street.
- Pumping Station #5: Is located on the west side of Meredith Drive.
- Pumping Station #6 (Private): Is located on King Street.
- Pumping Station #7 (Thames Valley District School Board): Is located at Oxbow Public School.

During a review of all wastewater infrastructure in Middlesex Centre in 2007, no major concerns were noted in terms of the pumping stations in Ilderton. It is difficult to accurately project the current percent capacity of each pumping station without performing individual drawdown tests. If the Municipality wishes, it could undertake this and compare it to the rated capacity, if given, in the respective C of A.

For a community the size of Ilderton, there are an above average number of pumping stations. Additional pumping stations within the community would become an economic and operations/maintenance burden for the Municipality. Limiting or reducing the number of pumping stations in Ilderton should be a long-term goal as it would reduce operational complexity and operating costs to the system. Ilderton's location between two drainage divides has been one of the driving elements for the number of pumping stations. It is important to take this factor into consideration in the planning of future trunk sewers. As well, it is not good practice for one pumping station to feed into another, as this would use up capacity for the receiving pumping station and increase operational complexity. It is recommended to set planning goals that will address future drainage areas and build collection systems towards long-term development.

5.2.3.2 Treatment

The Ilderton WWTF is located at 147 Meadowcreek Drive, as shown in Figure 5.4. The plant is bordered by forested area to the east, a stormwater management facility to the north, sports fields to the west and farmland to the south. The plant is situated at a lower elevation 271.800

m allowing the collection system to drain to the plant, where it is then pumped to the required elevation for gravity flow through the plant.

The plant was originally constructed in 1993 and has undergone substantial upgrades since then. Initially the plant consisted of one treatment train, with a second being added a year later. In 1994, the sewer system and pumping stations were constructed.

Initial rated capacity of the plant, when it opened on October 19, 1994 was 540 m^3/day. Due to high growth in the late 1990's, it was discovered that the plant could be re-rated for 660 m^3/day. Treatment capacity upgrades were still required and were completed in 2004, adding a third process train, resulting in a total capacity of 1,120 m^3/day. A summary of the current WWTF is as follows:

- Influent Pumping Station – Three pumps (2 duty, 1 standby) each rated for 1,900 m^3/d for a total estimated firm capacity of 3,800 m^3/d according to the C of A.
- Screening – One duty mechanical screen with a bypass manually cleaned screen.
- Degritting – Two parallel duty/standby manually cleaned grit channels.
- Flow splitting – Four weir gates (3 serving trains 1, 2, and 3 and a spare 4th for future)
- Three extended aeration trains – Flows are split 30/30/40 to trains 1, 2, and 3 respectively according to train capacity. Each train consists of rectangular aeration tank with fine bubble aeration and rectangular secondary clarifier with RAS/WAS/scum pumps. Total rated capacity is 1,120 m^3/d annual average flow for the three trains per C of A.
- Aerobic Digestion – Each train has primary and secondary digesters fitted with coarse bubble aeration, supernatant decanters, and sludge transfer pumps.
- Effluent Filtration – Secondary effluent from all three trains are combined and made to pass through 3 deep bed sand filters with continuous backwash. Sand filter capacity is 3,808 m^3/d peak flow according to C of A.
- Post Aeration – 24 m^3 tank fitted with coarse bubble aeration for DO increase.
- Effluent Pumping - Three pumps (2 duty, 1 standby) each rated for 1,900 m^3/d for a total estimated firm capacity of 3,800 m^3/d according to the C of A.
- UV Disinfection – One bank with 4 modules containing 8 lamps for a total of 32 lamps sized for 3,808 m^3/d peak flow according to C of A.
- Biosolids Storage – One rectangular biosolids storage tank with 1,500 m^3 storage volume fitted with 2 mechanical mixers and two sludge loading pumps (duty/standby).

- Control Building – Containing: laboratory, washrooms, standby diesel generator, chemical dosing systems, electrical and control systems, blowers and air compressors.

To accommodate and treat additional flows from future growth, an expansion will be necessary. The scope of such an expansion will be identified in the *Ilderton Servicing Class EA*. This would be dependent on the rate of development as to when the expansion would be required. Proven cost effective technologies for long term use and are capable of continuous improvement should be utilized. Any expansion should be a 20-year solution that ensures there is expandability to 40 years, if possible.

This expansion could be similar to that proposed for the Komoka WWTF in the *Komoka-Delaware Municipal Servicing Implementation Study (Stantec, 2009)*. Depending on design and/or effluent constraints either membrane bioreactor (MBR) or extended aeration (EA) technology could be considered, as both are currently utilized by the Municipality.

5.2.3.3 System Improvements / Alternatives

A Class EA was undertaken by MIG Consulting Engineers and MacViro in 2002 for the expansion of the Ilderton Wastewater Treatment Facility. The following alternatives were considered:

- Do nothing;
- Limit community growth;
- Re-rate existing treatment plant;
- Connect to an alternate existing treatment facility; and
- Construct additional treatment capacity.

Based on the findings in this Class EA, the do nothing and limit growth option are not viable solutions as Ilderton is currently growing and implementing these options would impose an unacceptable constraint on the community. In terms of re-rating the WWTF, it was concluded that an additional economical increase in capacity could be achieved but would not provide enough additional capacity. As the nearest WWTF is located in the City of London, connection to a plant there would not be economically feasible and would not follow the guiding principles set out in this document. It would go against the guiding principle that Middlesex Centre should service Middlesex Centre users and therefore not recommended. The last option, to construct additional treatment capacity was the preferred alternative. The existing site was chosen in the *Township of London, Police Village of Ilderton, Class Environmental Assessment, Final Environmental Assessment Report (Dillon, 1991)* as the preferred location for expansion. As described in the Ilderton Class EA, sufficient space exists on the current site. However, due to further expansions, a space constraint on site may exist for future capacity upgrades. This issue will be addressed in the *Ilderton Servicing Class EA*.

5.2.3.4 Other

Wastewater treatment in Ilderton was formerly accomplished through the use of private septic systems and leaching bed systems. It was recommended by the Health Unit and the MOE, after noticing that septic tanks were malfunctioning and compromising local storm drainage and creeks, that a communal wastewater system would be in the best long-term interest for the community. The findings from the study indicated that septic system issues stemmed from a high water table and low soil permeability (Class EA Ilderton Wastewater Treatment Plant, MIG/MacViro).

The Area Sanitary Servicing Study Southwest Corner of Ilderton (Development Engineering) gives possible routing options for future development in that area of Ilderton. Future review by Middlesex Centre will be required in accordance with the Guiding Principles outlined in this document to determine the location of trunk sewer lines and to promote gravity sanitary servicing.

5.3 ARVA

5.3.1 Demand Growth

Arva's current population is approximately 430 people. Development within Arva's growth boundary is currently constrained due to lack of provision of sanitary servicing. This makes it difficult to accurately determine growth projections. Prior housing starts do not provide an accurate trend for projections. Therefore, Stantec took a different approach to determine population growth in Arva.

Based on the area and number of lots in the subdivision proposed by St. John Woods Development Ltd. to the west of Richmond Street North, an approximate population density was calculated. Assuming that the remaining land within the growth boundary would be developed in a similar manner, an ultimate build-out population increase of 750 people is estimated. In terms of growth, it is predicted that the population will grow to 1,180 people by 2029 and 1,930 by 2029 (Stantec).

5.3.2 Constraints

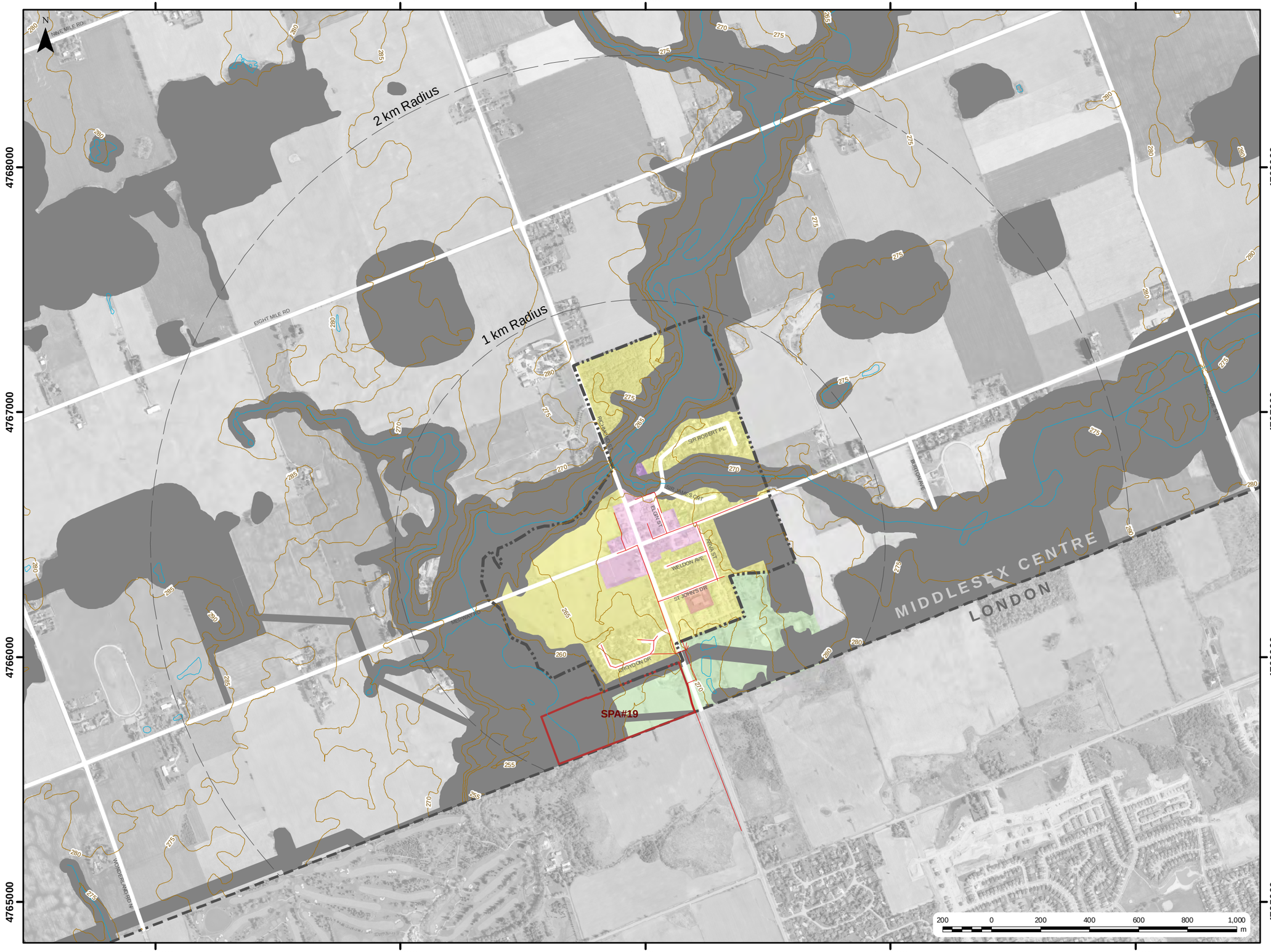
Within the current Official Plan growth boundary, there are two areas in the community that could experience residential growth. As the majority of land to the east of Richmond Street North has been developed, land to the west, bordering either side of Medway Road has the potential to be developed. There is another area of land to the north, bordered to the west by Richmond Street North and the Thames River to the east, which encompasses a significant woodlot. It should be noted that these locations and others **have not been** selected for actual development, but rather to assist in developing servicing policies for Arva.

As with any community, not all lands can be as easily serviced as others. Identified constraints to servicing in Arva are as follows, and are shown in Figure 5.5:

- Medway Creek (topography, as well as suitability for discharge body);
- Regulated limits and woodlots;
- Lake Huron Primary Water Supply System (LHPWSS) Water Transmission Main Corridor;
- Sun Canadian High-pressure Oil Pipeline Corridor; and
- City of London boundary.

Figure 5.6 illustrates the constraints shown in the previous figure, but provides an explanation or reasoning as why it has been determined to be a potential constraint.

Figure 5.7 shows various undeveloped parcels in Arva and each is summarized in Table 5.7.



Middlesex Centre

Stantec

Legend

- 5 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Municipal Boundary
- Planning Constraints
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre
- Special Policy Area

Notes

Not an official planning document. Consult appropriate agencies for policies and mapping. Data used under license with Middlesex Centre and the Ontario Ministry of Natural Resources.
Projection: UTM Zone 17N, NAD 1983

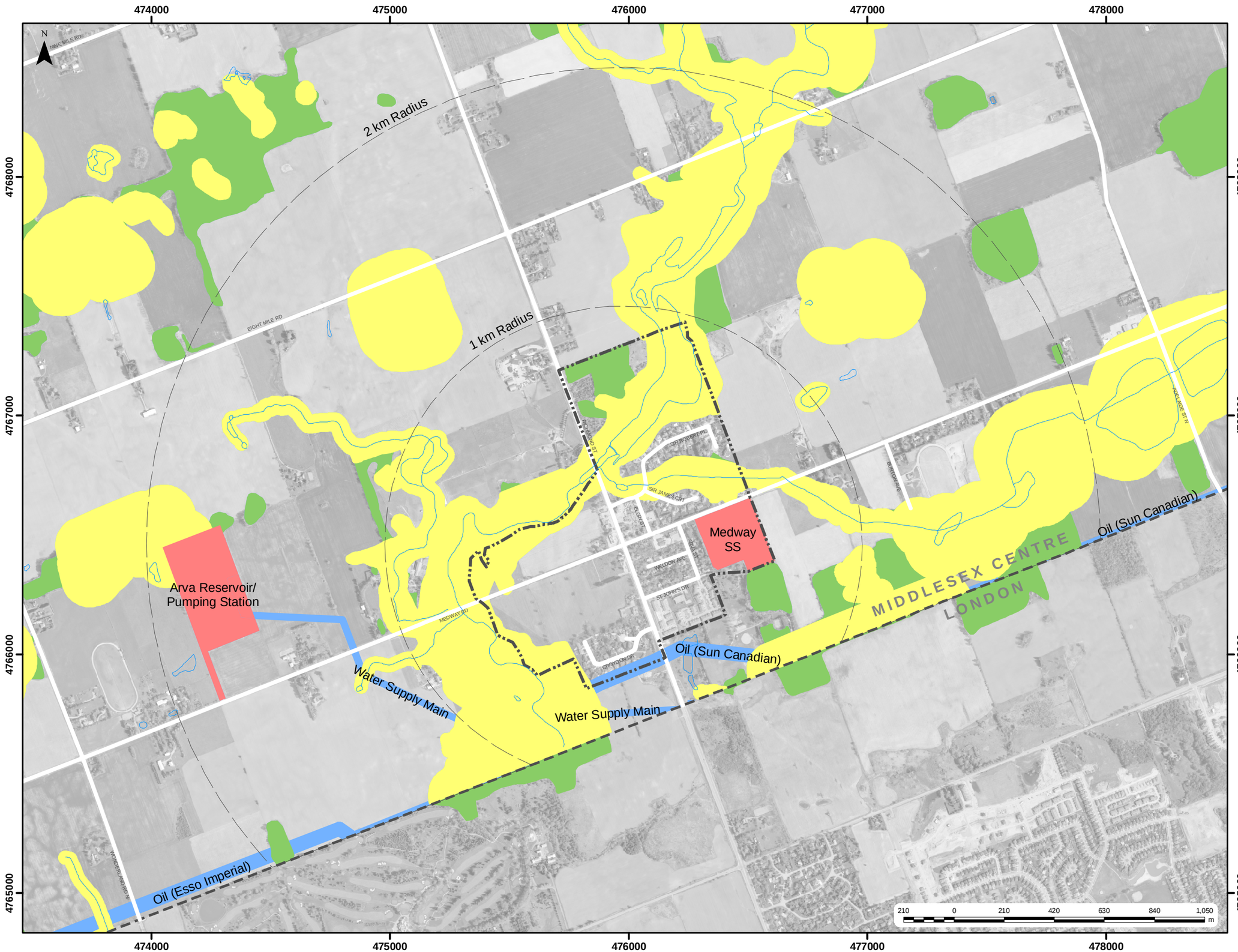
Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.5	**1**	**Feb. 2010**

Title

Arva Area Planning Constraints



Middlesex Centre

Stantec

Legend

- Watercourse
- Municipal Boundary
- Official Plan Settlement Area
- Significant Site
- Regulation Limit
- Significant Woodland
- Utility

Notes

Data used under license with Middlesex Centre and the Ontario Ministry of Natural Resources.
Projection: UTM Zone 17N, NAD 1983

Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.6	**1**	**Feb. 2010**

Title

Arva Area Planning Constraint Sources

475000 476000 477000

4767000

4766000

N

1 km Radius

Grain Handling Facility

SPA#19

Typical WWTF Buffer Area

MIDDLESEX CENTRE

LONDON

100 0 100 200 300 400 500 m

Legend

- Typical WWTF (~ 500 m³/day)
- 150 m Buffer Area
- 5 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Municipal Boundary
- Planning Constraints
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre
- Special Policy Area

Notes

Not an official planning document. Consult appropriate agencies for policies and mapping. Data used under license with Middlesex Centre and the Ontario Ministry of Natural Resources.
Projection: UTM Zone 17N, NAD 1983

Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.7	**2**	**Feb. 2010**

Title

Arva Area

Table 5.7: Arva Growth Options

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles	Notes
AREAS SUITABLE FOR SERVICE EXTENSION WITH FEW (IF ANY) ISSUES OR CONSTRAINTS**						
	20.7	793	238	▪ This area is situated within the northwest and southwest quadrant of Arva ▪ West of Richmond Street	Advantages ▪ Proximity to existing development would allow for easy integration into existing infrastructure (GP#9) ▪ Sanitary flows could drain by gravity into the existing collection system, and would not require construction of a pumping station to service this area (GP#5,11) ▪ Development in this area would eliminate need to cross various physical features and utility corridors (GP#12) ▪ Subdivision plans have been drafted and illustrate effective network servicing (GP#10)	▪ Within current growth boundary ▪ Subdivision plans have already been created, would allow for development to begin almost immediately
AREAS SUITABLE FOR SERVICE EXTENSION WITH SOME ISSUES OR CONSTRAINTS**						
	7.4	283	85	▪ This area is situated within the northeast quadrant of Ava ▪ Richmond Street to the west, Medway Creek to the south east	Advantages ▪ Proximity to existing development would allow for easy integration into existing infrastructure (GP#9) Disadvantages ▪ Sanitary flows may require pumping in order to cross Medway Creek (GP#11) ▪ Development in this area may involve crossing of physical features (GP#12)	▪ Within current growth boundary ▪ Contains a significant woodlot
Notes/Comments: **WITHIN GROWTH BOUNDARY** 1. **If an area is within the 20-year growth boundary for Middlesex Centre, it is assumed that servicing can be provided (Stantec's approach)**						

5.3.3 Service Assessment

Middlesex Centre has an agreement with the City of London that allows them to collect and pump Arva wastewater to London for treatment. This agreement limits growth in Arva, as the Agreement controls the amount of wastewater that London will accept. This results in a number of different alternatives that Arva may evaluate and implement over the next twenty years and are outlined further.

Wastewater generation rates for Arva for the past six years can be found in Table 5.10. The Sewage Treatment Agreement states that the City will receive no more than an average of 175 m^3/day based on a two month rolling average. Figure 5.8 illustrates the monthly average flow in 2008 and 2009 with an overlaid two month rolling average trend line.

Unlike Ilderton, Figure 5.7 does not show a graphical representation of the approximate area of land required to service both the 20 and 40-year design horizon. It is difficult to estimate future population projections for Arva, therefore it was assumed that the remaining land within the growth boundary would be developed by the end of the 20-year design horizon. For the 40-year design horizon, it was then assumed that the 20-year growth would be extrapolated linearly.

Table 5.8 shows the measured flows sent from Arva.

Table 5.8: Arva Measured Flows (2009)

	Measured Flow (m^3/d)	Peaking Factor
AADF	107	1.00
Max Day	225	1.57
Peak Hour	691	4.83

According to the method of projecting Arva's future population as discussed above, and current sanitary flow data, the associated flows and peaking factors generated by such growth are illustrated in Table 5.9. The measured average day and max day flows are taken from WWTF data and the peak hour is calculated based on the Harmon Formula.

Table 5.9: Projected Residential Sanitary Flows from Arva (2009)

	2009	2019	2029	2049
AADF (m^3/d)	143	242	354	579
Max Day (m^3/d)	225	380	557	911
Peak Hour (m^3/d)	691	1167	1711	2799

Table 5.10: Arva Measured Flows (2009)

	Average Daily Flow (m^3/day)							Maximum Daily Flow (m^3/day)						
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Jan	95	136	148	133	136	147	98	95	136	281	148	185	197	157
Feb	91	125	144	137	105	138	129	91	125	166	202	116	259	168
Mar	113	163	142	151	136	139	134	113	163	163	220	199	176	225
Apr	113	129	136	134	118	131	130	113	129	153	163	143	300	182
May	114	145	146	127	128	100	121	114	145	292	164	162	116	129
June	114	134	123	127	124	118	112	114	134	158	151	143	237	130
July	106	87	116	133	117	128	93	106	87	164	268	130	632	123
Aug	205	115	98	119	114	92	83	205	115	139	161	133	968	104
Sept	155	128	112	127	116	90	97	155	128	184	164	124	123	134
Oct	133	141	109	156	118	93	92	133	197	143	252	148	149	131
Nov	119	139	110	122	105	104	89	119	151	170	220	132	194	104
Dec	113	150	115	155	137	162	102	113	213	180	220	195	379	146
Average	123	133	125	135	121	120	107							
Maximum								205	213	292	268	199	N/A	225

Figure 5.8: Arva Sanitary Flows – Two Month Rolling Average (2009)

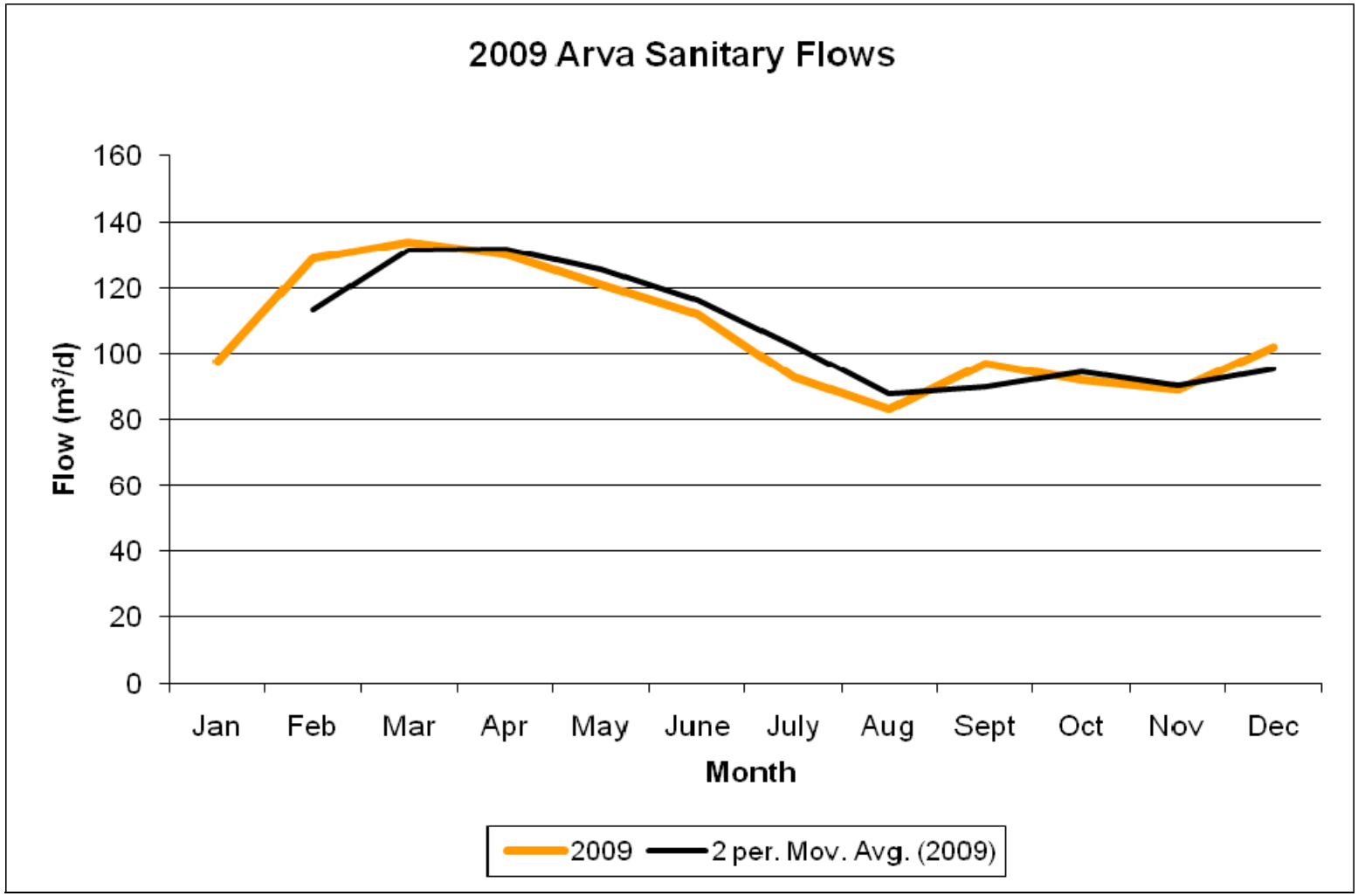


Table 5.11 shows the approximate sanitary capacity deficiency based on a two month rolling average as the City of London Agreement specifies.

Table 5.11: Arva Sanitary Capacity Deficiency

	CoL	2009*	2019	2029	2049
AADF (m^3/d)	175	43	-67	-179	-404

**based on a 2 month rolling average*

5.3.3.1 Collection

The sanitary collection system consists of a combination of gravity sewers and sanitary forcemains.

To facilitate the transport of wastewater from Arva to the City of London collection system, a sanitary pumping station is located approximately 1000 m north of Sunningdale Road on the east side of Richmond Street North. This pumping station has a capacity of 30 L/s. A 150 mm diameter forcemain transports the wastewater from the pumping station to a maintenance hole within London's sanitary network.

In order to service undeveloped areas to the north of Medway Creek as shown in Table 5.7, a pumping station would most likely be required. The steep topography adjacent to Medway Creek requires a pumping station for the creek crossing and the forcemain be either strapped to the bridge or directionally drilled under the creek. Either option could result in high costs and environmental impacts.

5.3.3.2 Treatment

Middlesex Centre currently does not have a WWTF in Arva. Through an agreement with the City of London, Arva wastewater is sent via forcemain to the Adelaide Pollution Control Plant in London for treatment and discharge to the Thames River.

5.3.4 Sanitary Servicing Options

Based on a review of servicing solutions by Middlesex Centre's Servicing Principles the following three solutions could be considered by Middlesex Centre with respect to sanitary servicing for development in Arva, and will be discussed in further detail:

- Do nothing;
- Amend City of London agreement; or
- Construct a new municipal wastewater treatment facility for Arva.

There are two general approaches to the above options. The first approach would provide solutions for wastewater servicing in the Master Servicing Plan and use this as the basis for proceeding with the project. The second approach would recommend a specific Class EA to address servicing for Arva.

5.3.4.1 Option 1: "Do Nothing"

As with all Class EAs, alternative solutions to the project must be reviewed against the "Do Nothing" alternative. This option does not appear to be a logical alternative, as it would restrict any growth to occur in Arva. Therefore, by doing nothing, the problem of lack of sanitary capacity in Arva would not be solved and would inhibit future growth. As it stands, land within the current settlement boundary cannot be adequately serviced due to this constraint. If such land cannot be utilized, then future plans for Arva to expand beyond its growth boundary would not be possible. The Do Nothing option will not be carried forward.

5.3.4.2 Option 2: Amend Sanitary Agreement

The second alternative would involve a proposed amendment to the current sanitary agreement between Middlesex Centre and the City of London. Middlesex Centre could approach the City and ask for an increase in sanitary capacity to allow for development to occur **within** the current settlement boundary. As this land has subsequently been zoned, the main reason that development has been inhibited is due to lack of sanitary capacity.

The capacity of the forcemain and pumping station in Arva would have to be examined to determine what, if any, upgrades would be necessary to handle the increased flows. A means of offline storage for additional sanitary flows may be necessary to prevent surcharge of City of London sewers or to prevent an overflow at the Arva PS. Confirmation of any potential surcharging issues within City of London sewers would have to be addressed as part of a technical review. The location of an offline storage site on municipal land would have to be determined, as there is likely not enough space on the current pumping station property. This would trigger the requirement of a Schedule B Class EA. Future review of the site and pumping station capacity may rule out the need for additional storage or wet well capacity or allow for onsite modifications and a Schedule A+ Class EA .

Middlesex Centre would be responsible for negotiating the terms of an amended agreement with the City of London. Amending the City of London Sanitary Agreement appears to be the preferred solution. If an Agreement can not be reached with the City, Middlesex Centre may need to proceed with a Class EA as soon as possible.

5.3.4.3 Option 3: Construct a New Municipal WWTF for Arva

The third alternative would involve the construction of a new municipal WWTF for Arva. However, the Municipality would have to decide whether the construction would be justified or not, and if it provides a long term servicing solution for Arva. As well, existing residents serviced

should not be assumed to be brought into a new system until the Municipality deems this to be in the rate payers best interest.

Potential sites within the area of Arva need to have adequate buffer zones and a suitable receiving stream for the treated effluent. Table 5.7 illustrates the approximate buffer area required. An assimilative capacity would have to be carried out to determine the imposed effluent limits and whether the receiving stream could adequately handle the flows generated from the WWTF.

Some considerations for this option include:

- Operational efficiency: New WWTF should treat at least 250 m^3/day, preferably 500 m^3/day
- Economics: possibility of servicing existing development
- Expandability: WWTF must be designed with consideration given to future expansion
- Location: would have to be located outside the current settlement boundary due to buffer restrictions
- Technology: current and proven technologies are to be recommended

The construction of a new WWTF in Arva could prove to be a long term solution for the sanitary capacity shortage that exists in Arva. However, this is secondary to amending the agreement with the City of London. Constructing a new WWTF would create a point source discharge to the Medway Creek, and will impact the environment. This option would only be considered if an agreement to provide service to the current community boundary through the City is not feasible. This will require the provision of additional wastewater capacity, and require a Schedule B Class EA to plan and evaluate servicing options. A Schedule C Class EA would be required for implementation. If a Class EA is required, then it would be recommended to bring the Do Nothing option back into consideration given the potential cost, complexity and impacts to the natural, social and economic environment. The EA would be municipally led, and funded by the benefitting parties.

A list of advantages and disadvantages for all three options can be found below in Table 5.12.

Table 5.12: Qualitative Evaluation of Alternative Solutions

Option	Impact on Natural Environment	Impact on Cultural Environment	Impact on Socio-Economic Environment
1) Do Nothing	▪ No impact	▪ No impact	▪ Adverse impact on planned community growth for Arva ▪ Adverse impact on future growth outside the current growth boundaries ▪ As sanitary flows are approaching the limit of 175 m^3/day, and as enrollment grows at Medway High School, the Municipality could face economic penalties or face a sanitary capacity shortage
2) Amend City of London Agreement	▪ Would not negatively affect Medway Creek as the discharge would remain the Thames River. The Thames River is a larger body of water and could provide better dilution even at low stream flow in dry months. ▪ Would not require an additional discharge point or outfall, which could impact environment during construction and operation due to sensitivity of the	▪ No impact	▪ Would be less costly than constructing a new WWTF as there would be few, or no capital costs ▪ Most infrastructure is already in place and therefore growth would not be inhibited by infrastructure construction schedule ▪ Municipality would remain reliant on the City of London for treatment of Arva sanitary flows

Table 5.12: Qualitative Evaluation of Alternative Solutions

Option	Impact on Natural Environment	Impact on Cultural Environment	Impact on Socio-Economic Environment
	Medway Creek Valley ▪ Connection to an existing WWTF has the least environmental impacts		
3) Construct a new WWTF in Arva	▪ Would require an assimilative capacity study to confirm discharge effluent limits ▪ Would require sufficient buffer area to meet MOE requirements	▪ New site would require archeological assessment	▪ Long term servicing solution ▪ Cost impacts include: − Land acquisition − Additional planning and engineering costs for new site − Construction cost for new facility − Cost to potentially redirect exiting infrastructure to new WWTF

5.3.4.3.1 Review of Alternatives

The preferred option for sanitary servicing in Arva would be to amend the agreement with the City of London. However, if an amendment cannot be made, it is recommended that a small WWTF be constructed, if there is sufficient growth to justify a municipally owned WWTF in Arva.

5.4 OTHER SETTLEMENT AREAS

5.4.1 Delaware

5.4.1.1 Demand Growth

Presently, Delaware has partial servicing with municipal water services being provided. Middlesex Centre recently completed an Environmental Study Report (Stantec, 2009) to develop a plan to provide for municipal wastewater servicing to Delaware. The timing for the implementation of full wastewater servicing has not yet been determined.

Since Delaware does not have municipal sanitary services, residential lot sizes are larger to account for additional space required for a second septic bed if the first was to either fail, or reach its capacity. This rule has potentially restricted past development, as fewer lots could be constructed on a parcel of land. Therefore, the rate of future growth in Delaware is contingent upon whether municipal sanitary servicing is provided to the community.

Based on population estimates taken from Table 4.1 of the *Komoka-Delaware Municipal Servicing Implementation Study ESR*, it is predicted that Delaware could reach a population of 2,100 in 2019, and 3,200 by 2029. This is based on the construction of a sanitary collection system, sanitary forcemain, and capacity upgrades to the Komoka WWTF.

Future growth and development within the Official Plan boundaries for Delaware will occur primarily on the east side of the community. This land is at a higher elevation than the west side, which slopes down to meet the Thames River. Land between Harris Road and Wellington Street, between Wellington Street and Longwoods Road, to the south of Longwoods Road, and to the north of Harris Road, are potential locations for new subdivision development in Delaware. Outside of the growth boundaries, areas further south of Longwoods Road could also be potentially serviced in the future. It should be noted that other areas are not restrictive in terms of development, however, the above identified lands are situated at higher elevations and are more easily and economically feasible for sanitary servicing.

5.4.1.2 Constraints

As with any community, not all lands can be as easily serviced as others. Identified constraints to servicing in Delaware are as follows, and are shown in Figure 5.9:

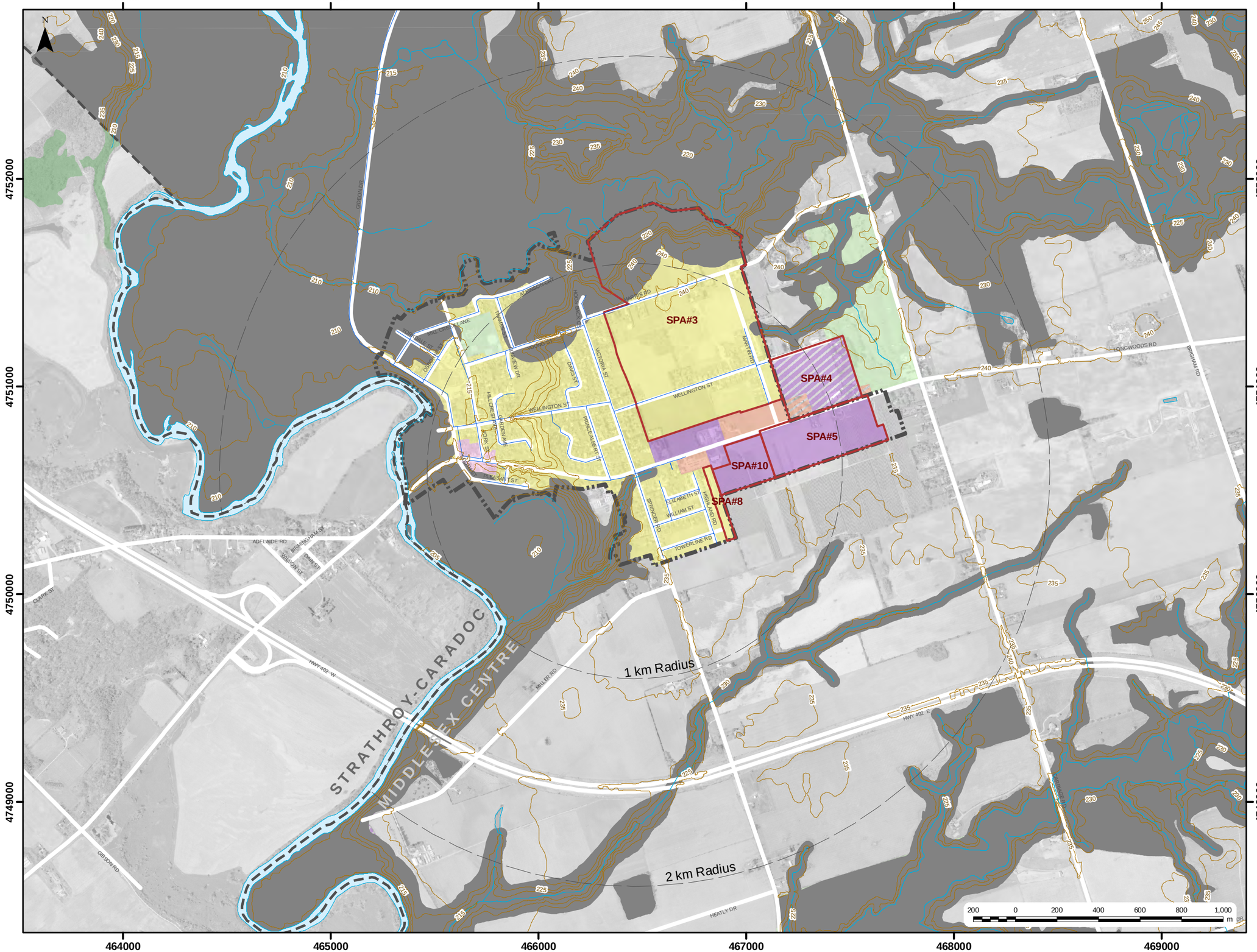
- Dingman Creek (to the southeast);
- Thames River (to the west);

- Highway 402 (to the south);
- Strathroy-Caradoc & Middlesex Centre municipal boundary; and
- Regulated limits and woodlots.

There are areas outside of the existing development boundary that are considered relatively easy to service in the long term based on the servicing principles presented in Section 4.4 of this report. It should be noted that these areas **have not been** selected for actual development, but rather to assist in developing servicing policies for land outside of Delaware's current growth boundary.

Figure 5.10 illustrates the constraints shown in the previous figure, but provides an explanation or reasoning as why it has been determined to be a potential constraint.

Figure 5.11 shows various undeveloped parcels in Delaware and each is summarized in Table 5.13.



Middlesex Centre

Stantec

Legend

- 5 m Contour
- Watermain
- Watercourse
- Municipal Boundary
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre

- Special Policy Area

Notes

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Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.9	**1**	**Feb. 2010**

Title

Delaware Area Planning Constraints

September 29, 2009 PIC

Legend

- Watercourse
- Municipal Boundary
- Official Plan Settlement Area
- Regulation Limit
- Significant Woodland

Notes

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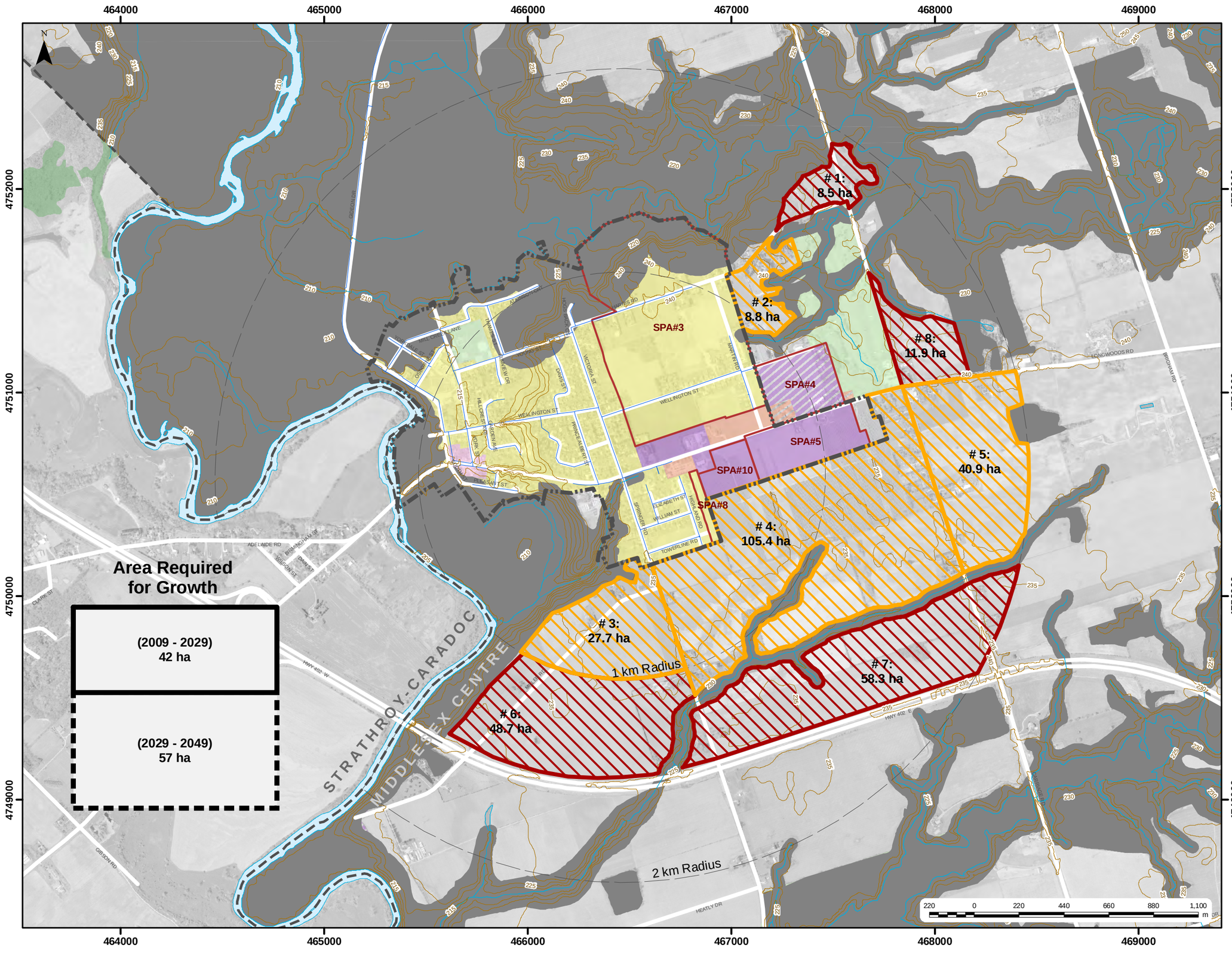
Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.10	**1**	**Feb. 2010**

Title

Delaware Area Planning Constraint Components



Middlesex Centre

Stantec

Legend

- Area suitable for service extension with few (if any) issues or constraints
- Area capable for service extension with some issues or constraints
- Area constrained for service extension with significant issues or constraints
- 5 m Contour
- Watermain
- Watercourse
- Municipal Boundary
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre

- Special Policy Area

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Figure No.	Revision No.	Date
5.11	**2**	**Feb. 2010**

Title

Delaware Area

Table 5.13: Delaware Growth Options

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles	Notes
AREAS SUITABLE FOR SERVICE EXTENSION WITH FEW (IF ANY) ISSUES OR CONSTRAINTS						
Areas within Delaware's current growth boundary						
AREAS CAPABLE FOR SERVICE EXTENSION WITH SOME ISSUES OR CONSTRAINTS						
3-5,8	185.9	7120	2848	▪ This area is situated in the south half of Delaware	▪ Geometry of parcel would promote network servicing (GP#10) ▪ Future growth to the south of Delaware would allow for the extension of services through integration of existing infrastructure. (GP#9) ▪ Majority of land could potentially allow for gravity sewers to be used to service development and flow could be directed towards Longwoods Road (GP#11) ▪ No physical barriers such as water crossings between undeveloped land and existing development (GP#12)	▪ Adequate land available within Delaware's current growth boundary to satisfy growth for a significant portion of the design period
AREAS CONSTRAINED FOR SERVICE EXTENSION WITH SIGNIFICANT ISSUES OR CONSTRAINTS						
6,7	107	4098	1639	▪ This area is situated in the south half of Delaware ▪ North of Highway 402	▪ Land slopes away from Delaware, due to Thames River tributary, could be problematic to service by gravity sewers (GP#11) ▪ To integrate servicing to existing infrastructure crossing through naturalized area would be required (GP#12) ▪ Distance from existing development would hinder service extension through integration of existing infrastructure (GP#9)	▪ Borders 400 series highway

Notes/Comments:

1. **If an area is within the 20-year growth boundary for Middlesex Centre, it is assumed that servicing can be provided (Stantec's approach)**

5.4.1.3 Service Assessment

Delaware relies on private sewage systems. The Municipality has proposed that Delaware become serviced as future development, and as stated by the MOE, "should be fully serviced if at all possible". The selected preferred design alternative components are:

- Collection system for existing development;
- Trunk sewer for future development;
- Sanitary sewage pumping station; and
- Sanitary forcemain to the Komoka WWTF.

5.4.1.4 Collection

Delaware has no collection system. Through the ESR (Stantec, 2009) the following points relating to a collection system will be identified and discussed:

- The most efficient gravity sewage system for the community will be determined;
- Where possible, reconstruction of existing roadways will be minimized; and
- The routes for trunk sewers for future development will be delineated.

A pumping station is necessary to transport Delaware's sanitary wastewater to the Komoka WWTF. A number of locations have been evaluated, with the preferred location in the northwest part of Delaware, at a topographical low spot. The subject property is municipally owned and is in a built up area. This location would allow for gravity flow from nearly all existing and planned development areas in Delaware. Its location outside the UTRCA regulated limit also means that there would be no special approvals required. Preliminary investigation of a possible sewer system indicated that the required depth of the pumping station would not be prohibitive.

5.4.1.5 Treatment

Treatment of Delaware's sanitary waste would be achieved at the Komoka WWTF, located on the northern side of the Komoka Bridge. Transported via forcemain from Delaware, along Gideon Drive, the wastewater would be treated and then discharged to the Thames River. This would involve capacity upgrades to the WWTF.

Middlesex County reviewed the preferred alignment of the forcemain along County roads Gideon Drive and Komoka Road. As per correspondence documented in the Komoka-Delaware ESR, there are no concerns. The only condition placed on the route at this time is that the Komoka Bridge not be used for the crossing. This will require a trenchless crossing of the Thames River.

5.4.2 Kilworth-Komoka

5.4.2.1 Demand Growth

The communities of Kilworth and Komoka are experiencing a relatively high rate of growth, in comparison to other areas within Middlesex Centre. Komoka is expected to grow to a population of 2,200 by 2019 and 2,700 by 2029. Kilworth is expected to grow to a population of 2,800 by 2019 and 4,100 by 2029. Reasoning behind this growth can be attributed to full servicing present in both communities.

Future growth and development within the Official Plan boundaries for Kilworth will occur primarily to the west of existing development. The Municipality has stated that this land will be serviced by the Komoka WWTF. Future growth and development for Komoka will occur primarily to the west and adjacent to existing development.

5.4.2.2 Constraints

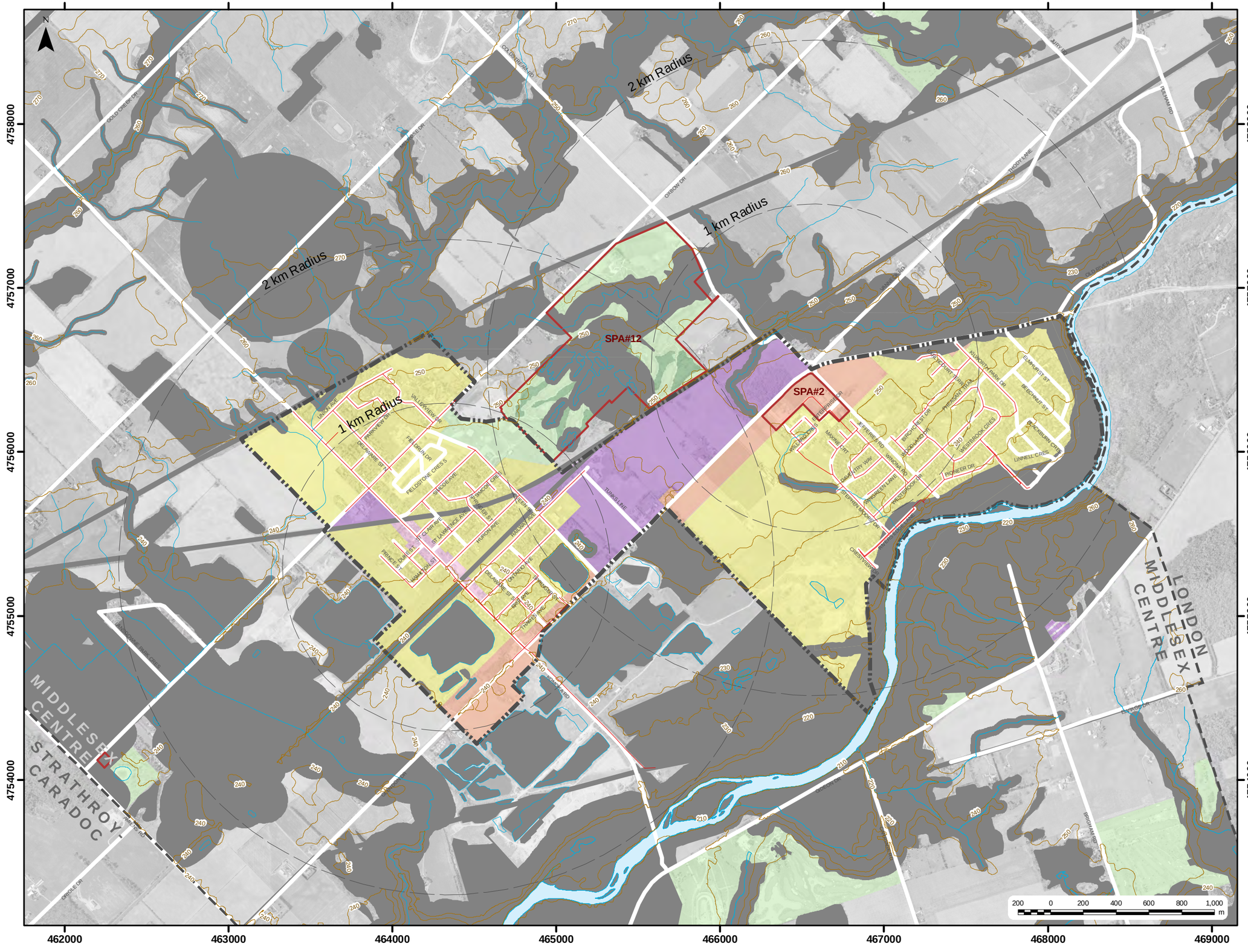
As with any community, not all lands can be as easily serviced as others. Identified constraints to servicing in Kilworth-Komoka are as follows, and are shown in Figure 5.12:

- Former gravel pits;
- Thames River (to the south);
- Rail lines (to the north);
- Komoka Provincial Park (to the south);
- Strathroy-Caradoc & Middlesex Centre municipal boundary; and
- Regulated limits and woodlots.

There are areas outside of the existing development boundary that are considered relatively easy to service in the long term based on the servicing principles presented in Section 4.4 of this report. It should be noted that these areas **have not been** selected for actual development, but rather to assist in developing servicing policies for land outside of Kilworth-Komoka's current growth boundary.

Figure 5.13 illustrates the constraints shown in the previous figure, but provides an explanation or reasoning as why it has been determined to be a potential constraint.

Figure 5.14 shows various undeveloped parcels in Kilworth-Komoka and each is summarized in Table 5.14.



Middlesex Centre

Stantec

Legend

- 10 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Municipal Boundary
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre
- Special Policy Area

Notes

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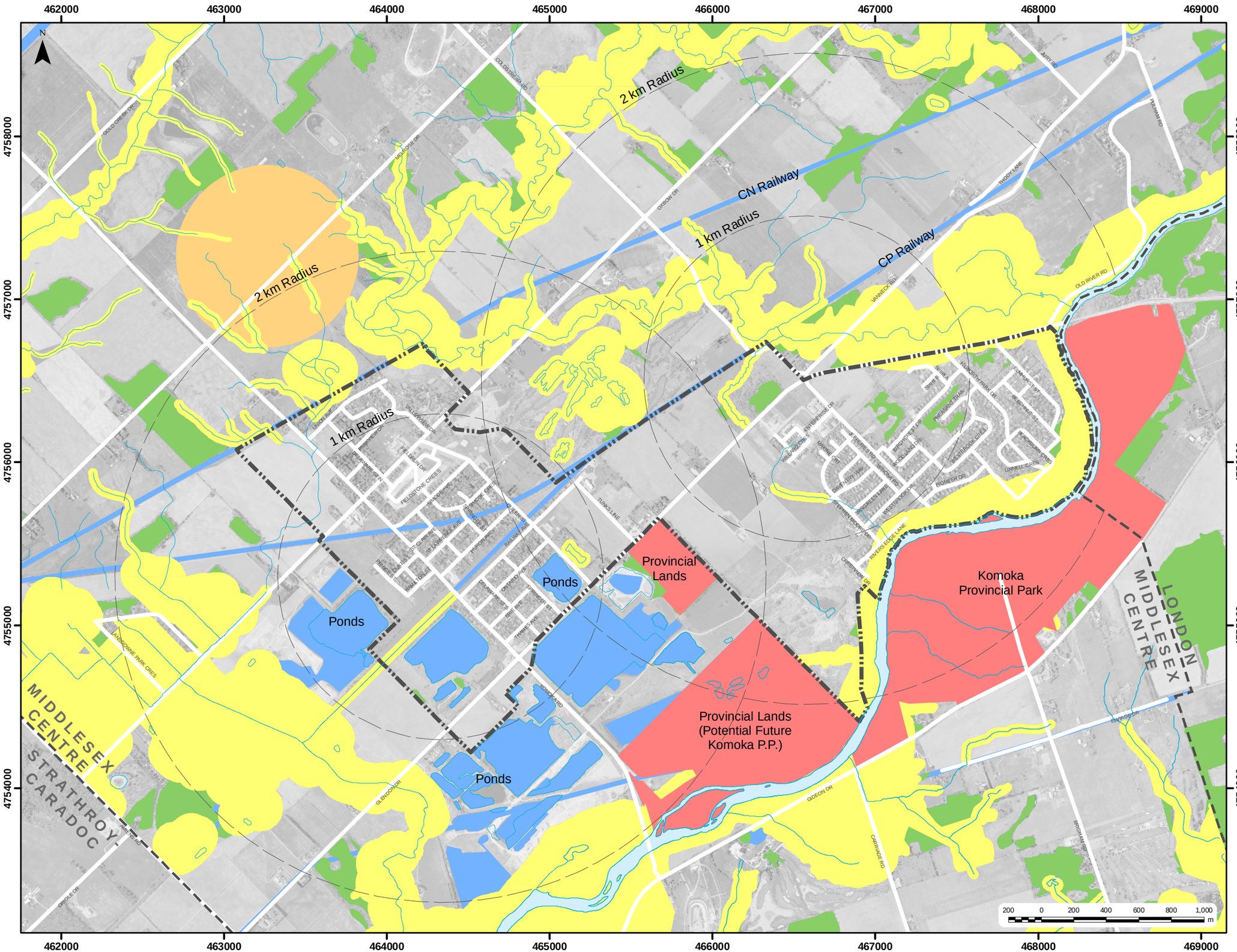
Figure No.	Revision No.	Date
5.12	**2**	**Feb. 2010**

Title

Kilworth - Komoka Area Planning Contstraints



Middlesex Centre

Stantec

September 29, 2009 PIC

Legend

- Watercourse
- Municipal Boundary
- Official Plan Settlement Area
- Significant Site
- Regulation Limit
- Minimum Distance Separation
- Significant Woodlands
- Other

Notes

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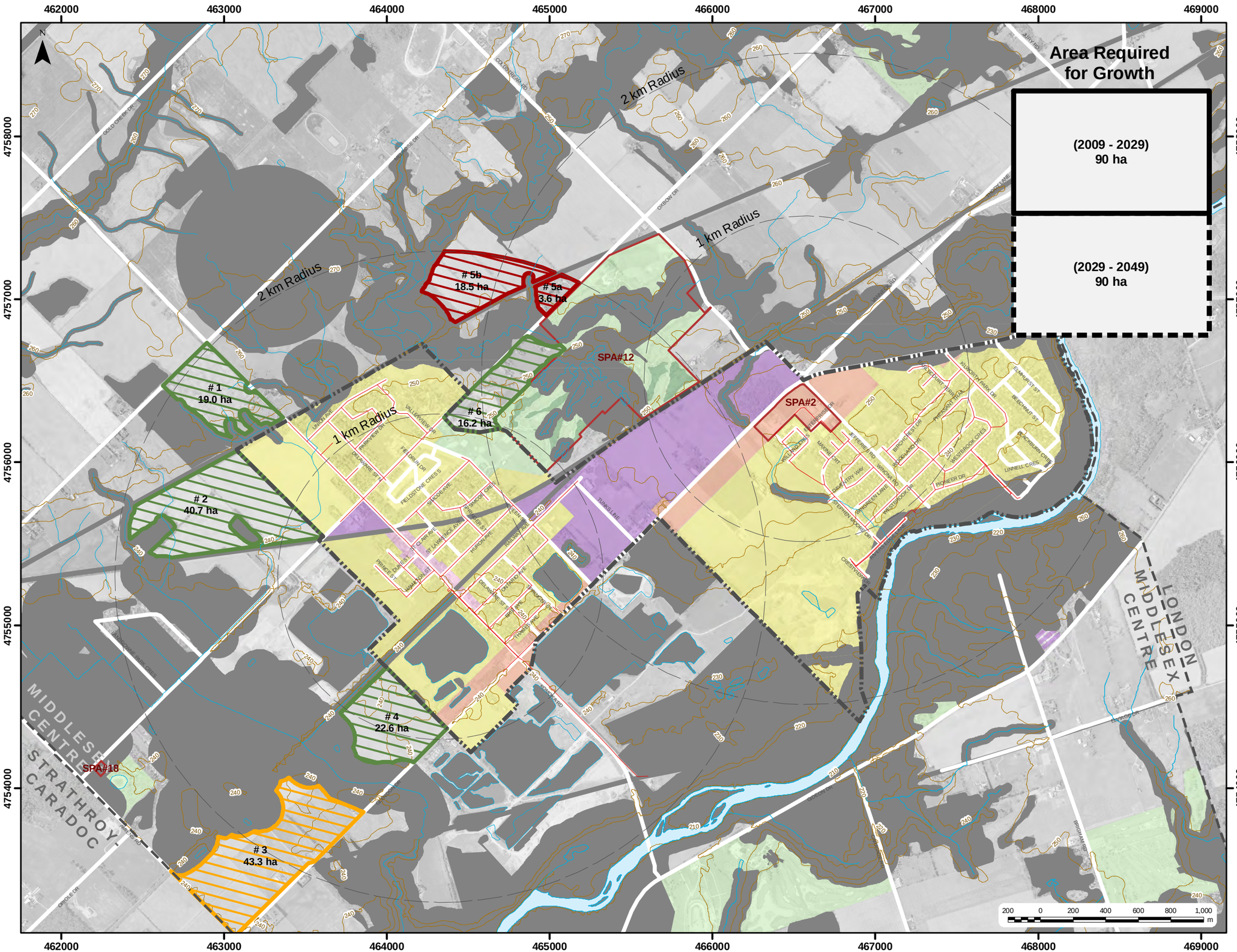
Figure No.	Revision No.	Date
5.13	**1**	**Feb. 2010**

Title

Kilworth - Komoka Area Planning Contstraint Components



Middlesex Centre

Stantec

Legend

- Area suitable for service extension with few (if any) issues or constraints
- Area capable for service extension with some issues or constraints
- Area constrained for service extension with some issues or constraints
- 10 m Contour
- Sanitary Sewer or Forcemain
- Watercourse
- Municipal Boundary
- Planning Constraint
- Official Plan Settlement Area

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre
- Special Policy Area

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Master Servicing Plan

Figure No.	Revision No.	Date
5.14	**3**	**Feb. 2010**

Title

Kilworth - Komoka Area

Table 5.14: Kilworth-Komoka Growth Options

Area	Size (ha)	Equivalent Service Population	Sanitary Flows (m^3/day)	Location	Guiding Principles	Notes
AREAS SUITABLE FOR SERVICE EXTENSION WITH FEW (IF ANY) ISSUES OR CONSTRAINTS						
1	19.0	728	255	▪ This area is situated in the northwest quadrant of Komoka ▪ North of CN Rail line	▪ Geometry of parcel would promote network servicing (GP#10) ▪ Extension of services through integration of existing infrastructure. (GP#9) ▪ Majority of land could potentially allow for gravity sewers to be used to service development and flow could be directed towards Komoka Road (GP#11)	
2	40.7	1559	546	▪ This area is situated in the northwest quadrant of Komoka ▪ Between CN and CP Rail lines	▪ Geometry of parcel would promote network servicing (GP#10) ▪ Extension of services through integration of existing infrastructure. (GP#9) ▪ Majority of land could potentially allow for gravity sewers to be used to service development and flow could be directed towards Komoka Road (GP#11)	
4	22.6	866	303	▪ This area is situated in the southwest quadrant of Komoka ▪ North of Glendon Drive	▪ Geometry of parcel would promote network servicing (GP#10) ▪ Extension of services through integration of existing infrastructure. (GP#9) ▪ Majority of land could potentially allow for gravity sewers to be used to service development and flow could be directed towards Komoka Road (GP#11)	
AREAS CAPABLE FOR SERVICE EXTENSION WITH SOME ISSUES OR CONSTRAINTS						
3	43.3	1658	580	▪ This area is situated west of Komoka ▪ Borders Strathroy-Caradoc / Middlesex Centre boundary ▪ North of Glendon Drive	▪ Hinders extension of services through integration of existing infrastructure due to isolated location and proximity to neighbouring municipality. (GP#9) ▪ Majority of land could potentially not allow for gravity sewers to be used to service (GP#11) ▪ Water crossings between undeveloped land and existing development (GP#12)	▪ Isolated from existing development
AREAS CONSTRAINED FOR SERVICE EXTENSION WITH SIGNIFICANT ISSUES OR CONSTRAINTS						
5	22.1	846	296	▪ This area is situated in the northeast quadrant of Komoka ▪ Borders CN rail line	▪ Land slopes away from Komoka due to Thames River tributaries, could be problematic to service by gravity sewers (GP#11) ▪ To integrate servicing to existing infrastructure crossing through naturalized area would be required (GP#12) ▪ Distance from existing development would hinder service extension through integration of existing infrastructure (GP#9)	

Notes/Comments:

1. **If an area is within the 20-year growth boundary for Middlesex Centre, it is assumed that servicing can be provided (Stantec's approach)**

5.4.2.3 Service Assessment

Wastewater generation rates for the Kilworth and Komoka WWTFs for the past six years can be found below in Table 5.15 and Table 5.16.

Further information pertaining to the service assessment can be found in the *Komoka-Delaware Municipal Servicing Implementation Study* (Stantec, 2009).

Table 5.15: Kilworth WWTF Measured Flows

	Average Daily Flow (m^3/day)							Maximum Daily Flow (m^3/day)						
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
January	310	568	941	828	738	754	543	408	1,781	2,030	1,021	947	1,085	899
February	365	416	511	852	587	836	694	489	670	728	1,075	1,060	1,533	1,584
March	444	767	775	886	643	762	426	732	1,845	968	1,394	902	1,330	1,149
April	510	532	779	637	631	727	522	739	1,108	1,120	881	722	1,462	753
May	449	701	636	547	547	660	544	504	1,548	862	795	673	1,633	875
June	386	818	505	430	494	766	522	496	1,493	696	562	608	1,674	731
July	336	450	464	482	539	899	409	454	972	591	690	770	2,067	563
August	350	443	528	502	487	793	298	499	633	766	749	636	1,580	443
September	369	301	552	646	460	740	387	490	589	804	911	693	1,211	536
October	377	439	559	796	496	825	535	478	649	763	1,143	638		831
November	482	532	603	823	567	910	525	1,455	791	948	1,220	730		695
December	536	650	741	752	711	746	564	872	848	1,039	1,035	1,119	1,413	808
Average	410	551	633	682	575	785	497							
Maximum								1,455	1,845	2,030	1,220	1,119	2,067	1,584

Table 5.16: Komoka WWTF Measured Flows

	Average Daily Flow (m^3/day)							Maximum Daily Flow (m^3/day)						
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
January	324	438	489	411	661	458	657	402	483	559	574	712	554	1,371
February	326	411	499	500	577	547	680	428	448	592	680	623	698	972
March	348	496	504	542	605	561	719	582	612	608	723	699	765	1,033
April	391	484	533	551	614	618	819	503	917	639	702	699	969	1,104
May	385	526	504	466	582	559	808	541	747	567	598	695	696	942
June	384	532	461	444	507	489	822	487	753	571	596	667	702	1,071
July	343	455	405	431	452	492	721	495	572	507	531	588	691	935
August	333	445	372	479	406	502	594	495	764	461	576	476	759	810
September	340	408	348	439	396	459	566	420	589	489	554	446	661	1,277
October	335	376	330	516	370	450	561	471	536	467	633	449	664	731
November	342	375	340	576	356	491	529	418	441	435	643	460	762	612
December	376	396	352	616	370	598	556	470	475	457	667	460	825	646
Average	352	445	428	498	491	519	669							
Maximum								582	917	639	723	712	969	1,371

5.4.2.4 Collection

In terms of future development and growth in the Komoka area, there appears to be sanitary sewer deficiencies along Komoka Road that will inhibit additional flow from outside the existing drainage area (as delineated by Totten Sims Hubicki, 1994). Figure 5.15 illustrates the current drainage area.

Any land that falls outside the current sanitary sewershed boundary would have to be examined by the proponent to determine if the existing trunk sewers had sufficient capacity to support future development.

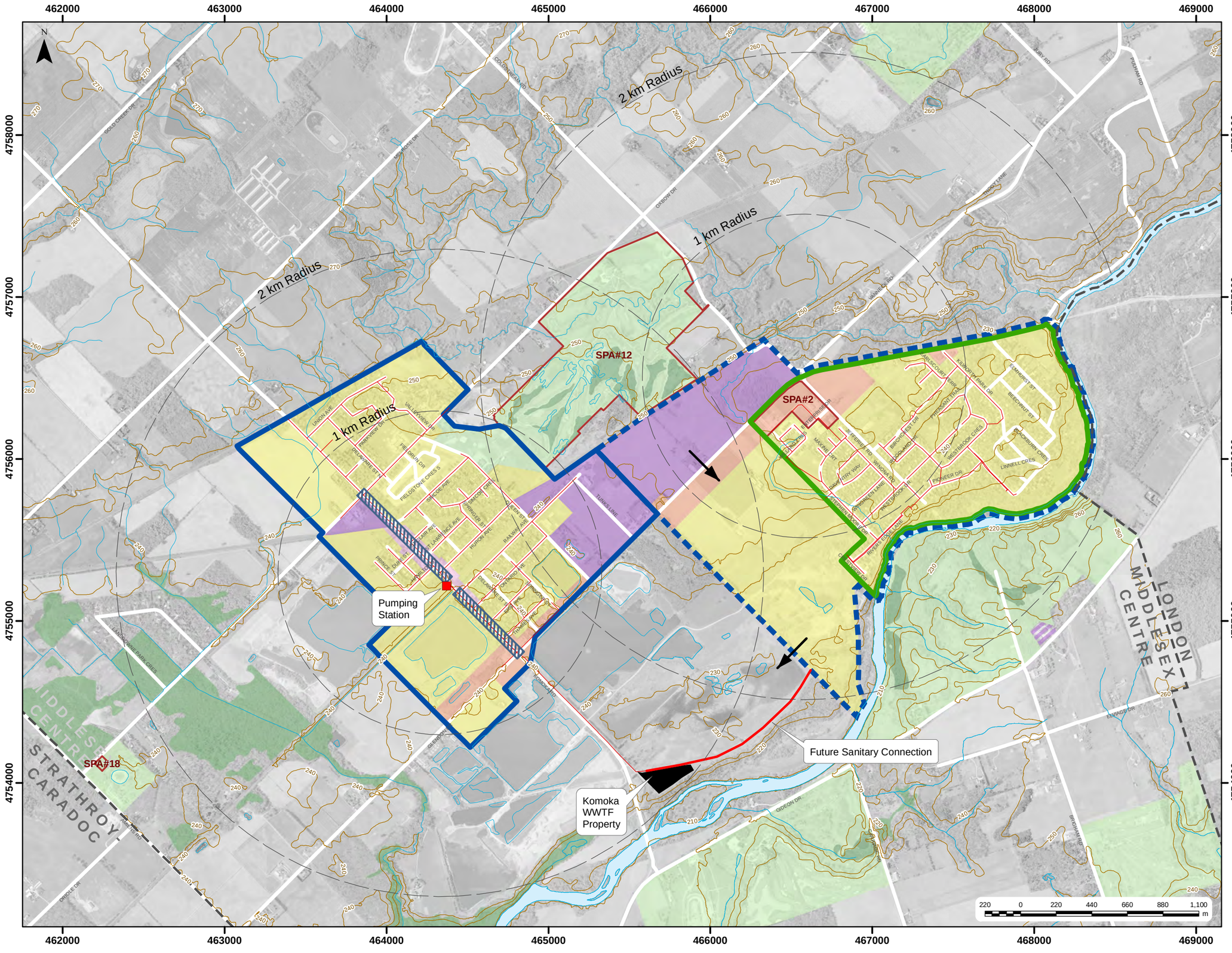
There are two sections of pipe along Komoka Road that may exceed their design capacity if additional land is developed outside the design area. Figure 5.15 shows the two areas. These lengths of pipe could constrain future growth. However, there is land within the sanitary design area that has not been developed so the municipality could re-designate lands for development without exceeding capacity. Below are three possible options to correct the deficiencies.

1. Remove deficient sections of sanitary sewer when such a trigger point is reached and replace with an oversized pipe, to allow for future growth to be serviced. This would involve construction along Komoka Road, either north and/or south of the pumping station. The current trunk sewer is fairly new (approximately 15 years old) and lies along the centerline of the road and is generally very deep under existing surface (approximately 5-6 m). Removal and replacement could be very costly due to depth. Road reconstruction costs would also be considerable. Could possibly twin the existing sanitary sewer, if the existing is in good condition. This would still involve extensive excavation and sufficient space below grade. Existing lateral connections would also have to be tied into a new oversized trunk sewer. There is no timeline for a new trunk sewer to replace the undersized sewer along Komoka Road. There is existing sanitary capacity dedicated to undeveloped land within the current growth boundary. The four parcels for potential growth outside the sewershed would require an increase in sewer capacity, and thus the need for oversizing. Flows would continue to be directed to the pumping station and then travel via forcemain to the WWTF.

2. Remove and replace sections of sanitary sewer north of the pumping station to accommodate future flows from outside the sewershed. This flow would be directed to the existing pumping station. Area to south of the pumping station could possibly be directed via gravity sewer to WWTF (for area outside sewershed) but elevation issues at the plant would have to be considered. This could add complexity to the plant. There are possible space constraints along Komoka Road as there would be an existing forcemain, potential gravity trunk sewer, and future water transmission main (for Delaware).

3. Keep existing sanitary trunk sewer intact along Komoka Road. There are two ways to maintain the trunk sewer. One option is possible gravity sewers along shoulder

dedicated only to the parcels outside of the sewershed. This might reduce the depth of excavation somewhat, but would have to be examined further. Another option would be a small forcemain and accompanying pumping station (reduce depth from 6 m to approximately 6 feet). This could result in cheaper construction costs, but higher lifecycle operations and maintenance costs.



Middlesex Centre

Stantec

Legend

- Pumping Station
- Sanitary Sewer or Forcemain
- Future Sanitary Connection
- Sewer Deficiency
- Komoka WWTF Property
- Komoka WWTF Service Area
- Future Komoka WWTF Service Area
- Kilworth WWTF Service Area *(To Komoka WWTF Post 2029)*
- 10 m Contour
- Watercourse
- Municipal Boundary
- 1 km Radius Marker

Official Plan Landuse

- Hamlet
- Natural Environment
- Parks and Recreation
- Residential
- Settlement Commercial
- Rural Commercial
- Settlement Employment
- Rural Industrial
- Village Centre

- Special Policy Area

Notes

Not an official planning document. Consult appropriate agencies for policies and mapping. Data used under license with Middlesex Centre and the Ontario Ministry of Natural Resources.
Projection: UTM Zone 17N, NAD 1983

Project

Middlesex Centre
Master Servicing Plan

Figure No.	Revision No.	Date
5.15	**2**	**Feb. 2010**

Title

Kilworth - Komoka Wastewater Overview

The Komoka PS is fitted with duty/standby pumps, each rated for 2,800 m^3/day flow. Data taken from higher pump volume days suggest that the duty pump capacity is at least 3,000 m^3/day. According to preliminary calculations, once the Komoka WWTF reaches approximately 800 m^3/day, the actual pumping capacity at the PS may exceed its C of A rated capacity. Furthermore, in order to handle increase sanitary flow generated by population growth in Komoka, upgrades to the PS will be required. Field testing should be carried out to determine the actually capacity of each pump. Upgrades may be required at the pumping station to increase the physical capacity, pump capacity and to bring the current PS up to current standards.

Future development on the west side of Kilworth, and ultimately, all sanitary flow from Kilworth once the Kilworth WWTF reaches the end of its design lifespan, will be sent to the Komoka WWTF. Wastewater from Kilworth to Komoka will be transferred via a trunk sewer (gravity or forcemain). A review of the terms of reference for the Kilworth Sanitary Connection to the Komoka WWTF can be found in Section 7.1.2. An easement will allow the trunk sewer to cross Komoka Provincial Park and the sewer routing is found on Figure 4.7 of the Project File.

5.4.2.5 Treatment

Stantec completed a Schedule C Class EA to provide for projected 20-year development growth to serve the Komoka sanitary servicing area. The Class EA analysis and results are documented in an ESR completed by Stantec in November 2009. The key analysis and results determined in the ESR include:

- Growth projections for residential, commercial, institutional and industrial land uses in order to estimate the 20-year design wastewater flows as well as estimates for longer-term 40-year wastewater flows. Assuming the 20-year growth develops as predicted by the ESR, then annual average flows would be approximately 3,500 m^3/day.

- Effluent limits for a plant expansion to approximately 3,500 m^3/day annual average flow. An assimilative capacity study was completed in order to develop appropriate effluent limits for the plant expansion. This was done in consultation with the local MOE branch office.

- Wastewater treatment technologies were reviewed in order to determine the most appropriate wastewater expansion concept given:

    - The proposed effluent limits determined through the assimilative capacity study;

    - Existing wastewater infrastructure; and

    - Client needs and constraints.

- This analysis confirmed that the most appropriate expansion concept included:

- Expanding the extended aeration process;
- Replacing the existing sand filters with new expanded tertiary filters;
- Expanding UV disinfection;
- Converting the sludge holding tanks to aerobic digesters;
- Adding biosolids storage; and
- Modifying the administration building to suit other client needs.

Extended aeration treatment will require the construction of new aeration tanks and secondary clarifiers. Aeration tanks will be fitted with fine bubble aerators to provide air needed by the biomass to perform treatment reactions. The secondary clarifiers separate the biomass from the treated effluent and recycle the biomass to the aeration tanks for reuse.

Advantages of extended aeration treatment are:

- It's a proven technology;
- The current WWTF already utilizes extended aeration treatment; and
- There is a lower life cycle cost (when compared to MBR).

Disadvantages of extended aeration treatment are:

- Larger footprint for treatment system (when compared to MBR) which may result in site constraint concerns and possibly in slightly higher construction costs; and
- May need expensive tertiary filtration equipment to achieve very high quality effluent, low in particulates.

The key determining factor between EA and MBR will be the effluent limits that are to be required by the MOE. The letter from Dr. Ronald Griffiths of the MOE, dated September 30, 2009, based on a review of the Assimilative Capacity report requires effluent limits as shown in Table 5.2 of the report.

5.5 NON-SETTLEMENT AREAS

5.5.1 Demand Growth

Non-settlement areas within Middlesex Centre are also referred to as Hamlets. These areas are not separated into specific land use categories. Any commercial or industrial development must be on a scale compatible with the character and size of the hamlet. Furthermore, any

residential growth, in which a subdivision exceeds three new lots, is required to provide full municipal services.

5.5.2 Service Assessment

Non-settlement areas have no municipal sanitary infrastructure. Table 3.1 below shows the estimated population of each hamlet and the equivalent sanitary flows. The distance from each hamlet to other WWTFs within the Municipality have been shown (along with a potential future Arva WWTF) to provide an idea of the large distances that wastewater would have to be transported via forcemain. These costs alone would be in excess of millions of dollars. Therefore, when the cost of a collection system, capacity upgrades to the receiving WWTF, forcemain, and pumping station costs are factored in, municipal servicing would not be economically feasible. Servicing these hamlets would not be in the Municipality's best interest.

In most cases, each hamlet has approximately 100 lots or fewer, thus it would not be economically feasible to provide municipal sanitary servicing to such a small population. Therefore, in accordance with the guiding principles, non-settlement areas should continue using private sewage systems as the local health unit does not have any specific concerns against this. As well, as stated in the Official Plan, Urban and Community settlement areas are a priority for growth and development over hamlets.

Table 5.17: Equivalent Hamlet Sanitary Flows

Hamlet	Current Population	Equivalent Sanitary AADF (m^3/day)	Distance to Nearest WWTF (km)		
			Ilderton	Komoka	(Arva)
Ballymote	130	40	16.5	26.3	4.9
Birr	270	90	8.9	29.9	8.5
Bryanston	200	65	12.5	33.5	11.9
Denfield	240	75	10.1	26.2	19.5
Lobo	190	60	12.4	10.4	12.2
Melrose	340	110	12.2	9.6	11.9
Poplar Hill-Coldstream	810	260	15.5	10.9	21.1

Notes:

1. Assume 3.1 people per unit
2. Assume ~ 1m^3/day flow per unit
3. Shading represents closest WWTF
4. Approximate distance to a potential future WWTF in Arva is given in the far right column

6.0 Identified Municipality Level Issues

6.1 BIOSOLIDS MANAGEMENT FOR ALL WWTF'S

6.1.1 Biosolids Management

Biosolids refers to treated sewage sludge that meets Ontario's pollutant and pathogen requirements for land application and surface disposal. Sewage sludge are solids separated during the treatment of municipal wastewater and may include septage from septic tanks. Application of biosolids is governed by the Nutrient Management Act (NMA). Under the NMA, the Municipality is required to provide storage for 240 days of biosolids production from their WWTFs and any other municipal sources.

Under the NMA, a minimum of 240 days storage is required to be provided for the ultimate design capacity of a WWTF. Middlesex Centre, through its Contract Operator, American Water Services Canada is responsible to have the biosolids removed from the WWTF and disposed of in accordance with the NMA.

The NMA and its regulations define how biosolids generated within wastewater treatment facilities are to be stored and disposed. All of the WWTFs within the Municipality of Middlesex Centre feature aerobic digestion, liquid biosolids storage, and land application - practices that are generally consistent with the current NMA and its regulations. Similar practices are expected for the foreseeable future given the relatively low cost and relatively large land area available for disposal. Minor upgrades to the existing program are expected to occur as the plants are expanded. For example, the planned expansion at Komoka WWTF will include additional storage volume to allow for 240 days of biosolids storage for both the Kilworth and Komoka WWTFs. Similarly, future expansions at the Ilderton WWTF will also need to consider additional biosolids storage to provide 240 days of storage – either by building more storage at Ilderton WWTF or by adding more storage at Komoka WWTF.

According to the Municipality, Middlesex Centre has been exempted from undertaking a mandatory Biosolids Management Master Plan (BMMP) by OMAFRA as required by the NMA.

Therefore, with the exception of the planned expansion at Komoka WWTF, no changes to biosolids management are recommended at this time.

6.1.2 Biosolids Generation

Current and future biosolids generation and storage for the Komoka and Kilworth WWTFs have been accounted for the in the Komoka WWTF expansion. Ilderton WWTF currently has storage capacity for the 20-year design period. Nearing the end of the 40-year design horizon, the

Ilderton WWTF may require additional biosolids storage. A location on site has been identified to duplicate the existing tankage.

6.1.3 Septage Handling

The term septage refers to the contents removed from septic tanks, portable toilets, privy vaults and holding tanks serving houses, schools, motels, mobile home parks, campgrounds and small commercial endeavors, all receiving sewage from domestic sources (MOE Design Guidelines for Sewage Works, 2008). One method of septage disposal and treatment is to discharge it to a municipal WWTF. At present, Middlesex Centre does not offer septage disposal as a municipal service.

Within new lots, the standard of onsite treatment systems are regulated by the Ontario Building Code. Lots are required to provide for sufficient space for two tile bed areas. Typically lots need to have an area of 1,000 m^2 in order to allow for conventional tile bed systems (one for use and other as a backup). For lots with less area or retrofitted systems, more complex types of systems may be required.

Septage is typically high strength wastewater that contains high levels of grit. Flow equalization or grit tanks may then be necessary to protect WWTF operations. Septage can also cause significant odour problems. Additional costs would be incurred to upgrade the headworks, as well as the cost to construct a septage receiving system to assist with load dampening.

Septage handling is not recommended given the population serviced by the WWTFs and no apparent benefit for the Municipality.

6.1.4 Municipal Biosolids Management Review

At present, there are two potential known trigger points when Middlesex Centre should consider undertaking a municipal level review of biosolids management. These are as follows:

- Ilderton WWTF Class EA – This may identify when and if the biosolids storage capacity at this site will be used up by process changes and if additional storage on site is not a practical option; and
- The construction of a communal wastewater system for Delaware will require expanded biosolids storage facilities at the Komoka WWTF.

A Municipal Biosolids Management Review would review the following over a 20-year horizon.

1. Trends regarding biosolids regulations;
2. Biosolids and septage generation rates for Middlesex Centre;
3. Review of current biosolids management (responsibilities of Middlesex Centre, Contract Operator, Others; treatment and storage systems and capacity);

4. For reference, typical minimum threshold for effective dewatering of 10,000 m^3/day which is not met at individual WWTFs or as a combined total within the current 20-year horizon. Individual dewatering at WWTFs with less flow is generally too costly. Similarly, a centralized facility could be considered in the future if costs change substantially, there is a regulatory change, or septage is received into the WWTFs; and

5. Review and determine a cost effective management strategy in terms of use of existing assets, development, new facilities, operation and use of third party services.

6.2 REVIEW OF PRIVATE SEWAGE DISPOSAL SYSTEMS: NON-GROWTH AREAS

6.2.1 Servicing in Non-Settlement Areas (Official Plan)

Based upon the Official Plan, the following policies are in place:

- The principal means of wastewater disposal in agricultural areas of the Township is the septic tank and weeping tile system. It is anticipated that such systems will continue to be the principal means of wastewater disposal outside of settlements in the foreseeable future, however the consideration of alternative and improved technologies is encouraged. The installation of septic systems is subject to the approval of the authority having jurisdiction;

- Where new development with septic systems is proposed, it is the policy of this Plan that lots be of sufficient size to accommodate the wastewater disposal system and contingency. Minimum lot requirements will be established in the implementing zoning by-law.

- Municipal water and wastewater systems shall generally not be provided to areas outside of settlement area boundaries, except where otherwise noted in this Plan;

- Appropriate approval shall be required for any new septic tank and tile bed systems. The Township may require a servicing options statement or report accompanying all development and redevelopment proposals to identify the most appropriate forms of servicing to ensure environmental protection;

- Holding tanks are not permitted for new development. Holding tanks will only be permitted for existing developments where the appropriate agency has deemed a problem exists with existing septic tank systems, and there is no other alternative;

- In processing development applications, the Township and the applicants shall have regard to the principles of storm water management so that new development does not significantly increase downstream flows above existing levels or degrade water quality;

- All lots affected by an application for severance or plan of subdivision shall be sized such that there is sufficient space for a building envelope, wastewater envelope, wastewater system contingency area, and potable water supply if municipal water is not available.

7.0 Summary of Findings and Recommendations

7.1 URBAN SETTLEMENT AREAS

7.1.1 Ilderton

Areas outside of the Official Plan growth boundary have been assessed based on the relative ease to provide wastewater servicing through an extension of existing servicing. These areas have not been selected for actual development, but rather to assist in developing servicing policies. These areas are shown in Figure 5.3. Various constraints to sanitary servicing have been identified. It appears that there may be sufficient space within the growth boundary for much of projected growth.

As Ilderton has five municipal and two private pumping stations, it is recommended that if a future pumping station is necessary, that an existing pumping station be eliminated. Additional pumping stations add complexity in both operation and cost for the Municipality. If at all possible, the number of pumping stations should be reduced. Gravity servicing is the preferred method for Ilderton.

Most of the Ilderton WWTF capacity has been committed to proposed development, however, actual flow rates are much less than the rated WWTF capacity, subject to this development proceeding. The Ilderton Water and Wastewater Servicing Class EA is currently underway to allow for future development to proceed based on the provision of wastewater treatment capacity.

7.1.2 Kilworth-Komoka

The Komoka-Delaware Municipal Servicing Implementation Study Class EA identified the need to expand the Komoka WWTF. The expansion to treatment capacity is necessary to service future development, and to accommodate future flows for Kilworth and Delaware, if a regional municipal system is eventually constructed.

Areas outside of the Official Plan growth boundary have been assessed based on the relative ease to provide wastewater servicing through an extension of existing servicing. These areas have not been selected for actual development, but rather to assist in developing servicing policies. These areas are shown in Figure 5.14. Various constraints to sanitary servicing have been identified.

It has been previously identified that areas within the growth boundary west of the Kilworth WWTF service area are to be serviced by the Komoka WWTF. Items which should be reviewed in the Terms of Reference for the Kilworth West Sanitary Trunk Connection to Komoka WWTF are as follows:

Terms of Reference

1. Must be in accordance with the Municipal Engineers Association Class Environmental Assessment (MEA Class EA) and the Class Environmental Assessment for Provincial Parks and Conservation Reserves as set by the Ministry of Natural Resources (MNR).
2. In accordance with the MEA Class EA, this project would be considered a Schedule B project as it falls under the following category:
    1. Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not in an existing road allowance or an existing utility corridor. *[Utility Corridor: Means land or rights to land utilized for locating utilities, including sewage, stormwater management and/or water services and/or appurtenances thereto, railways, street-cars, light rapid rail systems and transit ways. In this document, "existing utility corridor" means a developed utility corridor.]*
3. In accordance with the MNR Class EA, this project would be considered a Category A project as it falls under the following category. However, the proponent shall liaise with the MNR, prior to commencing the EA to verify the screen mechanisms and category of which this project falls in.
    1. Amend a boundary to enable disposition of a portion of a park or reserve for a corridor (normally only applies to major, exclusive use projects such as provincial highways). *Notes: Category A if the proponent certifies compliance with a relevant provincial and/or federal EA process.*
4. The proponent should ensure that any conditions or policies outlined within either the MEA Class EA or MNR Class EA, the most stringent will apply to this EA.
5. The study area must incorporate the effective sewershed..
6. In accordance with the MSP Guiding Principles, one sanitary pumping station should be used for the trunk sewer system.
7. Conveyance as well as all wet wells and structures should be sized for ultimate flow conditions.
8. The width of the easement through the Provincial Park will in all likelihood, restrict the depth of a sewer or forcemain installed by open cut.
9. The location of the termination of the easement into the Komoka WWTF does not permit either deep sewer or wet well for a pumping station.

The timing of the implementation of the Kilworth Sanitary Connection to Komoka WWTF Class EA is based on development. It is recommended that the Class EA and implementation schedule be tied to its requirement for development.

The Komoka PS is rated for a peak flow of approximately 3,000 m^3/d. Once sanitary flows at the WWTF exceed 800 m^3/d average flow, upgrades may need to occur at the pumping station. Wet well capacity and pump sizes increases will be addressed, as well as any other upgrades necessary to bring the pumping station up to current standards.

There appears to be sanitary sewer deficiencies along Komoka Road, north and south of the pumping station that could inhibit future development from outside the current sanitary sewershed boundary. Any land that falls outside this boundary would have to be examined to

determine if the existing trunk sewers can support the proposed future development. This would be done on a case-by-case basis.

7.2 COMMUNITY SETTLEMENT AREAS

7.2.1 Delaware

The Komoka-Delaware Municipal Servicing Implementation Study Class EA addressed the potential for implementation of full wastewater servicing in Delaware. If a communal wastewater system was to be constructed, sanitary flows would travel from a pumping station in Delaware via forcemain along Gideon Drive to the expanded Komoka WWTF.

Areas outside of the Official Plan growth boundary have been assessed based on the relative ease to provide wastewater servicing through an extension of existing servicing. These areas have not been selected for actual development, but rather to assist in developing servicing policies. These areas are shown in Figure 5.11. Various constraints to sanitary servicing have been identified. It appears that there may be sufficient space within the growth boundary for much of projected growth.

7.2.2 Arva

There are three sanitary servicing options to be considered by Middlesex Centre for Arva. The options are as follows:

- Do nothing;
- Amend City of London agreement; or
- Construct a new municipal wastewater treatment facility for Arva.

After review, the do nothing option will not be carried forward as the lack of sanitary capacity in Arva would not be solved. However, if Middlesex Centre chooses to carry out a Schedule B Class EA to evaluate the planning options, the do nothing option would be brought back.

Amending the City of London Sanitary Agreement appears to be the preferred option. The Municipality would be responsible for negotiating the terms of an amended agreement. If an revised agreement cannot be achieved, then the Municipality may need to proceed with a Class EA as soon as possible to evaluate the above options.

7.3 OTHER AREAS

No significant findings.

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APPENDICES

APPENDIX 3.2:
EXISTING SANITARY INFRASTRUCTURE - ILDERTON

General Summary of Existing Sanitary Infrastructure - Ilderton

Ilderton's wastewater infrastructure consists of both a collection and treatment system. A sanitary sewer network collects the town's sewage which is then directed to one of five municipal (5) sanitary pumping stations and then pumped via forcemain to the Ilderton Wastewater Treatment Plant where it is treated and discharged to Oxbow Creek. The sanitary infrastructure serving the Urban Settlement Area of Ilderton is governed by MOE Amended Certificate of Approval, Municipal and Private Sewage Works, Number 2395-6N6M6Y (March 24, 2006).

The Ministry of the Environment (MOE) has designated the Ilderton wastewater collection system and the wastewater treatment system both Class II systems (O.Reg. 129/04, Schedule I). The wastewater treatment facility went under major upgrades and expansion which was completed in 2004 to increase the rated capacity from 660m^3/day to 1,120m^3/day. Ilderton has approximately 686 service connections.

The Ilderton Wastewater Treatment Plant is a three stream conventional extended aeration activated sludge system with effluent filtration and UV disinfection. A description of the pumping station and treatment system is as follows *(provided by Middlesex Centre – Initial Conditions Survey and CofA)*:

- Raw wastewater pumping station
    - concrete wet well housing three submersible raw sewage pumps (two duty and one standby) each with a capacity of 22 L/s,
    - raw auto sampler;
- One mechanically raked bar screen and an overflow channel;
- Two manually cleaned grit removal channels (duty and standby) to serve each of the three wastewater treatment trains;
- One flow splitter box to serve all three wastewater treatment trains;
- Three wastewater treatment trains (train 1 to the south, train 2 to the north and train 3 down the centre);
- Train 1
    - aeration tank equipped with a fine bubble diffused aeration system,
    - secondary clarifier with scum skimming system and equipped with RAS and scum removal pumps,
    - aerobic digesters equipped with coarse bubble diffused aeration system,

  - a supernatant decanting facility,
  - two submersible sludge pumps (duty and standby) each rated at 7.2 L/s;
- Train 2
  - aeration tank equipped with a fine bubble diffused aeration system,
  - secondary clarifier with scum skimming system and equipped with RAS and scum removal pumps,
  - aerobic digesters equipped with coarse bubble diffused aeration system,
  - a supernatant decanting facility,
  - two submersible sludge pumps (duty and standby) each rated at 7.2 L/s;
- Train 3
  - one 136m^3 primary aerobic sludge digester with coarse bubble diffused aeration,
  - aeration tank with a volume of 352 m^3 equipped with fine bubble diffusers,
  - waste activated sludge submersible pumps (duty and standby) each rated at 10.5 L/s,
  - secondary clarifier with volume of 380m^3 equipped with scum removal system;
- Effluent filtration has three sand filters designed for peak flow of 3,808 m^3/day and one filter waste sump equipped with two submersible pumps (duty and standby);
- Effluent pumping station is a concrete wet well equipped with three submersible effluent pumps (two duty and one standby) each with a design rated capacity of 22 L/s;
- Post aeration basin with a volume of 23.7 m^3 equipped with a coarse bubble diffused aeration system (back of plant);
- Effluent pumping station has one magnetic effluent flow meter;
- Effluent Disinfection
  - UV disinfection unit equipped with one UV bank with 8 UV modules each with 4 low pressure high intensity UV lamps – total of 32 lamps,
  - Design flow of 3,808 m^3/day;
- Effluent auto sampler;

- Outlet to Oxbow Creek;
- Scum pit pumps the scum off the clarifier back to the headworks;
- Biosolids Management System
    - one 1,500 m^3 digested sludge storage tank equipped with two mechanical propeller type mixers (duty and standby),
    - two submersible pumps each rated at 7.2 L/s for sludge transfer;
- Control Building
    - washroom and locker area,
    - furnace and hot water tank,
    - control room, office & electrical panel old on south side and new on north,
    - control panel – PLC and HMI – touch screen,
    - lab area for testing,
    - transfer switch to diesel back up generator,
    - phosphorous storage tank holds 7,570 L and day tank,
    - phosphorous removal – 4 alum metering pumps adding alum upstream of effluent filtration and 4 alum metering pumps adding alum upstream of the secondary clarifiers serving all 3 treatment trains,
    - Trains 1 & 2 air blowers – 4 blowers (three duty and one standby),
    - Train 3 air blowers – 2 blowers (duty and standby) with room for a third blower,
    - standby power – 230kW diesel power generator; and
- Garage
    - tool area,
    - storage for back-up portable generator for pumping stations
    - storage for portable chlorination trailer for the Denfield and Ballymote systems

APPENDIX 3.3:
EXISTING SANITARY INFRASTRUCTURE – KILWORTH-KOMOKA

General Summary of Existing Sanitary Infrastructure - Kilworth

Kilworth's wastewater infrastructure consists of both a collection and treatment system. A sanitary sewer network collects the towns wastewater which travels via gravity to the Kilworth Water Pollution Control Plant where it is treated and discharged to the Thames River. There is also a small pumping station located on Blackburn Crescent, just to the west of Blackburn Place. This collects wastewater from a small section of development along Blackburn Crescent and is then pumped back into the gravity sewer along Westbrook Crescent The sanitary infrastructure serving Kilworth is governed by MOE Amended Certificate of Approval, Municipal and Private Sewage Works, Number 1417-79NM4M (December 14, 2007).

The wastewater treatment facility went under major upgrades and expansion was completed to increase the rated capacity 1,280m^3/day using a newer treatment technology – Membrane Bioreactor (MBR) treatment. Kilworth has approximately 716 service connections.

The Kilworth Water Pollution Control Plant was converted from an extended aeration type activated sludge system to a membrane bioreactor system. A description of the pumping station is as follows:

- Collects sanitary flows from the eastern portion of Kilworth;
- Two pumps (duty and standby) operated by float switches;
- 6 m deep with an overflow chamber;
- No permanent generator on site.

A description of the pumping station is as follows:

- Two (2) grinders and 2 mm fine screening systems
- One (1) flow equalization tank
- Gravity flow return activated sludge (RAS) line from new membrane treatment building to aeration tanks;
- Building (approximately 14 m wide by 17 m long) to house membrane filtration system and ancillary equipment;
- Two-train membrane filtration system, each train consisting of two membrane cassettes with multiple membrane modules per cassette to meet design flow requirements, variable speed permeate pump to draw treated water through the membrane system, and associated air and chemical piping to provide adequate agitation and cleaning to prevent undue membrane fouling;

- Ancillary equipment for the membrane filtration system consisting of citric acid and sodium hypochlorite chemical storage and injection systems for cleaning, three blowers with two configured in lead-lag and one as an installed spare for membrane aeration and air-scour cleaning, backpulse water storage tank, compressed air system for pneumatic valve operation, including all controls and associated appurtenances and lifting equipment for cassette removal;

- One (1) ultraviolet disinfection system, located in the plant outlet structure, designed to disinfect the plant peak equalized flow of 2,560 m^3/day, relocated to the building envelope

- One (1) 13m^3 capacity chemical storage tank and three chemical feed pumps capable of delivering 0.2 to 20 L/hr for phosphorus removal;

- One (1) 145 kW capacity standby diesel generator set to provide power during emergency situations

- Administration building;

- Maintenance shop and parts storage building;

General Summary of Existing Sanitary Infrastructure - Komoka

Komoka's wastewater infrastructure consists of both a collection and treatment system. A sanitary sewer network collects the town's wastewater which is then directed to a pumping station at Komoka Road and Railway Avenue and then pumped via forcemain to the Komoka Wastewater Treatment Facility near the Komoka Road bridge, and is then treated and discharged to the Thames River. The sanitary infrastructure serving Komoka is governed by MOE Certificate of Approval, Number 3-0297-95-006 (July 25, 1995).

The MOE has designated the Komoka Wastewater Collection System and the Wastewater Treatment system a Class II and Class III system, respectively. (O.Reg. 129/04, Schedule I). Komoka has approximately 546 service connections.

The Komoka Wastewater System is a conventional activated sludge system. The purpose of the pumping station is to remove large solids and trash, collect raw wastewater in the wet well, and lift and transmit wastewater to the Komoka WWTF.

A description of the pumping station is as follows:

- Raw wastewater enters the pumping station wet well at an invert elevation of 233.933m through a 375 mm PVC pipe.
- A screen basket prevents larger or coarse debris from damaging the submersible pumps, and is manually cleaned.
- The wet well is benched to minimize settlement of solids.
- Levels within the wetwell are measured using an ultrasonic level detector.
- Wet well equipped with two wastewater pumps (duty and standby) each rated at 32.4 L/s. Each pump has a 150 mm discharge connection to a common header, which feeds into a 200 mm forcemain (630m in length);
- Permanent 40kW diesel standby generator; and
- 900 L fuel storage tank.

Fundamental wet well data and wastewater pump data are shown below:

Wet Well Data	
Diameter	3.0 m
Bottom Slab Elevation	231.5 m
Top of Concrete Elevation	239.4 m
Operational Depth	1.0 m
Volume	7.0 m^3

Wastewater Pump Data		
Designation	SP101	SP102
Model	CP 3127 HT	CP 3127 HT
Manufacturer	ITT Flygt	ITT Flygt
Capacity	2,800m^3/d	2,800m^3/d
Capacity	32.4 L/s	32.4 L/s
Discharge Head	13.5 m	13.5 m
Discharge Diameter	150 mm	150 mm
Motor Rating	7.5 kW	7.5 kW
Supply Voltage	600 V / 60 Hz / 3 phase	600 V / 60 Hz / 3 phase
RPM	1,750	1,750

A description of the wastewater treatment facility is as follows:

- Facility is an extended aeration treatment facility with effluent filtration and seasonal UV disinfection;
- C of A rated capacity of 780 m^3/day average daily flow and 2,800 m^3/day peak flow rating;
- Two grit channels with hydraulic capacity of 5,200 m^3/day and weirs to control flow;
- Two screen channels, one with a manually raked bar screen and the other with a comminutor;
- Aerated sludge holding tanks equipped with coarse bubble air diffusers;
- Two 390 m^3 capacity extended aeration tanks equipped with fine bubble air diffusers;

- Two secondary clarifiers equipped with two activated sludge pumps (duty and standby) each with a rated capacity of 1,555 m^3/day;
- Two scum pumps (duty and standby) each with a rated capacity of 640 m^3/day;
- Three air blowers
    - one for process air to aeration tanks,
    - one for process air supply to aerated sludge holding tank and
    - one standby;
- Return sludge system consists of two activated sludge pumps each with a rated capacity of 1,555 m^3/day;
- Two continuous backwash upflow granular media effluent filters (sand filters) designed for a peak flow of 1,400 m^3/day;
- Trojan UV disinfection system rated for a peak flow of 2,800 m^3/day;
- Effluent flow meter;
- Auto sampler;
- Outlet to the Thames River;
- Treatment facility building
    - PLC control panel,
    - level meters,
    - electrical panel,
    - SCADA system which is also connected to the Kilworth-Komoka Water System,
    - SCADA has monitoring capabilities, alarms, trending,
    - 2007 project to upgrade and replace this system hardware (computer) and upgraded WonderWare license,
    - laboratory facilities,
    - fume hood,
    - washroom, lockers and showers, washer and dryer, eye wash,
    - air compressor,
    - hot water tank,
    - chemical dosing for phosphorous removal one 15,000L storage tank and 1 454 L capacity day tank and safety shower,
    - alum injection pumps – two metering pumps (duty and standby) each rated at 7.6 L/hr,
    - 80kW diesel generator with a 1,135 L fuel storage tank,

  - main power 600V service disconnect; and
- Garage
  - workshop and tool area,
  - generator exhaust.

APPENDIX 3.4:
EXISTING SANITARY INFRASTRUCTURE - ARVA

General Summary of Existing Sanitary Infrastructure - Arva

Arva's wastewater infrastructure consists primarily of a collection system and wastewater pumping station. Due to its close proximity to the City of London, wastewater from Arva is pumped via forcemain from the Arva Pumping Station (PS) to the City of London, where it is treated at the Adelaide Pollution Control Plant (PCP) and then discharged to the Thames River.

The sanitary sewers, sewage pumping station and forcemain serving Arva is governed by Ministry of the Environment (MOE) Certificate of Approval, Municipal and Private Sewage Works, Number 7285-4KNGAY (May 26, 2000).

The MOE has designated the Arva Collection System a Class II system (O.Reg. 129/04, Schedule I). It was constructed in 2001 and has approximately 134 service connections.

The Arva PS is located on the east side of Richmond Street approximately 1000 m north of Sunningdale Road. A general description of the pumping station is as follows (provided by Middlesex Centre – Initial Conditions Survey and CofA):

- A 3m diameter wet well equipped with two submersible pumps (one as standby)
- A 3m square precast concrete chamber housing two dry pit booster pumps (one standby) each rated at 30L/s
- Normal pumping system consists of one submersible pump and one dry pit booster pump which operates in series to provide a station capacity of 30 L/s
- A lifting device is provided for access to the pumps
- Flow bypass chamber and flow metering chamber equipped with a 100 mm diameter magnetic flow meter
- Discharges via a 150mm diameter forcemain along Richmond Street into a sanitary manhole at the junction of Plane Tree Drive and Richmond Street, in accordance with the application dated April 10, 2000, entitled "Township of Middlesex Centre, Arva Sanitary Sewage System"
- 60 kW natural gas powered generator with enclosure for standby power

Appendix 5.1:
Water Technical Memorandum

Middlesex Centre Master Servicing Plan
Technical Memorandum – Water Supply and Distribution

Technical Memorandum – Water Supply and Distribution

April 26, 2010

Table of Contents

List of Tables

List of Appendices

1.0 Introduction

The Municipality of Middlesex Centre (Middlesex Centre) has identified a need for master servicing plans for water, wastewater, transportation, solid waste and stormwater services for its settlement areas. This document will focus on water services. These plans shall encompass and address servicing for the following communities:

- Ilderton;
- Kilworth;
- Komoka;
- Delaware;
- Arva;
- Ballymote;
- Birr;
- Bryanston;
- Denfield;
- Lobo;
- Melrose;
- Poplar Hill-Coldstream; and
- Non-settlement Areas.

This Master Servicing Plan (MSP) documents existing services, identifies future needs, and recommends alternatives to be implemented.

2.0 Work Scope

2.1 OVERVIEW

Community water servicing alternatives could consist of:

- do nothing;
- communal wells;
- municipal wells;
- connection to adjacent municipalities through agreements (City of London); and
- connection to regional water supply system (Lake Huron Primary Water Supply System).

Currently in progress is the construction of a new supply main from the Lake Huron Primary Water Supply System to service the Communities of Kilworth – Komoka, with a future connection to Melrose and extension to Delaware.

2.2 ASSESSMENT OF EXISTING SERVICING COMPONENTS

This technical memorandum will assess the existing level of service and existing servicing components, as outlined in the original “Request for Proposal” by Middlesex Centre, and as follows:

- Compile consumption data on the existing system by undertaking the following:
    - review unit design criteria based on five year average;
    - review general municipal and provincial criteria and provide recommendations for criteria to be used in the Master Servicing Study; and
    - comment on water usage wastewater generation.
- Identify water supply capacities, distribution system servicing capabilities, and limitations within existing systems;
- Identify existing and future water conservation measures and potential impacts on future water demands; and
- Prepare water distribution system models for Delaware, Kilworth-Komoka, and Ilderton using WaterCAD V8. Calibrate model based on field data compiled by the municipality. Model to include all mains 200 mm and greater with outputs to be in both WaterCAD V8 and EPANet formats.

2.3 ASSESSMENT OF SERVICING COMPONENT ALTERNATIVE SOLUTIONS

This technical memorandum will further assess the existing servicing components and alterative solutions, as outlined in the original “Request for Proposal” by Middlesex Centre, and as follows:

- Provide estimate of projected water demands for each growth area over 20 year planning horizon;
- Comment on the adequacy of existing water supply facilities to meet projected 20 year population;
- Develop water supply alternative including “do nothing” and/or “limit community growth”;
- Complete assessment of alternative and selection of preferred alternative for water supply;
- Identify logical extensions of distribution systems based on system demands to service both currently un-serviced areas within each community as well as future growth and development areas; complete system model to identify major distribution network mains (greater than 200 mm diameter). Proposed network extensions are to be included in the evaluation of water system alternatives;
- Prepare preliminary cost estimates for each alternative; and
- Prepare implementation strategies (i.e. role of existing community and development; identify potential funding alternatives – i.e. capital, user fees, development charges).

3.0 Existing Level of Service

3.1 GENERAL

A more detailed description of the existing sanitary infrastructure within the Municipality can be found in Appendix 1.1. Appendix 1.2 illustrates the water supply and distribution network in each community.

3.2 ILDERTON

3.2.1 Type of Community

Ilderton is considered an 'Urban Settlement Area' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.2.2 Population

Ilderton is situated to the northwest of the City of London, near Ilderton Road & Hyde Park Road with a population of approximately 2500 people (Watson and Associates, 2009).

3.2.3 Infrastructure

Water is supplied to the Ilderton reservoir and booster pumping station (BPS) by way of a 300 mm pipe directly connected to the 1200 mm Lake Huron Primary Water Supply System's (LHPWSS's) transmission main. The maximum permissible flow is 3024 m^3/day.

A reservoir, directly beneath the BPS, consists of an in-ground facility with 455 m^3 of storage of which a 30 m^3 is cell dedicated specifically for fire supply.

The system is operating under Certificate of Approval (C of A) # 2198-5B7HRC dated September 27, 2002.

3.3 KILWORTH-KOMOKA

3.3.1 Type of Community

Kilworth-Komoka is considered an 'Urban Settlement Area' as noted in the Official Plan of the Township of Middlesex Centre (2001).

3.3.2 Population

Kilworth is situated just west of the City of London, near Glendon Drive & Coldstream Road with a population of approximately 2220 people (Watson and Associates, 2009).

Komoka is situated just west of the City of London, near Glendon Drive & Komoka Road with a population of approximately 1693 people (Watson and Associates, 2009).

3.3.3 Infrastructure

In early 2010 the communities of Kilworth and Komoka will be serviced by a new booster pumping station as part of the Komoka – Mt. Brydges Water Supply System water supply upgrades.

The system operates under C of A # 8540-7TWK72 dated July 31, 2009.

3.4 ARVA

3.4.1 Type of Community

Arva is considered a 'Community Settlement Area' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.4.2 Population

Arva is situated just north of the City of London, near Richmond Street & Medway Road with a population of approximately 430 people.

3.4.3 Infrastructure

Arva is supplied by a direct connection from the City of London distribution system. The water passes through a small pump station that contains an inline fire pump, which operates only in the event of a fire demand, as well as a sodium hypochlorite panel for residual chlorine disinfection.

The system is operating under C of A # 2139-665N5D dated October 28, 2004.

3.5 DELAWARE

3.5.1 Type of Community

Delaware is considered a 'Community Settlement Area' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.5.2 Population

Delaware is situated to the west of the City of London, near Longwoods Road & Gideon Drive with a population of approximately 1600 people (Watson and Associates, 2009).

3.5.3 Infrastructure

Delaware is supplied by a direct connection from the City of London pipeline. An agreement with the City of London provides for up to 591 m^3/day. The system contains a standpipe and rechlorination facility. The rechlorination facility is situated on Gideon Drive.

The system operates under C of A # 4366-6ZRJX4 dated April 16, 2007.

3.6 BALLYMOTE

3.6.1 Type of Community

Ballymote is considered a 'Hamlet' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.6.2 Population

Ballymote is situated to the northeast of the City of London, near Highbury Avenue North & Medway Road with a population of approximately 130 people.

3.6.3 Infrastructure

Ballymote receives water through a connection into a 300 mm pipeline that is part of the City of London's distribution system.

The system is operating under C of A # 2522-665K34 dated October 28, 2004.

3.7 BIRR

3.7.1 Type of Community

Birr is considered a 'Hamlet' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.7.2 Population

Birr is situated to the north of the City of London, near Richmond Street & 13 Mile Road with a population of approximately 264 people.

3.7.3 Infrastructure

Birr is serviced by a combination of private wells and a municipal well. 18 lots along Gwendolyn Street are serviced by a municipal system comprised of a 49 m deep well fitted with a 1.42 L/s submersible well pump at a depth of 30m. The treatment system and pumps sit above a concrete ground reservoir, approximately 55 m^3 in volume.

The system operates under C of A # 0525-665QG7, dated October 28, 2004 and Permit to Take Water # 0571-732NPN, dated May 10, 2007.

This system has capacity only to service to service this area and is not intended to be expanded. The remaining households are serviced by private wells.

3.8 BRYANSTON

3.8.1 Type of Community

Bryanston is considered a 'Hamlet' as noted in the Official Plan of the Township of Middlesex Centre, (2001)

3.8.2 Population

Bryanston is situated to the northeast of the City of London, near Highbury Avenue North & 12 Mile Road with a population of approximately 198 people.

3.8.3 Infrastructure

Bryanston has no municipal water infrastructure. Any water demands are being met through individual private wells and/or treatment systems.

3.9 DENFIELD

3.9.1 Type of Community

Denfield is considered a 'Hamlet' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.9.2 Population

Denfield is situated to the northwest of the City of London, near Denfield Road & 16 Mile Road with a population of approximately 239 people.

3.9.3 Infrastructure

Denfield currently receives water via a tapped connection to the LHPWSS's 1200 mm transmission main.

The system operates under C of A # 9204-82GQT5, dated February 25, 2010.

3.10 LOBO

3.10.1 Type of Community

Lobo is considered a 'Hamlet' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.10.2 Population

Lobo is situated to the northwest of the City of London, near Egremont Drive & Nairn Road with a population of approximately 189 people.

3.10.3 Infrastructure

Lobo has no municipal water infrastructure. Any water demands are being met through individual private wells and/or treatment systems.

3.11 MELROSE

3.11.1 Type of Community

Melrose is considered a 'Hamlet' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.11.2 Population

Melrose is situated to the northwest of the City of London, near Egremont Drive & Vanneck Road with a population of approximately 332 people.

3.11.3 Infrastructure

The Wynfield Estates subdivision, situated in Melrose, is serviced by two municipal wells. This well based system is not designed to be expanded.

The system operates under C of A # 8518-665PXL, dated October 28, 2004 and Permit to Take Water # 00-P-1319, dated January 21, 2001.

3.12 POPLAR HILL – COLDSTREAM

3.12.1 Type of Community

Poplar Hill-Coldstream is considered a 'Hamlet' as noted in the Official Plan of the Township of Middlesex Centre, (2001).

3.12.2 Population

Poplar Hill-Coldstream is situated to the northwest of the City of London, along Ilderton Road, between Poplar Hill Road and Coldstream Road with a population of approximately 378 and 428 people, respectively.

3.12.3 Infrastructure

Both Poplar Hill and Coldstream have no municipal water infrastructure. Any water demands are being met through individual private wells and/or treatment systems.

3.13 NON-SETTLEMENT AREAS

3.13.1 Type of Community

These types of lands are broken down into the following types:

- Agriculture;
- Rural Industrial;
- Rural Commercial;
- Parks and Recreations;
- Natural Environment Areas; and
- Flood Plain.

3.13.2 Population

It is estimated that the population of these areas is approximately 6154 people (Watson and Associates, 2009).

3.13.3 Infrastructure

Non-settlement areas have no infrastructure and thus water demands are met through individual private wells and/or treatment systems.

4.0 Policy Review

4.1 STATUES AND REGULATORY STANDARDS

4.1.1 Safe Drinking Water Act, 2002

This act encompasses all the aspects and responsibilities for operating a drinking water system in Ontario and states:

The purposes of this Act are as follows:

1. *To recognize that the people of Ontario are entitled to expect their drinking water to be safe.*

2. *To provide for the protection of human health and the prevention of drinking water health hazards through the control and regulation of drinking water systems and drinking water testing.*

4.1.1.1 O. Reg. 169/03 Ontario Drinking Water Quality Standards

O. Reg. 169/03 provides the standards and compliance requirements for Ontario drinking water. These standards are broken into the different categories, referred to as schedules in the Act; microbiological, chemical, and radiological.

4.1.1.2 O. Reg. 170/03 Drinking Water Systems

The Drinking Water Systems Regulation (O. Reg. 170/03) regulates municipal and private water systems that provide water to year-round residential developments and designated facilities that serve vulnerable populations such as children and the elderly. Designated facilities include children's camps, child and youth care facilities, health care and social care facilities, a school or private school, a university, college or institution with authority to grant degrees.

Amendments to O. Reg. 170/03 came into effect on June 5, 2006. The amendments are risk-based and are designed to safeguard the quality of Ontario's drinking water, while making the regulation more workable and affordable for residential drinking water systems and systems serving designated facilities. They add clarity and flexibility to the testing and operational regimes set out in Reg. 170 and in some cases, could reduce the cost of regulatory compliance.

4.1.1.3 O. Reg. 188/07 Licensing Of Municipal Drinking Water Systems

This regulation is in reference to the licensing of drinking water systems on a municipal level along with the date as to when the application for renewal of the license or permit is due. The regulation also states:

The day that a municipal drinking water licence is first issued to the owner of a municipal drinking water system is specified as the day on and after which the owner shall ensure that an accredited operating authority is in charge of the system.

4.1.1.4 O. Reg. 453/07 Financial Plans

The purpose of O. Reg. 453/07 is to ensure that those responsible for the drinking water system are of sound financial welfare. In order to do this, the individual must provide evidence and have approved financial plans prior to application or the renewal of they drinking water systems licence. It is expected that these financial plans will be applicable for a period of not less than six years.

4.1.2 Sustainable Water and Sewage Systems Act, 2002

The purpose of this act is similar to that of O. Reg. 453/07, in that it is there for Municipalities to determine how much it will cost them to run, maintain, and ultimately replace their drinking water systems. It is also mandatory that the cost of providing these services is recoverable, be it taxes, rate payers, grants, reserve funds, or another manner.

4.1.3 Ontario Water Resources Act

The purpose of this Act is to provide for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being.

4.1.3.1 O.Reg. 903/90 Wells

This regulation pertains to the design, construction, operation, and decommissioning of wells. Such items as well contractor and technician licences, disinfection, records, and maintenance are also covered.

4.1.3.2 O.Reg. 387/04 Water Taking

This regulation pertains to the issuing, data collection, and reporting of taking water to supply drinking water systems in Ontario. It details information and considerations used in determining the validity of an application. Some considerations are: the ecosystem, water availability, and the use of water, along with other matters that may be related. The regulation also stipulates that the applicant must record water usage and submit this information yearly to the Ministry of Environment.

4.2 POLICIES AND GUIDELINES

4.2.1 Ministry of the Environment

The Ontario Ministry of the Environment (MOE) is *"responsible for protecting clean and safe air, land and water to ensure healthy communities, ecological protection and sustainable development for present and future generations of Ontarians."* It is comprised of five divisions:

- Drinking Water Management Division;
- Operations Division;
- Environmental Sciences and Standards Division;
- Integrated Environmental Planning Division; and
- Corporate Management Division.

The Drinking Water Management Division "*has lead responsibility for program and operational activities related to the protection and provision of safe drinking water in Ontario."* The Division is further subdivided into three branches:

- Drinking Water Program Management Branch;
- Safe Drinking Water Branch; and
- Source Protection Programs Branch.

The MOE produced a set of Design Guidelines for Drinking – Water Systems in 2008 that are meant to provide assistance in the design of drinking water systems. Any legislation or regulated taking precedence over these guidelines must be adhered to. These are:

- Environmental Assessment Act;
- Safe Drinking Water Act, 2002;
- Ontario Water Resources Act;
- Clean Water Act, 2006;
- Environmental Protection Act; and
- Environmental Bill or Rights.

O. Reg. 169/03 and O. Reg. 170/03, both described earlier, are part of the Safe Drinking Water Act, 2002.

4.2.2 Middlesex Centre

The Municipality of Middlesex Centre has a set of minimum standards for the construction of watermains. These standards are to be followed wherever possible, however, deviation is possible through permission from the Municipality's Director, Public Works and Engineering Department. These standards were originally prepared in 1998.

4.2.3 Ten State Standards

The Ten States Standards produces a document pertaining to publicly owned water treatment facilities that provides recommended guidelines and standards. The document is broken up into nine parts with the following headings:

- Submission of Plans;
- General Design Considerations;
- Source Development;
- Treatment;
- Chemical Application;
- Pumping Facilities;
- Finished Water Storage;
- Distribution System Piping and Appurtenances; and,
- Waste Residuals.

The latest revision to these recommended guidelines and standards was produced in 2007.

4.2.4 American Water Works Association

The American Water Works Association (AWWA) produces a set of standards pertaining to "*the minimum requirements for design, installation, performance, and manufacturing of products used in the water industry, including pipe, chemicals, storage facilities, valves, and other appurtenances."* While not government regulated these are considered industry accepted standards that are broken down into twenty-four categories and contain more than one hundred and forty standards for both processes and equipment. Between twenty and twenty-five standards are revised annually.

4.3 ISSUES OF CONCERN TO REGULATORY AGENCIES

4.3.1 MOE District

To date, no issues of concern have been provided by the MOE to the municipality.

4.3.2 Health Unit

The Middlesex – London Health Unit (MLHU) has indicated if any development goes ahead it prefers that all lots are fully serviced (new homes to include both water and waste water services). This is similar to Middlesex Centre's Official Plan, which indicated that if any more than three lots are developed the lots must be equipped to provide for both services, even if one or both are not currently present.

Furthermore, the MLHU reiterated the ongoing issue of elevated sodium levels in Melrose. This follows from O.Reg 170/03 that requires notification, from both the municipality and local health unit, if sodium concentrations are greater than 20 mg/L, as this may affect individuals on sodium restricted diets.

4.4 ISSUES OF CONCERN TO MIDDLESEX CENTRE

A Steering Committee was organized to guide the progress of the study. The members of the Steering Committee are:

- Maureen A. Looby, M.Eng., P.Eng., Director – Public Works and Engineering, Municipality of Middlesex Centre;
- Cathy Saunders, CAO/Clerk, Municipality of Middlesex Centre (until November 2009);
- Marc Bancroft, MPL, MCIP, RPP, Senior Planner, Municipality of Middlesex Centre; and
- Joe Heyninck, P.Eng., Development Advisory, IBI.

Meetings with the Steering Committee were undertaken to present the problem statement, study approach and development of alternative servicing strategies. Through discussions between Stantec and the Steering Committee, a list of guiding principles were developed.

In order to review the issues and opportunities of the municipality with regard to servicing over the 20-year planning period, consideration needs to be provided to principles to guide the plan development. These principles that should be used in the Master Servicing Plan are:

1. The Master Servicing Plan should be informed by the Municipality's Strategic Plan.
2. Servicing solutions should suit the Municipality's Growth Plan - If Middlesex Centre wishes growth in an area, the MSP would not and should not 'veto' it. However, areas that are not readily provided with municipal services would be costly (capital costs and operational costs).
3. Preference should be for long term servicing solutions over interim solutions.

4. All services to be fully funded through adequate planning, budgeting and identified revenue streams.
5. Servicing solutions should be developed which minimize risk to the municipality, users and others.
6. Proven, cost effective technologies that should be in long term use and are capable of continuous improvement should be utilized.
7. Middlesex Centre should service Middlesex Centre users, where possible.
8. Recommended servicing solutions should be 20-year solutions and ensure that there is expandability to 40-years, if possible (or to the life expectancy of the infrastructure).
9. Service Extension through Integration - Future growth and servicing should use existing infrastructure as much as possible to promote cost effectiveness.
10. Network Servicing versus Linear Servicing - A network of streets is more efficient to service than the equivalent length of a linear development.
11. High vs. Low - As water servicing is supplied by pressure, development would be preferred at higher elevations to utilize gravity in sanitary and storm services.
12. Minimize Crossings - Where possible, servicing should attempt to avoid crossing physical features such as the Lake Huron Primary Water Supply Pipeline, hydro corridors, other utilities and naturalized areas.
13. Minimize Complexity – Examples include pumping from one PS to another, having two systems service one community, servicing occasional/seasonal users and servicing isolated development.

4.5 ISSUES OF CONCERN TO THE PUBLIC

Three (3) Public Information Centres (PICs) have been held at both the Komoka and Coldstream Community Centres. Each PIC was held as a drop in session along with a MS PowerPoint presentation. Handouts of the presentation were provided to each attendee as well as a comment sheet so that any issues of concern to the public could be addressed.

To date no concerns with issues relating to the water distribution systems in Middlesex Centre have been identified by the public.

5.0 20-Year Demand Growth and Service Review

5.1 ILDERTON

5.1.1 Demand Growth

Ilderton is expected to undergo a population increase of nearly 1300 in the next 20 years to approximately 3800 people (Watson and Associates, 2009). There are currently three areas within the Official Plan Settlement Area that can be developed prior to expansion outside this area:

- the northeast corner; near Hyde Park Road and Ilderton Road;
- along the southwest side of the community, between Ilderton Road and an old railway easement; and
- near the northern end of King Street.

Of the three of these, the smaller area at the end of King Street is not particularly suited for residential development as it is close to several industrial/commercial developments.

Growth outside of the Official Plan Settlement Area is likely to occur along Hyde Park Road possibly to Ten Mile Road to the south and the area north of Ilderton Rd. Another likely location is to the west, along Ilderton Road. These areas would have the least amount of issues or constraints for servicing. Other areas with a moderate amount of servicing issues are to the east, in the region of the public school, and the entire southwest quadrant of the community.

5.1.2 Service Assessment

These sections will assess the existing water supply infrastructure to confirm whether the characteristics of the system and supply are able to meet the projected twenty year demands. For Ilderton, WaterCAD modeling was also utilized to assess estimated current system performance as well as estimated performance twenty years from now. In both cases, there appears to be few to no issue with the operation of the system. The backbone of the system is a 300 mm line that runs down Ilderton Road with 200 mm and 150 mm lines branching off. This provides for a system that can tolerate increasing flow rates due to growth and expansion.

Ilderton receives its water directly from the LHPWSS resulting in very little need to control the quality of the water it receives as treatment has already taken place. The annual report from 2008 (MOE Annual Report, 2008) indicated that there were no exceedances of any sort.

Ilderton's level of water security is high due to its connection the to LHPWSS transmission main. This transmission main is the spine of the system that serves all the other smaller community

and municipal systems in the region, including the largest user, the City of London. As a result the system requires high continuity of service with rare interruptions.

The current C of A also lists that the maximum rated flows off the LHPWSS are not to exceed 3024 m^3/d. The projected two day demand in 2029 is approximately 2000 m^3 (Ilderton Water Storage Assessment, 2009) signifying that allowable daily flow volumes will likely not be a concern in the near future.

Current day, 10, 20, and 40 year projected storage requirements by both MOE and Risk Management methods are as follows:

Table 5.1: Summary of Storage Requirements for Ilderton

Year	Population	Existing Reservoir	MOE Storage Requirement		Risk Management	
		Storage (m^3)	Storage (m^3)	Deficit (m^3)	Storage (m^3)	Deficit (m^3)
2009	2500	455	1,459	1,004	1,296	841
2019	3100	455	1,594	1,139	1,607	1,152
2029	3800	455	1,822	1,367	1,970	1,515
2049	5200	455	2,447	1,992	2,696	2,241

According to the MOE's, 1984 criteria, water storage is a function of the population serviced and includes an allowance for the following storage components:

- Fire Storage (Volume A) is the volume of water required to fight fires at a prescribed fire flow rate and for a minimum required duration (MOE recommended values). Typically, the annual amount of water used for firefighting is relatively small; however, the rate of use is quite high. Conventional design calls for the provision of fire flow from reservoir storage. The product of fire flow rate and duration, both a function of the population being serviced, yield the required fire storage.

- Equalization Storage (Volume B) is the volume of water stored in order to augment pumped flow (maximum day flow) during periods of high demand (during peak hour). During periods of low consumption (less than maximum day demand) excess flows are used to fill the reservoir. The MOE recommends equalization storage equivalent to 25% of the maximum day demand.

- Emergency Storage (Volume c) is the volume of water stored for unexpected contingencies, such as equipment failure at the water supply facility. The MOE recommends emergency storage equivalent to 25% of both fire and equalization storage.

The combined volumes (A, B & C) comprise the MOE approach for the requirement for water storage.

In the event of a water supply disruption, it would be anticipated that demand would approach minimum day consumption. This would be on a winter holiday such as Christmas Day when commercial and industrial consumption is at a minimum. Therefore, assuming average winter day demand may provide an added level of security. Winter day is based on the average daily flows for the months of October through March when highly consumptive outdoor water uses such as lawn watering and filling of swimming pools do not occur. This method is referred to as the Risk Management approach.

However, another aspect of water security is storage. A review of Ilderton's storage capacity was undertaken in 2008, updated in late 2009, and indicated that there was currently a deficiency which continues to grow. In 2009 the deficiency was 1,004 m^3 or 841 m^3, with these values growing to 1,992 m^3 and 2,241 m^3, based on MOE and Risk Management storage requirement approaches respectively for the 40 year design horizon (Ilderton Water Storage Assessment, 2009).

Looping and end runs are an integral part in providing quality water with an increased level of security. Looping provides alternate pathways for the water to travel through the distribution system and reach the user in the event of a break or blockage in the line. Several areas of Ilderton are served by a single pipe, leading to areas that cannot be serviced in the event of a pipe break or blockage.

The largest segment (besides a break immediately downstream of the BPS) would disrupt approximately 650 m of pipe if a break were to occur between Ilderton St and King St; King St between Ilderton Rd and George St; and George St in it's entirety will disrupt service on Ilderton Rd (west of Ilderton St), King St (south of Ilderton Rd), and George St. The second largest segment, approximately 600 m in length, is situated on the Willow Ridge Rd loop. If a break occurs on Willow Ridge Rd between Blue Heron Dr and the southerly entrance portion of Willow Ridge Rd, the remainder of the loop along with Dogwood Trail would be without service. Other breaks would disrupt segments approximately 300 m or less.

The better looped and more redundant a system is, the more reliable it is. For the most part Ilderton is well looped and provides shorter runs where fewer people will be disrupted in the event of a service interruption.

End runs have the potential to provide users with old or stale water. This tends only to be an aesthetic issue but can become a service issue if enough sediment builds up at the end points and a routine flushing program is not performed. If the pipe is properly sized and there are enough users, problems should not be encountered.

5.1.3 Identified Issues

The following are issues that have been identified:

- storage deficiency; and

- areas that require further looping.

5.2 KILWORTH-KOMOKA

5.2.1 Demand Growth

Demand growth in Kilworth and Komoka is expected to remain high for the foreseeable future. Between the two communities, considered as one for the purposes of this report, there is approximately 344 acres of land zoned residential within the current Settlement Boundary. Because the community is fully serviced, the assumed housing density is 5 units/acre (Settlement Area Residential Inventory, 2008), leading to 1720 units. In addition, Middlesex Centre assumes 3.1 people/unit equating to a population increase of 5332 (Watson and Associates, 2009).

The majority of the future growth outside of the Settlement Boundary will be focused towards the westerly side of Komoka, off of Glendon Drive, Komoka Road, and between the CP and CN Rail lines, as well as a spot to the east along Oxbow Drive. These areas provide the least obstruction and complications to servicing. Komoka does have some area to infill, but is corralled to the south by ponds and to the east by a golf course and Kilworth. For the most part Kilworth is enclosed by constraints, leading to the likelihood of little or no development outside of its Settlement Boundary.

5.2.2 Service Assessment

Kilworth and Komoka are currently undergoing upgrades to their water supply and distribution system. A new supply, to come into service in early 2010, via the Komoka – Mt. Brydges Water Supply will provide potable water from the LHPWSS. In addition to the supply, a booster pumping station, intermediate pumping station, and storage facility are also being built, entering service in early 2010. These upgrades are projected to provide services to not only Kilworth and Komoka, but also to Delaware for the next 20 years before further upgrades are required. However, servicing Delaware from the Komoka BPS will require further upgrades to the distribution system by way of a transmission main from Komoka to Delaware.

5.2.3 Identified Issues

The following are issues that have been identified:

- required transmission main from Komoka to Delaware.

5.3 ARVA

5.3.1 Demand Growth

Using a plan of subdivision for a proposed development in the westerly side of Arva with 184 units covering 21.7 hectares there is resulting a density of approximately 8.5 units/hectare. This value was applied to the area in the north end of the community with approximately 5 hectares of usable area, resulting in approximately 50 units. Using these 234 units, with Middlesex Centres density figure of 3.1 people/unit, results in a population increase of approximately 725 people. This increases the population from 430 people to 1155 within the existing development boundary.

5.3.2 Service Assessment

Arva currently receives water, already treated, from the City of London. As a result, there are no issues with the quality of the water and so long as Arva continues to receive water from the City of London. Furthermore, the connection to the City of London line ensures a high level of security for the future.

The current water servicing agreement between Middlesex Centre and the City of London (a new agreement is currently under negotiations) dictates the areas of Arva that are to be supplied using City of London water. In reference to the agreement water service area and the growth boundary lines, they both appear to be the same set, indicating that all areas within the growth boundary can be serviced with water.

Going into the future the municipality has three options in regards to supplying water to Arva:

- Do nothing and continue with existing agreement;
- Seek to increase service area in the supply agreement; and
- Investigate for excess capacity in Komoka – Mt. Brydges transmission main.

In the future, any increases in water supplied by the City of London will have to be met equally by wastewater flows, also accepted by London, through a separate agreement. This requires careful examination of the above options regarding servicing and population growth.

The distribution system is comprised of 150 mm and 200 mm pipes and has a moderate level of looping. The diameter of the pipes is adequate and will incur only marginal increases in resistance if flow rates are to increase in the existing network. Once the undeveloped areas on the east side of Arva start to fill in, this will provide an opportunity for further looping and increased security.

5.3.3 Identified Issues

The following issue has been identified:

- future servicing will likely trigger a review of how water is supplied to the community.

5.4 DELAWARE

5.4.1 Demand Growth

Demand growth for Delaware is dependent on whether it becomes fully serviced. Currently Delaware is only serviced with municipal water, and as a result, the lot density is lowered to 2 units/acre (Settlement Area Residential Inventory, 2008). If Delaware becomes fully serviced, the density estimate rises to 5 units/acre (Settlement Area Residential Inventory, 2008). Dependent on what level of service is provided, the population growth could be between 440 and 1100 based on full build out of the 71 acres within the settlement area.

The growth in Delaware will be focused on the easterly side of the community in four different areas. Three of these are already zoned as residential, with the fourth and southernmost, zoned as Settlement Employment. Any growth that is likely to occur outside the settlement boundary will have a couple of small pockets on the east side; however, the bulk will occur on the southern side. These areas will have varying levels of issues and constraints, depending on the distance out from the existing settlement boundary.

5.4.2 Service Assessment

Delaware receives water via a connection to the City of London distribution system. This connection is limited to 591 m^3/day. The new Komoka BPS will address the long term servicing to Delaware via a connection to the LHPWSS. As demand and population in Delaware increases, further upgrades to the system in the form of an inline booster pump station and eventually pressure zone separation will be required to service existing and new developments. (Komoka - Delaware Municipal Servicing Implementation Study, 2009)

Existing storage and line pressure is provided by a standpipe situated at 11229 Longwoods Rd. Current day, 10, 20, and 40 year projected storage requirements by both MOE and Risk Management methods are as follows:

Table 5.2: Summary of Storage Requirements for Delaware

Year	Population	Existing Reservoir	MOE Storage Requirement		Risk Management	
		Storage (m^3)	Storage (m^3)	Deficit (m^3)	Storage (m^3)	Deficit (m^3)
2009	1600	664	1,111	447	796	132
2019	2200	664	1,341	677	1,094	430
2029	3200	664	1,610	946	1,592	928
2049	5200	664	2,419	1,755	2,586	1,922

Once the new Komoka BPS is operational and a connection to the Delaware system has been established, the use of the on-ground storage reservoir at the station in Komoka can be utilized. However, some consideration should be given for the proximity of this storage in relation to Delaware. The closer and more interwoven into the distribution system the storage can be the

greater the security and effectiveness it provides. This was also outlined in the Komoka - Delaware Municipal Servicing Implementation Study from 2009.

The majority of Delaware's water distribution system is comprised of 150 mm and 200 mm with smaller lengths of 600 mm, 250 mm, 100 mm, and 50 mm pipes. The developed areas are well looped, providing flow efficiency and security, whereas the areas that are designated for development are not well looped. As these areas infill with development, looping will likely occur, and system efficiency will rise.

5.4.3 Identified Issues

The following are issues that have been identified:

- deficiency in storage.

5.5 BALLYMOTE

5.5.1 Demand Growth

Because Ballymote is considered a hamlet it is "expected to accommodate only limited future development" (Official Plan, 2001). As a result, the only growth expected to happen in Ballymote is the infilling of the empty lots already zoned residential. Also, any significant developments will require the provision of full municipal services.

Ballymote has 11 acres of vacant land and because the only municipal service that it has is water, the estimated density is 2 units/acre (Settlement Area Residential Inventory, 2008) for a total of 22 units. It is unlikely that the demand growth for these lots will be very high. Ballymote had no housing starts between 1999 and 2007.

5.5.2 Service Assessment

Ballymote currently receives treated water directly from the City of London. As a result, there are no issues with the quality of the water and so long as Ballymote continues to receive water from the City of London. Furthermore, the connection to the City of London line ensures a high level of security for the future.

5.5.3 Identified Issues

No issues have been identified for Ballymote. Its connection to the City of London water supply provides for high security and the demand growth rate is low.

5.6 BIRR

5.6.1 Demand Growth

Because Birr is considered a hamlet it is “expected to accommodate only limited future development” (Official Plan, 2001). As a result, the only growth expected to happen in Birr is the infilling of the empty lots already zoned residential. Also, any significant developments will require the provision of full municipal services which in turn will likely limit the rate of growth.

Birr has 33 acres of vacant land and because the only municipal service that it may provide is water, the estimated density is 2 units/acre (Settlement Area Residential Inventory, 2008) for a total of 66 units. It is unlikely that the demand growth for these lots will be very high. Birr had a total of 3 housing starts between 1999 and 2007; one in 1999 and two in 2000 (Settlement Area Residential Inventory, 2008).

5.6.2 Service Assessment

Birr is restricted by its Permit to Take Water (PTTW) to take no more than 88,376 L/day and the well pumps cannot operate for more than 18 hrs/day. Based on flow data recorded from 2003 to 2008, and taking into account the 18 households connected to the system, the average consumption works out to approximately 233 litres/capita/day (L/cap/d), with a maximum consumption of 824 L/cap/d.

5.6.3 Identified Issues

The well water supplying the households in Birr has elevated levels of sodium and has had this issue consistently. As a result, the Medical Officer of Health has been notified, as required by drinking water regulations, when sodium levels are greater than 20 mg/L.

5.7 BRYANSTON

5.7.1 Demand Growth

Bryanston has no vacant land within the growth boundary and because it has no municipal services, it is unlikely that development will occur.

5.7.2 Service Assessment

There are no services to assess.

5.7.3 Identified Issues

No issues have been identified for Bryanston.

5.8 DENFIELD

5.8.1 Demand Growth

Denfield is considered a hamlet, and as such is "expected to accommodate only limited future development" (Official Plan, 2001). As a result, the only growth expected to happen in Denfield is the infilling of the empty lots already zoned residential. Also, any significant developments will require the provision of full municipal services which in turn will likely limit the rate of growth.

Denfield has 13 acres of vacant land and because the only municipal service that it may provide is water, the estimated density is 2 units/acre (Settlement Area Residential Inventory, 2008) for a total of 26 units. It is unlikely that the demand growth for these lots will be very high, however, the new booster pumping station and storage facility has been designed to meet this build out capacity. Denfield had a total of 10 housing starts between 1999 and 2007, although currently there are no applications, plans, or registered lots that are going to be built upon (Settlement Area Residential Inventory, 2008).

5.8.2 Service Assessment

Denfield is undergoing upgrades to its water distribution system. These upgrades will provide a new booster pumping station and water storage facility. This will be a change from the pre-existing setup where water was supplied directly off the LHPWSS's transmission main and into the distribution system. This new facility has been designed to meet the current ultimate build-out of the community.

5.8.3 Identified Issues

Denfield has no looping in its system to provide for better flow efficiency and security in the event of a pipe break. Given the land currently designated for growth; south down Denfield Rd along the easterly side and a parcel to the south of the Brookfield St development, looping may be difficult to establish.

5.9 LOBO

5.9.1 Demand Growth

Lobo has no vacant land within the growth boundary and because it has no municipal services, it is unlikely that development will occur.

5.9.2 Service Assessment

There are no services to assess currently due to the fact that all the lots are on private systems.

5.9.3 Identified Issues

No issues have been identified for Lobo.

5.10 MELROSE

5.10.1 Demand Growth

Because Melrose is considered a hamlet it is "expected to accommodate only limited future development" (Official Plan, 2001). As a result, the only growth expected to happen in Melrose is the infilling of the empty lots already zoned residential. Also, any significant developments will require the provision of full municipal services which in turn will likely limit the rate of growth.

Melrose has 13 acres of vacant land and because the only municipal service that it has is water, the estimated density is 2 units/acre (Settlement Area Residential Inventory, 2008) for a total of 26 units. It is unlikely that the demand growth for these lots will be very high. Melrose had 7 housing starts between 1999 and 2007; with 5 in 1999, and one each year in 2001 and 2002 (Settlement Area Residential Inventory, 2008).

5.10.2 Service Assessment

Melrose is restricted by its Permit to Take Water (PTTW) to take no more than 277,200 L/day and the well pumps cannot operate for more than 16 hrs/day. Based on MOE Design Guidelines, flow rates for a community the size of Melrose can vary between 180 L/cap/day to 1500 L/cap/day. If a demand of 300 L/cap/day and 3.1 people/unit are assumed, the maximum total of residences that the wells can sustain is approximately 298. Melrose currently has approximately 90 units, thus the existing system is more than adequate.

Melrose is situated close to the Komoka – Mt. Brydges Water Transmission Main with Middlesex Centre having ownership of extra capacity in the system. As the well system ages and reaches the end of its lifecycle, becoming inefficient to operate, it is anticipated that a Class EA will be undertaken to investigate future servicing options. A list could contain:

- Do Nothing and continue to operate system as is;
- Upgrade existing well supply pump house; and
- Connect to Komoka – Mt. Brydges Water Transmission Main.

5.10.3 Identified Issues

The following are issues that have been identified:

- Class EA at the end of the existing well system's life cycle.

5.11 POPLAR HILL – COLDSTREAM

5.11.1 Demand Growth

Both Poplar Hill and Coldstream are considered hamlets in the 2001 Official Plan and as such are "expected to accommodate only limited future development." There is currently 150 lots that have received Draft Plan Approval with a further 273 acres available at 2 units/acre (Settlement Area Residential Inventory, 2008) providing a further 546 potential lots. However, future development of these lots is likely dependent on the fact that the community has no municipal services. A total of 16 houses were constructed between 1999 and 2007, with the majority built in 1999 and 2000 (Settlement Area Residential Inventory, 2008). Coldstream and Poplar Hill is the fifth largest community in Middlesex Centre, however, until services are constructed, the demand growth is likely quite limited.

5.11.2 Service Assessment

There are no services to assess currently due to the fact that all the lots are on private systems.

5.11.3 Identified Issues

No issues have been identified for Poplar Hill - Coldstream.

5.12 NON-SETTLEMENT AREAS

5.12.1 Demand Growth

Based on the types of lands designated in non-settlement areas, any growth will be extremely small.

5.12.2 Service Assessment

There is no infrastructure in the non-settlement areas and this will likely continue to be the case for the time to come. It's not expected that in the next twenty years conditions will change to the point where it becomes viable to service this area.

5.12.3 Identified Issues

No issues have been identified for non-settlement areas.

6.0 Community Issues Identified

6.1 ILDERTON

As previously identified in a report, Ilderton is deficient in storage. In late 2009 a Class EA was initiated to explore options for types and location of a new storage facility. Currently Ilderton's storage is located directly beneath the booster pumping station with a capacity of 455 m^3, a deficiency of over 700 m^3.

For the most part, Ilderton is well looped, providing redundancy and pumping efficiency in the distribution system. There are a few spots where a pipe break will leave an area without service; the largest being situated at the west end of the community. Further development in this area could increase looping and a reduction in those affected in the event of a break in the supply line.

6.2 ARVA

Arva currently has no storage, however, due to its close proximity to the Arva Reservoir and its direct connection to a City of London transmission main, emanating from their BPS and fed by the Arva Reservoir, this is not a major issue. As such the community is dependent on the City of London to provide it with water. Middlesex Centre will need to investigate the water servicing options through a Class EA process for future servicing needs.

6.3 DELAWARE

Delaware currently has a storage capacity of 664 m^3 and by the year 2029 will require approximately 1600 m^3 further storage, while by the year 2049 the requirement will have increased to approximately 2500 m^3. In the short term Delaware could utilize the storage at the Komoka BPS, however this would require the construction of a transmission main to connect the two distribution systems. This interconnection of the systems is part of the long term servicing solution as described in the Class EA conducted for the Komoka – Delaware Municipal Servicing Implementation Study. Delaware would be better served by situating a storage facility closer to its own distribution system so as to reduce the chances of it being unavailable in the event of a main break.

6.4 BALLYMOTE

No issues have been identified for Ballymote. Its connection to the City of London water supply provides for high security and the demand growth rate is low.

6.5 BIRR

Birr has consistently had issues with high levels of sodium in the water supply; greater than 20 mg/L, resulting in notification to the Medical Officer of Health as required under drinking water regulations.

6.6 BRYANSTON

No issues have been identified for Bryanston. All of the properties are on private well systems.

6.7 LOBO

No issues have been identified for Lobo. All of the properties are on private well systems.

6.8 MELROSE

Melrose has a history of elevated sodium levels in its water supply. Once the system reaches the end of its lifecycle it is anticipated that a Class EA will be undertaken to determine an appropriate course of action for water servicing.

6.9 POPLAR HILL – COLDSTREAM

No issues have been identified for Poplar Hill and Coldstream. All of the properties are on private well systems.

6.10 NON-SETTLEMENT AREAS

No issues have been identified for Non-Settlement Areas. All of the properties are on private well systems.

7.0 Municipality Level Issues Identified

Several communities are dependent on systems not owned by Middlesex Centre for their water service. These communities include:

- Arva;
- Ballymote;
- Delaware;
- Denfield; and
- Ilderton.

Arva, Ballymote, and Delaware receive their water from the City of London distribution system, while Denfield and Ilderton are serviced directly from the Lake Huron Primary Water Supply System, which also ultimately provides water to the City of London. Of these five communities, the only feasible ones to switch over to Middlesex Centre supplied water are Arva and Delaware. As mentioned earlier, it is anticipated that once a trigger point has been met Delaware will connect to the Komoka system, which is serviced by way of the Komoka – Mt. Brydges Water Supply System. Arva also has the potential to connect to this system after undergoing a Class EA process and examining all the options.

Ballymote however is too far isolated from any other system besides the pipeline connecting to the City of London distribution system. Although Middlesex Centre pays a premium for this water, compared to LHPWSS's rate, it is not feasible to find an alternative supply at this time.

As mentioned above, both Denfield and Ilderton are serviced by way of a direct connection to the Lake Huron Primary Water Supply System. Middlesex Centre is a member of the LHPWSS Joint Board of Management, a body comprised of the municipalities receiving services from the LHPWSS. This Board oversees and administers the primary water system. As a result of this, Middlesex Centre has no incentive or need to acquire a water supply from another source.

8.0 Recommended Planning Solutions

8.1 COMMUNITY ISSUES

Where feasible water systems and distribution networks throughout all of Middlesex Centre's communities should be designed and constructed in such a manner so as to increase efficiency, security, and serviceability.

During planning and development of lands, provisions should be made to loop distribution pipes, or provide the ability for this to occur in the future if not initially feasible. System looping provides for greater redundancy, providing alternate pathways, to service users in the event of line breakages. It also reduces pumping costs as water can find alternative pathways to demand points instead of through a single pipe which will increase the friction losses. Looping also prevents end runs which is where low pressure and stagnant water can occur.

For the most part, the communities in Middlesex Centre are equipped with emergency storage or have already been identified deficient and are in the process of undergoing a Class EA. These facilities should be designed to adequately address the 20 year demands with ease of expansion to 40 year requirements. They should also be well situated in the distribution system so as to provide for optimal security and performance.

8.2 MUNICIPAL ISSUES

The completion of the Komoka – Mt. Brydges Transmission Main will supply LHPWSS water to Komoka, Kilworth, and Mt. Brydges (in the Municipality of Strathroy-Caradoc) with a connection for Delaware and potentially Melrose in the near future. Middlesex Centre owns extra capacity in this system and as such can use it to service areas within the municipality. The Municipality has the option, through careful examination, where it foresees growth occurring or would like it to occur, and can direct the extra capacity to these areas.

9.0 References

Official Plan of the Township of Middlesex Centre, 2001

Ilderton, MOE Annual Report, 2008

Ilderton Water Storage Assessment, 2009

Komoka - Delaware Municipal Servicing Implementation Study, 2009

Safe Drinking Water Act, 2002

O. Reg. 169/03 Ontario Drinking Water Quality Standards

O. Reg. 170/03 Drinking Water Systems

O. Reg. 188/07 Licensing Of Municipal Drinking Water Systems

O. Reg. 453/07 Financial Plans

Sustainable Water and Sewage Systems Act, 2002

Ontario Water Resources Act

O.Reg. 903/90 Wells

O.Reg. 387/04 Water Taking

Ten States Standards, Recommended Standards for Water Works 2007 Edition, 2007

Settlement Area Residential Inventory – end of 2007, Municipality of Middlesex Centre, 2008

Watson and Associates, Economists Ltd., 2009

Appendices

APPENDIX 1.1:
EXISTING WATER INFRASTRUCTURE

Ilderton

The BPS sits atop the reservoir and contains the following components:

- four (4) vertical turbine pumps:
    - two (2) duty/standby each rated at 35 L/s at 55 m of total dynamic head (TDH);
    - one (1) jockey pump rate at 10 L/s at 55 m TDH; and
    - one (1) fire pump rated at 150 L/s at 55 m TDH.
- one (1) sodium hypochlorite disinfection panel consisting of:
    - one (1) 300 L sodium hypochlorite storage tank complete with 430 L containment basin;
    - one (1) duty/standby and one (1) spare metering pumps rated at 1.4 L/hr at 253 psig; and
    - one (1) chlorine residual analyzer.
- one (1) 150 mm pressure relief valve;
- one (1) 8 m^3 hydropneumatic tank;
- one (1) 200 mm flow meter;
- one (1) 200 mm overflow from the reservoir to a seepage pit;
- one (1) Motor Control Centre (MCC);
- one (1) Process Logic Controller (PLC);
- one (1) Remote Terminal Unit (RTU); and
- one (1) Human-Machine Interface (HMI).

Kilworth – Komoka

The system consists of the following:

- two (2) Sodium Hypochlorite Disinfection panels:
    - Dosing Pumps (duty/standby for each panel);
    - One (1) 170 L Poly Day Tank, and
    - two (2) Variable Frequency Drive (VFD) Demand Booster Pumps consisting of, each rated at 53.7 L/s at 34.9 m TDH and operating in duty/standby/parallel;

- two (2) Analyzer Groups (consisting of pH and Chlorine Residual), one located on storage fill line and one on BPS discharge line;
- two (2) Magnetic Flow Meters, one located on storage fill line and one on BPS discharge line;
- PLC and SCADA node;
- UPS for the SCADA and PLC;
- Back up power generator;
- Tower
- Storage tank

Arva

The system consists of:

- one (1) sodium hypochlorite disinfection panel consisting of:
    - one (1) sodium hypochlorite storage tank complete with containment basin;
    - two (2) duty/standby metering pumps rated at 1.4 L/hr; and
    - one (1) chlorine residual analyzer.
- one (1) manual start vertical inline pump rate at 75 L/s;
- one (1) 200 mm flow meter; and
- one (1) 100mm bypass line complete with 100mm bypass valve.

Delaware

The system consists of:

- Rechlorination Panel
    - two (2) duty/standby metering pumps rated at 4.4 L/hr;
    - one (1) 200 L chemical storage tank;
- one (1) flow meter; and
- one (1) standpipe, storage of 1460 m^3 at high water level and 1380 m^3 at low water level. The standpipe measures 7.62 m wide and 32.0 m in height.

Ballymote

The tapped 300 mm pipe and 100 mm bypass line, complete with valve, is situated in a chamber. Beside the chamber are two heated, weatherproof panels, equipped with:

- one (1) chlorine analyzer;
- one (1) portable re-chlorination system;
- one (1) flow meter;
- paperless chart recorder complete with an alarm; and
- auto-dialer and associated controls.

Birr

The treatment system consists of the following:

- one (1) sodium hypochlorite disinfection panel consisting of:
    - two (2) duty/standby sodium hypochlorite dosing pumps each rated at 0.59 L/hr and;
    - all associated flow sensors, valves, controls, and piping.
- 100 L sodium hypochlorite tank;
- two (2) submersible duty/standby pumps each rated at 1.36 L/s;
- one (1) flow meter;
- one (1) set of analyzers (chlorine residual and turbidity); and
- two (2) 450 L hydropneumatic tanks.

Bryanston

Bryanston has no municipal water infrastructure.

Denfield

The components of the system are as follows:

- flow meter and associated bypass piping and valving;
- 40 hp manual start fire pump;

- pressure reducing valve;
- re-chlorination injection point with portable chlorine feed system;
- residual chlorine analyzer;
- paperless chart recorder complete with alarm; and
- autodialer and associated controls.

Lobo

Lobo has no municipal water infrastructure.

Melrose

Well No. 2 with a depth of 23.8 m and Well No. 3 with a depth of 24.7 m. Well No. 2 and 3 are equipped with submersible pumps are at a depth of 18.5 m and 20.5 m below grade respectively. Both pumps are rated at 5.45 L/s and 27 m of TDH and equipped with 75 mm discharge piping to the treatment and booster pumping building. The reservoir is divided into two cells each with a capacity of 184.3 m^3 and used for holding filtered water. A further 47.5 m^3 clear well is used for fire storage.

The components of the system are as follows:

- one (1) sodium hypochlorite disinfection system consisting of:
    - one (1) 100 L sodium hypochlorite storage tank situated in a containment curb;
    - two (2) chemical metering pumps;
    - two (2) residual chlorine analyzers; and
    - associated valving and piping.
- two (2) pumps rated at 5.45 L/s at 20 m TDH for transfer from storage to filter units;
- three (3) 1050 mm multimedia pressure filters;
- one (1) turbidity meter; and
- four (4) pumps:
    - two (2) 4.65 L/s at 56 m TDH for peak hour demand;
    - one (1) 2.35 L/s at 35 m TDH for average day demand; and
    - one (1) 38 L/s at 43m TDH for fire demand.

Poplar Hill and Coldstream

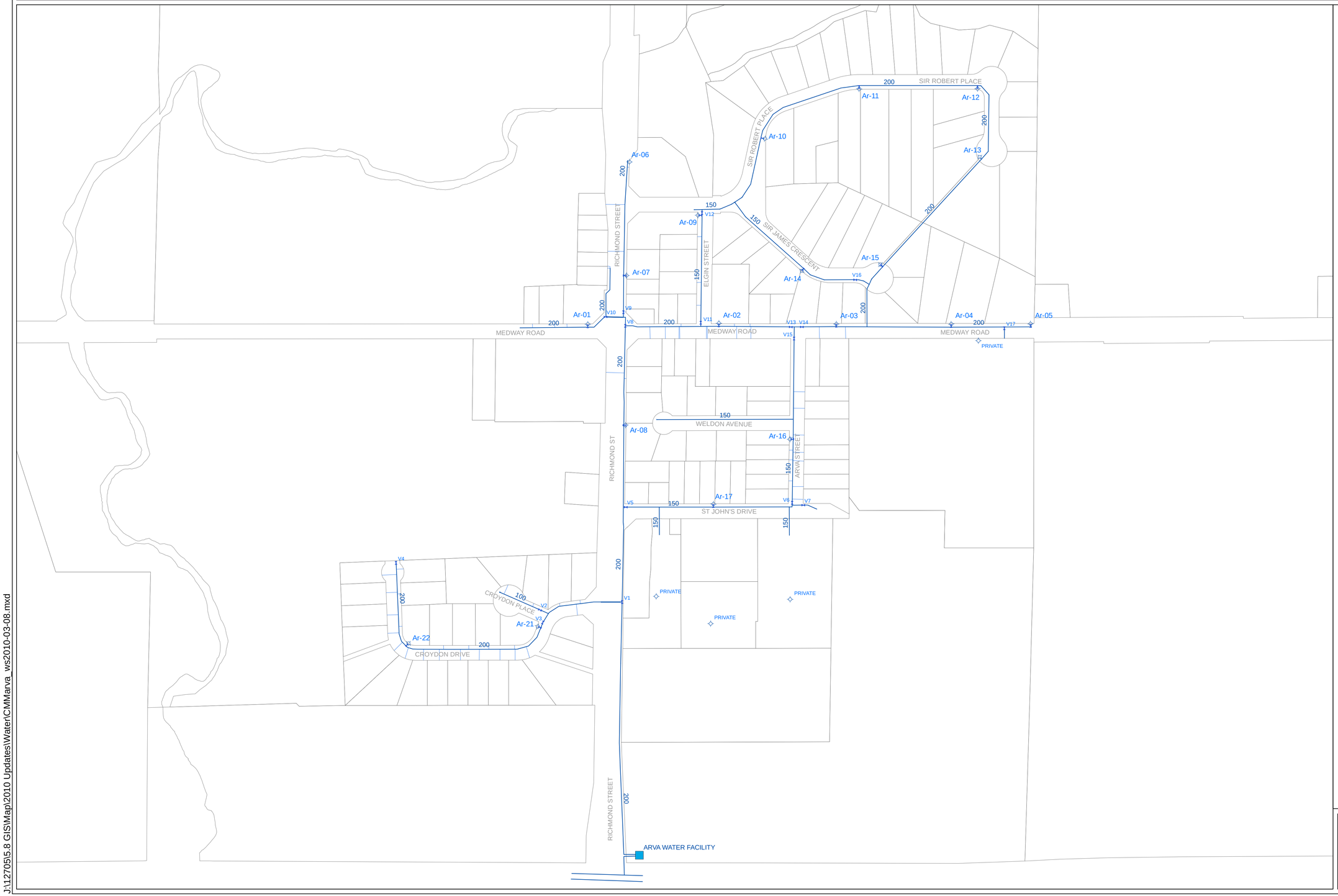
Both Poplar Hill and Coldstream have no municipal water infrastructure.

Non-settlement areas

Non-settlement areas have no municipal water infrastructure.

APPENDIX 1.2:
WATER SUPPLY & DISTRIBUTION NETWORK

Arva Water System



Municipality of Middlesex Centre

Middlesex Centre Distribution System
DWS# 260004202

Legend

- Ar-14 — Fire Hydrant
- V11 — Water Valve
- 200 — Watermain
- Lateral Service Connection
- Arva Water Facility
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

0 130 260
Metres

(22X34 Layout) 1:2,500

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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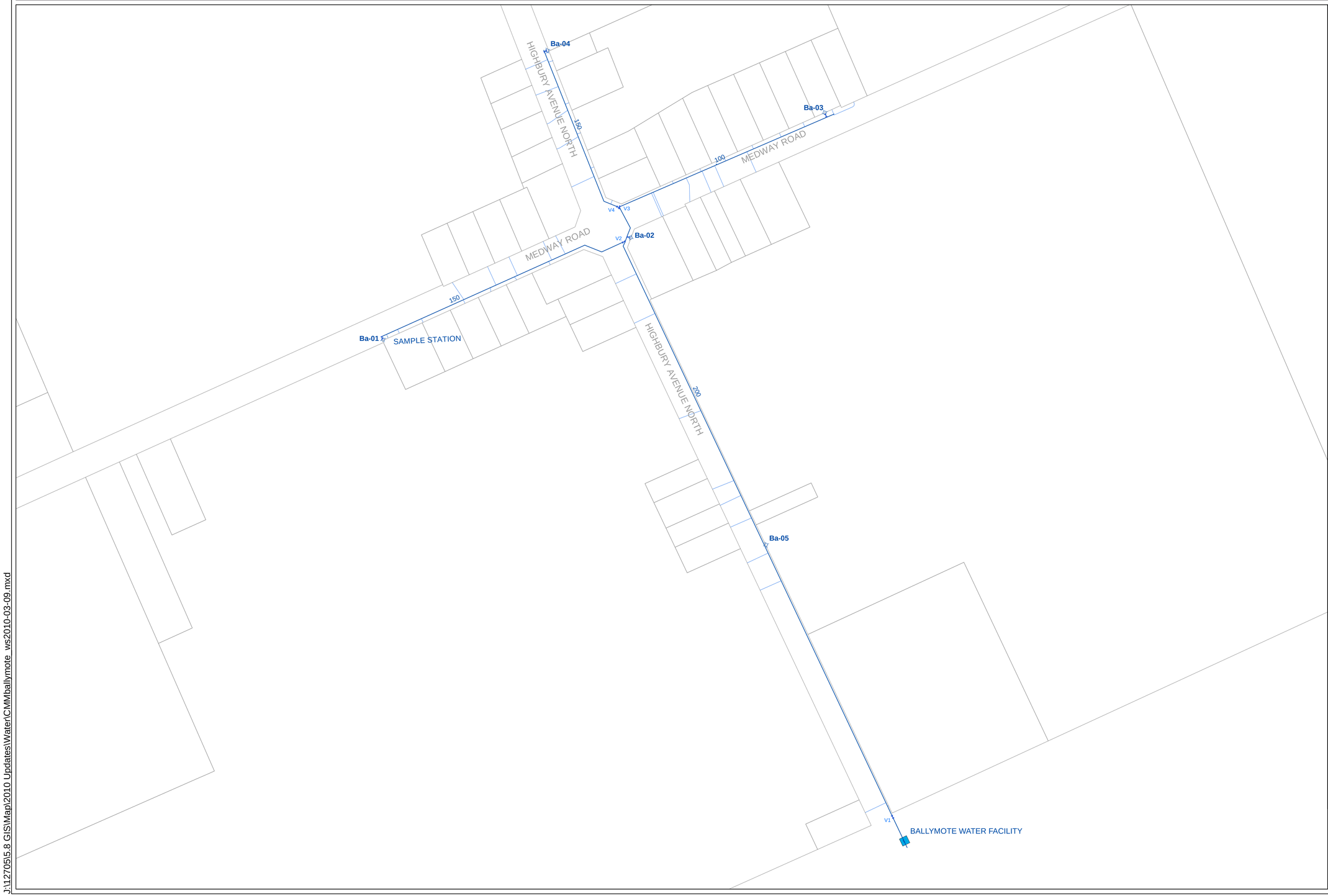
Ballymote Water System



Municipality of Middlesex Centre

Middlesex Centre
Distribution System
DWS# 260004202

Legend

- Ba-04 — Fire Hydrant
- V28 — Water Valve
- 200 — Watermain
- Lateral Service Connection
- Ballymote Water Facility
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

N

0 100 200
Metres

(22X34 Layout) 1:2,000

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

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Birr Water System

THRTEEN MILE RD

SALISBURY DR

GWENDOLYN ST

RICHMOND ST

BLOW OFF

SAMPLE STATION

150

BIRR WATER FACILITY

V1

150

150

BLOW OFF

J:\127055.8 GIS\Map\2010 Updates\WaterCMMbirr_ws2010-03-09.mxd

Municipality of Middlesex Centre

Birr Water System
DWS# 220005492

Legend

- V28 — Water Valve
- 200 — Watermain
- Lateral Service Connection
- Birr Water Facility
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

0 25 50
Metres

(22X34 Layout) 1:750

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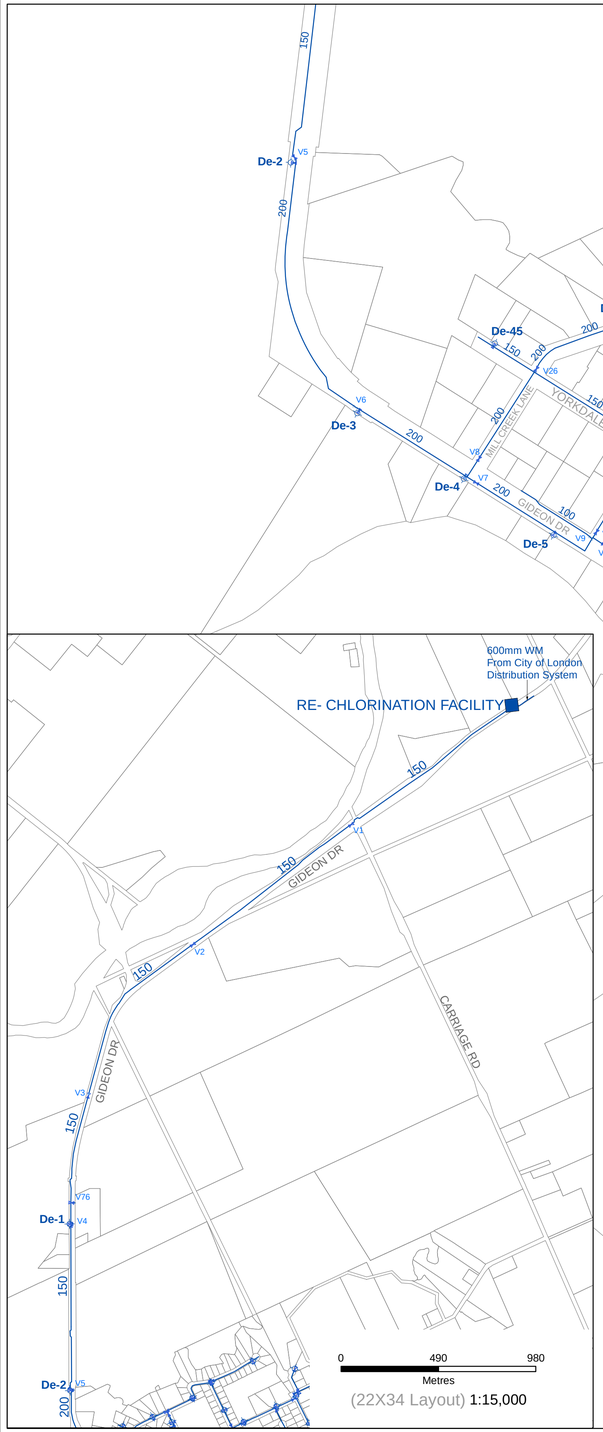
Revision Date: March 31, 2010

IBI GROUP

Delaware Water System



Municipality of Middlesex Centre

Delaware Distribution System
DWS# 260063323

Legend

- Re-Chlorination Facility
- Water Tower
- Fire Hydrant (De-14)
- Valve (V28)
- Watermain (200)
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

0 150 300
Metres

(22X34 Layout) 1:3,500

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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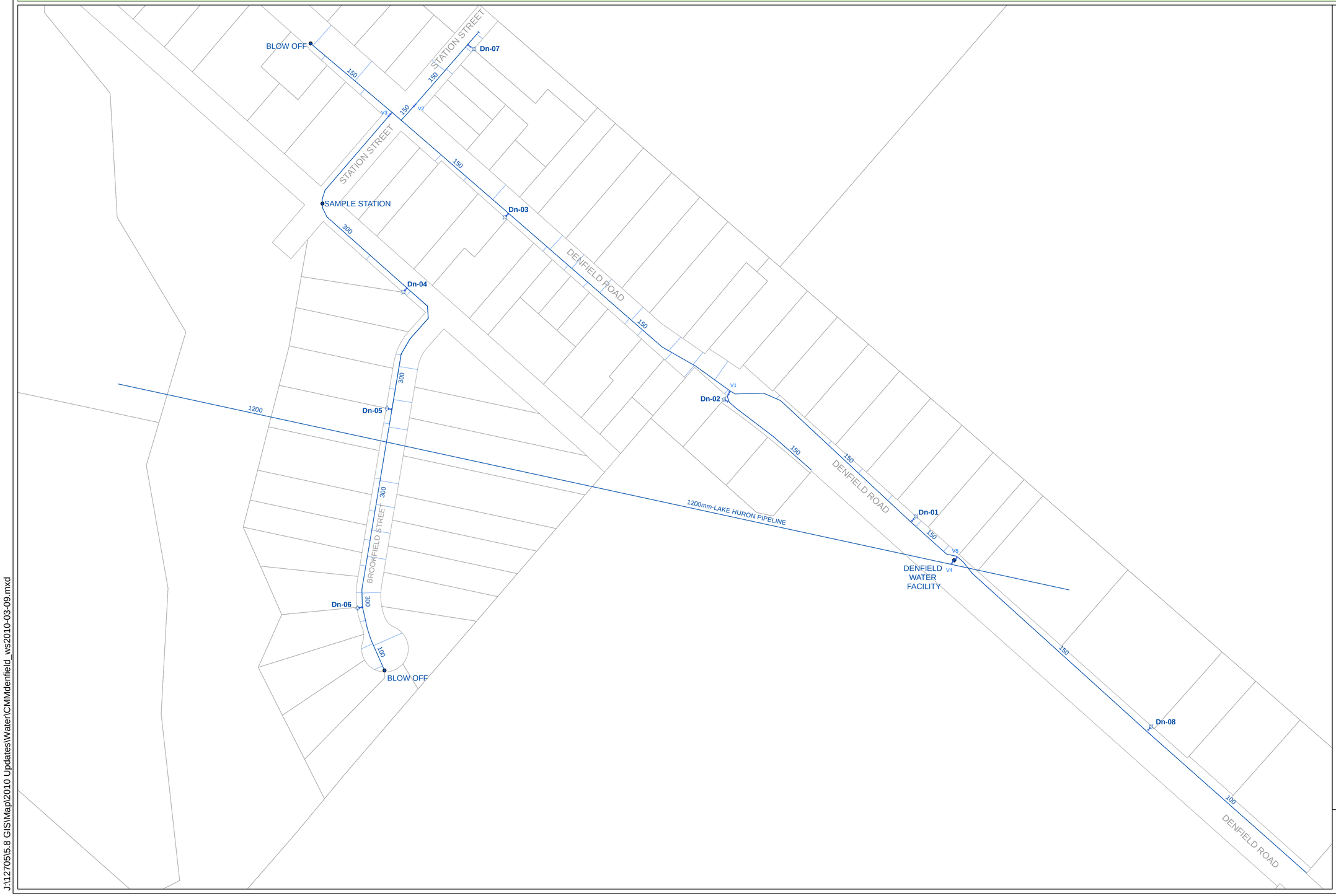
Denfield Water System



Municipality of Middlesex Centre

Middlesex Centre
Distribution System
DWS# 260004202

Legend

- Dn-05 — Fire Hydrant
- V28 — Valve
- 200 — Watermain
- Lateral Service Connection
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

0 75 150
Metres

(22X34 Layout) 1:1,500

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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Ilderton Water System

Municipality of Middlesex Centre

Middlesex Centre Distribution System
DWS# 260004202

Legend

- Ilderton Water Facility
- IL-14 Fire Hydrant
- V28 Valve
- 200 Watermain
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

0 150 300
Metres

(22X34 Layout) 1:3,500

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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Kilworth Water System

Legend

- Water Facility
- Fire Hydrant (Ki-14)
- Valve (V28)
- Watermain (200)
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

0 150 300
Metres

(22X34 Layout) 1:3,500

Municipality of Middlesex Centre

Kilworth Distribution System
DWS# 210003994

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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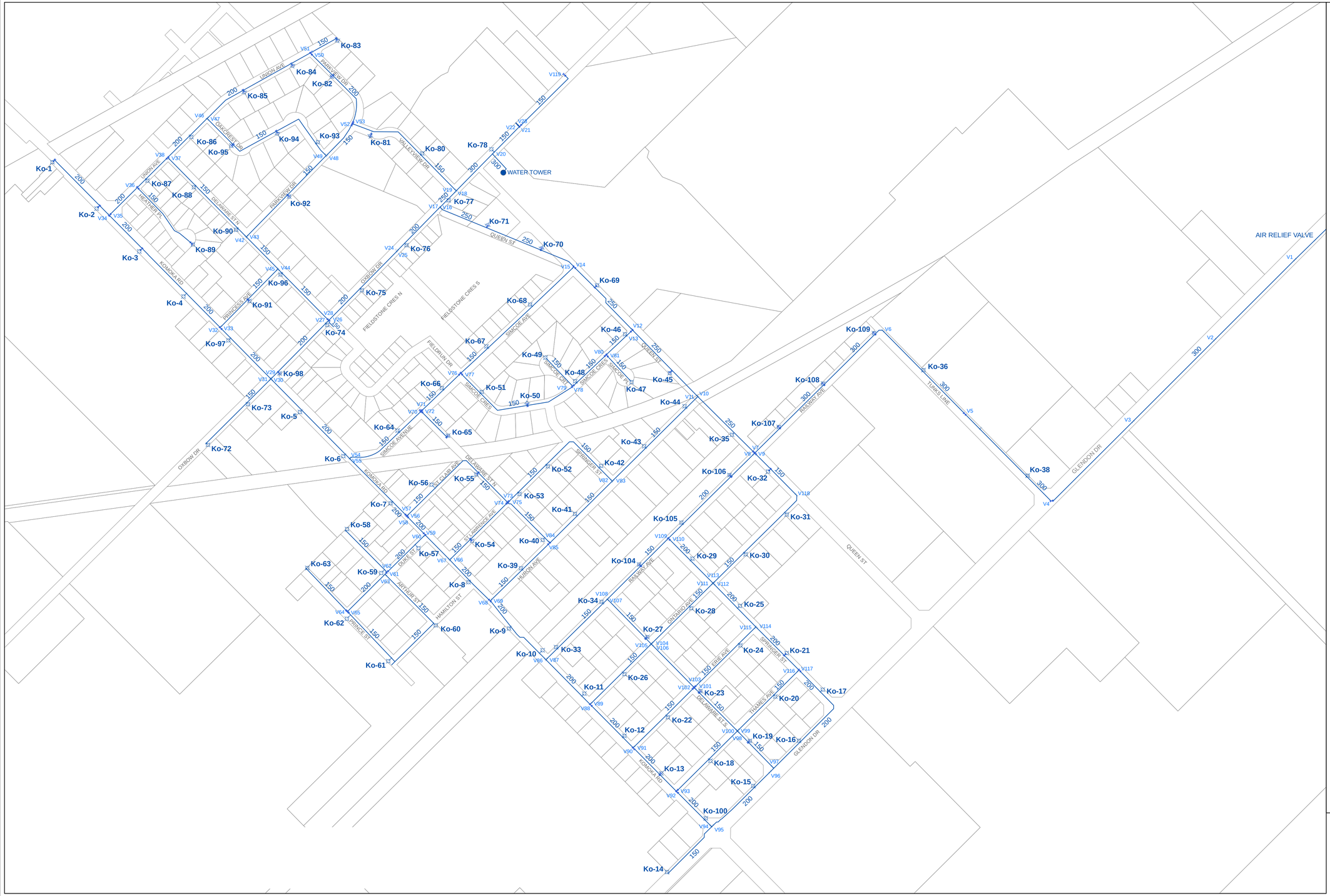
Komoka Water System



Municipality of Middlesex Centre

Komoka Distribution System
DWS# 210003994

Legend

- Water Tower
- Ko-14 Fire Hydrant
- V28 Valve
- 200 Watermain
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

0 200 400
Metres

(22X34 Layout) 1:4,000

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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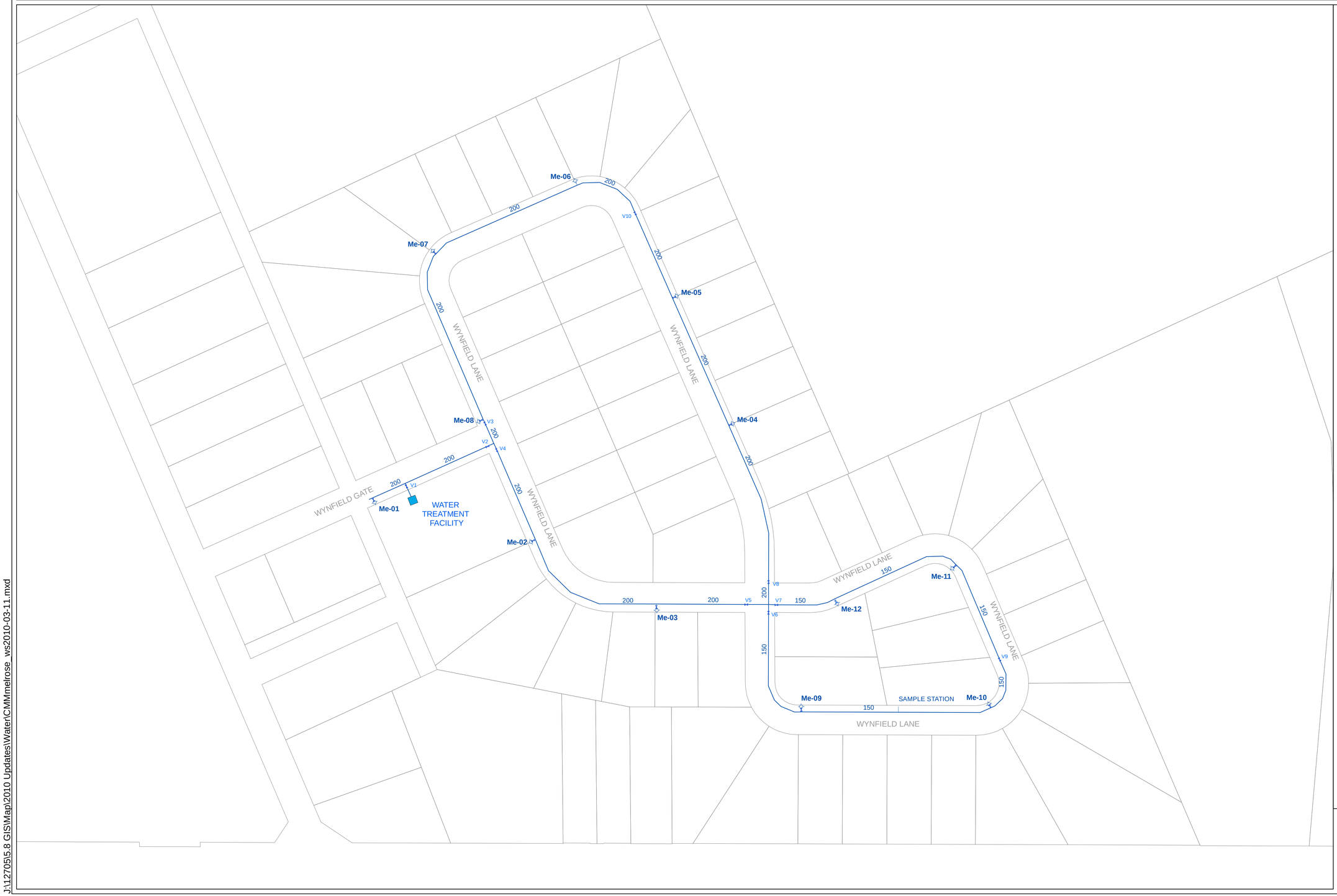
Melrose Water System



Municipality of Middlesex Centre
Melrose Water System
DWS# 260002915

Legend

- Me-11 — Fire Hydrant
- V28 — Water Valve
- 200 — Watermain
- Lateral Service Connection
- Melrose Water Facility
- Street
- Parcel

Note: All the Watermain sizes are in millimeters (mm)

N

0 50 100
Metres

(22X34 Layout) 1:1,250

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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Appendix 6.1:
Solid Waste Technical Memorandum

Middlesex Centre Master Servicing Plan
Technical Memorandum – Solid Waste

Technical Memorandum – Solid Waste

April 2010

Table of Contents

Table of Contents

Figures

Tables

Appendices

1.0 Introduction

Stantec Consulting Ltd. was retained by the Municipality of Middlesex Centre to undertake a Master Servicing Plan with five different components. These components include water, wastewater, solid waste, transportation, and storm water management.

Planning for each component is addressed in a separate Technical Memorandum which are then compiled and summarized in the Master Servicing Plan. This TM addresses Solid Waste Management.

2.0 Work Scope

This Solid Waste Technical Memorandum (TM) will be used to generate a Waste Management Plan which will provide a status report of how much waste is currently being generated within the Municipality of Middlesex Centre (Municipality) at present and how it is dealt with, in terms of diversion and disposal, including waste generated both by the Municipality and the private sector. Projections of future waste generation based on population/growth projections will be developed in conjunction with future waste diversion and disposal goals for which a range of alternative strategies will be developed. Based on population/growth projections and the waste diversion and disposal alternatives technically and economically feasible systems, facilities, and equipment will be identified that will be required to implement the Waste Management Plan.

Relevant statutes, regulations, policies, and guidelines will be reviewed (Section 4.0) to determine which regulations, will impact how the Municipality manages its waste both now and in the near future.

This TM will also assess the existing level of service and existing servicing components. Municipal waste management programs, policies, procedures, systems, and facilities will be inventoried, current waste quantities will be determined, and a summary of diversion and disposal options and identification of relevant trends in waste management will be provided.

The Municipality's current system of solid waste collection and management provides residents with an excellent level of service. The goal of this TM is to:

- Describe the system in its present state;
- Determine what could potentially occur if the current system were to break down; and
- Understand how future regulations may impact the system.

3.0 Existing Level of Service

3.1 INTRODUCTION

Under the scope of work, an assessment of the existing level of service is required. A 20-Year Master Servicing Plan, prepared by Bluewater Recycling Association (BRA) is available in Appendix 3.1 and describes the existing level of service and identifies future potential diversion opportunities, which will be discussed in Section 5.0.

3.2 SOLID WASTE AND RECYCLING

Middlesex Centre, through Bluewater Recycling Association, operates a once a week pick up of solid waste and recyclables. Garbage bags/containers require tags at a cost of $1.75 each. Acceptable recyclables are picked-up free of charge. Each garbage bag/container is to be less than 20 kg (44 lbs) or 114 L (30 gallons).

The Blue Box Program was launched in the mid-1980s as a partnership between industry, and provincial and municipal governments. Today nearly 99% of the Ontario population has access to recycling. The framework of the Waste Diversion Act financially supports the Blue Box program. The net costs of the program are shared on a 50/50 basis between producers whose packaging is collected in the program, and the municipalities that have a Blue Box Program (i.e. all municipalities with a population greater than 5,000, including Middlesex Centre).

Solid waste and recyclables collection is done by Bluewater Recycling Association. Refer to Figure 3.1 (see page 3.4) for a map of collection areas provided by the BRA.

Unacceptable garbage items include:

- Large items;
- Hazardous waste;
- Biomedical waste;
- Radioactive waste;
- Construction and demolition waste; and
- Explosive waste (ammunition).

BRA collects the following recyclables:

- Newspapers, inserts, magazines and phone books;

- Plastic bags;
- Boxboard and fine paper;
- Corrugated cardboard;
- Glass bottles and jars;
- Aluminum and steel beverage and food containers;
- Rigid screw top plastic (1, 2, and 4);
- Wide mouth tubes (1, 2, 3, 4, 5, 6, and 7);
- Aluminum foil and foil wrap; and
- Aerosol and paint cans.

3.3 HOUSEHOLD HAZARDOUS WASTE

Household hazardous waste generated by residents of Middlesex Centre can be dropped off at the London Household Special Waste Drop-off Depot. Drop off is allowed under a special arrangement with the County of Middlesex and the City of London.

Household hazardous waste include paints, oils, thinners, pesticides, small batteries, drain cleaners, poisons, clean fluid, thermometers, and medications.

3.4 HEAVY ITEMS

As noted in Section 3.2 there is a weight restriction on waste items that can be picked up curbside. Two Clean-Up Days are run by the Municipality, one in May and one in October, at two locations that allow for the drop off of permitted waste. Permitted waste includes household garbage too large for curbside collection, cold ashes, small furnishings, rubber tires, clean wood products, appliances, and scrap metal.

Unacceptable items include car batteries, propane tanks, explosive and combustible materials, hazardous and toxic materials, liquid waste materials, brick, concrete, shingles, asphalt and other construction materials, fast food outlet and restaurant waste, and animal carcasses and excrement. Compostable materials are also not accepted.

3.5 YARD WASTE

The Municipality offers two yard waste depots and TRY Recycling offers two depots in the area as well. Yard waste such as plant trimmings, brush, limbs, grass clippings, leaves, and pumpkins are permitted to be dropped off at any of the four depots. Brush and limbs can be a maximum 1 m long and 10 cm in diameter.

3.6 OTHER PROGRAMS

3.6.1 E-Waste

Electronic waste (e-waste) is growing four times faster than any other waste stream, with only 12.5% of generated waste recycled. It is illegal to dispose of e-wastes, which include computers, monitors, laptops, printers, and TVs, in municipal landfills that do not specifically accept e-wastes. Electronic components and materials are resources that can be re-used or recycled.

The Municipality is a member municipality of the BRA, which has identified markets that are able to reuse, recycle, and dispose of e-waste while ensuring that any data stored in the electronic device has been destroyed to protect your privacy. BRA accepts all computers and accessories, free of charge, at their depot, five days a week.

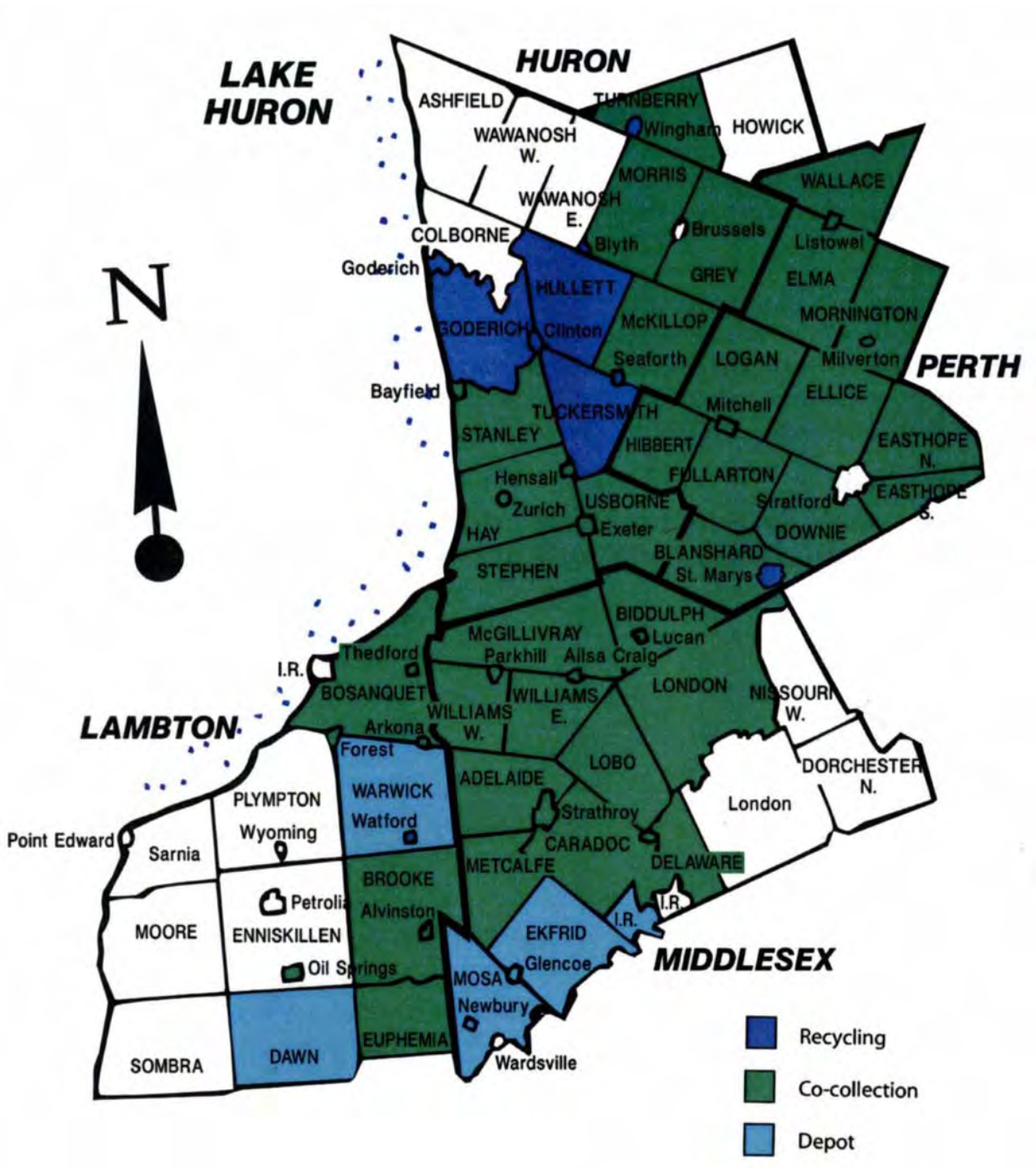
A new provincial program aimed at diverting e-wastes will be implemented in the near future. Refer to Section 6.0 for more information.

3.6.2 Bag It Back Program

The Bag It Back Program has been in operation since February 5, 2007 and aims to increase the amount of alcohol bottles, cans and other containers recycled. Since February 2007, wine and spirit containers in Ontario have been subject to a deposit, which is fully refunded when the containers are returned to The Beer Store. Any unclaimed deposits are put back into the Deposit Return Program.

Prior to program implementation only 68% of spirit containers were recycled and broken glass and mixed colours make recycling difficult and resulted in lower quality products. Since the implementation of the program there has been a significant increase in the amount of wine and spirit containers recycled in Ontario and due to cleaner bottles and colour separation practices more glass is now recycled into high value products (such as bottles and fibreglass).

Figure 3.1: Solid Waste and Recycling Collection Map



4.0 Current Policy Review

4.1 STATUES AND REGULATORY STANDARDS

4.1.1 Introduction

Federal and provincial regulations and guidelines have been put in place that pertains to waste management and future trends to deal with waste. As part of this MSP document, they were reviewed and used to gain an understanding on how Middlesex Centre can provide best management planning options that work within these regulations and guidelines.

4.1.1.1 Waste Diversion Act

The purpose of the Waste Diversion Act is to promote the reduction, reuse, and recycling of waste and to provide for the development, implementation and operation of waste diversion programs.

Designated waste is blue box waste or material prescribed as a designated waste by the regulations, described below.

4.1.1.2 O. Reg 273/02 Blue Box Waste

Blue box waste consists of the following material, or any combination of them:

- Glass;
- Metal;
- Paper;
- Plastic; and
- Textiles.

4.1.1.3 O. Reg 542/06 Municipal Hazardous or Special Waste

Municipal hazardous or special waste is prescribed as a designated waste for the purposes of the Waste Diversion Act under this regulation. Municipal hazardous or special waste means waste that consists of municipal hazardous waste or municipal special waste, or any combination of them, whether or not the waste is owned, controlled, or managed by a municipality.

Municipal hazardous waste consists of:

- Corrosive products, flammable products, or toxic products, if the sale of the product is permitted only if the container displays information required by the Hazardous Products Act and associated regulations;
- Containers that display information required by the Hazardous Products Act and associated regulations;
- Flammable hazards, corrosive hazards, or toxicity hazards that shall not be disposed of in one or more systems within the regular domestic waste stream because of significant risks posed to humans or the environment; and
- Corrosive waste, ignitable waste, leachate waste, reactive waste, or containers that contain these types of waste, as defined under the Environmental Protection Act.

Municipal special waste is defined as:

- Batteries;
- Pressurized containers;
- Aerosol containers;
- Portable fire extinguishers;
- Fertilizers, fungicides, herbicides, insecticides, or pesticides, and containers in which they are contained;
- Paints and coatings, and containers in which they are contained;
- Containers that have a capacity of 30 L or less and that were manufactured and used for the purpose of containing lubricating oil;
- Oil filters, after they have been used for their intended purpose;
- Fluorescent light bulbs or tubes;
- Pharmaceuticals;
- Sharps, including syringes;
- Switches; thermostats, thermometers, barometers, or other measuring devices that contain mercury;
- Antifreeze, and containers in which it is contained; and

- Solvents and the containers in which they are contained.

4.1.1.4 O. Reg 33/08 Stewardship Ontario

Stewardship Ontario is composed of a board of directors with five appointed members and ten elected members.

Members shall be appointed from each of the following bodies:

- Canadian Consumer Specialty Products Association;
- Canadian Paint and Coatings Association;
- Automotive Industries Association of Canada; and
- Retail Council of Canada.

One member shall be jointly appointed by the following bodies:

- Spectrum Brands Canada, Inc.;
- Procter & Gamble Inc.;
- Energizer Canada Inc.; and
- Panasonic Canada Inc.

4.1.1.5 O. Reg 85/03 Used Oil Material

Used oil material is prescribed as a designated waste for the purposes of the Waste Diversion Act. Used oil material means waste that consists of any of the following materials, or any combination of them:

- Lubricating oil after it has been used for its intended purpose;
- Lubricating oil that is not suitable for its intended purpose;
- An empty container, with a capacity of 30 L or less, manufactured and used for the purpose of containing lubricating oil; and
- An oil filter after it has been used for its intended purpose.

4.1.1.6 O. Reg 84/03 Used Tires

Used tires are prescribed as a designated waste for the purposes of the Waste Diversion Act and consist of used tires that have not been refurbished for road use, and tires that, for any reason, are not suitable for their intended purpose, or any combination of the above.

4.1.1.7 O. Reg 393/04 Waste Electrical and Electronic Equipment

Waste electrical and electronic equipment is prescribed as designated waste for the purposes of the Waste Diversion Act.

Waste electrical and electronic equipment means a device that is waste, that required an electric current to operate and that is:

- A household appliance, included in Schedule 1;
- Information technology equipment, included in Schedule 2;
- Telecommunications equipment, included in Schedule 3;
- Audio-Visual equipment, included in Schedule 4;
- A toy, leisure equipment or sports equipment, included in Schedule 5;
- An electrical or electronic tool, including any device listed in Schedule 6, but not including large-scale stationary industrial tools; and
- A navigational, measuring, monitoring, medical, or control instrument, included in Schedule 7, but not including any implanted or infected medical instrument.

4.1.2 Environmental Protection Act

The purpose of this Act is to provide for the protection and conservation of the natural environment.

4.1.2.1 O. Reg 103/94 Industrial, Commercial and Institutional Source Separation Programs

Source separation programs required under this Regulation must include:

- Facilities for the collection, handling, and storage of source separated wastes;
- Measures to ensure that the source separated wastes that are collected are removed;
- Provision of information to users and potential users of the program; and
- Reasonable efforts to ensure that full use is made of the program and that the separated waste is reused or recycled.

Source separate programs are required for Retail Shopping Establishments (over 10,000 m^2), Retail Shopping Complexes (at least 10,000 m^2), Large Construction Projects (total floor area of 2,000 m^2), Large Demolition Projects (total floor area of 2,000 m^2), Office Buildings (at least

10,000 m^2), Multi-Unit Residential Buildings (six or more units), Restaurants, Hotels and Motels (more than 75 units), Hospitals, Educational Institutions (where more than 350 people are enrolled), and Large Manufacturing Establishments.

4.1.2.2 O. Reg 104/94 Packaging Audits and Packaging Reduction Work Plans

A packaging audit includes the examination of the type and amount of packaging, the extent to which the packaging consists of reused or recycled material, the management decisions, and policies that relate to packaging, the reusability and recyclability of the packaging after use, and the impacts of packaging that becomes waste, including the final destination of the packaging after use.

A packaging reduction work plan plans to reduce the amount of packaging used, to increase the extent to which packaging consists of reused or recycled materials, to increase the reusability and recyclability of the packaging after use, and to reduce the impacts of packaging that becomes waste.

Packaging audits and packaging reduction work plans are required for the following establishments:

- Large Food or Beverage Manufacturing Establishments;
- Paper Manufacturing Establishments;
- Chemical Manufacturing Establishments; and
- Importers.

4.1.2.3 O. Reg 101/94 Recycling and Composting of Municipal Waste

Local municipalities with a population of a least 5,000 shall establish, operate and maintain a blue box waste management system. An annual report on the operation of the blue box management system is required to be submitted to the Director on or before June 1 of each year. Annual reports must set out the name of the municipality and the type and amount of wastes that were collected or accepted in the previous calendar year and a description of the information provided that year to users and potential users.

In addition to blue box waste, a municipality with a population of at least 5,000 shall establish, operate, and maintain a leaf and yard waste system. The leaf and yard system must include the provision of home composters to residents by the municipality at cost or less and the provision of information to residents, publicizing the availability of home composters, explaining the proper installation and use of home composters and the use of compost, and encouraging home composting.

At the licensed leaf and yard waste site, provided to Middlesex Centre by TRY Recycling, only leaf and yard waste and wood, not including painted or treated wood, or laminated wood, may be accepted and the total amount of compost on their sites that is in or has completed the curing stage shall not exceed 18x the monthly process design capacity of the site.

4.1.2.4 O. Reg 102/94 Waste Audits and Waste Reduction Work Plans

Waste audits address the amount, nature and composition of waste, the manner by which the waste gets produced, and the way in which the waste is managed.

Waste reduction work plans plan to reduce, reuse, and recycle waste, to the extent that is reasonable.

The following are required to perform Waste Audits and prepare Waste Reduction Work Plans;

- Retail Shopping Establishments and Complexes (at least 10,000 m2);
- Large Construction Projects (total floor area of at least 2,000 m2);
- Large Demolition Projects (total floor area of at least 2,000 m2);
- Office Buildings (at least 10,000 m2);
- Restaurants;
- Hotels and Motels (more than 75 units);
- Hospitals;
- Educational Institutions; and
- Large Manufacturing Establishments.

4.1.2.5 O. Reg 232/98 Landfilling Site

This regulation pertains to landfilling sites that come into existence on or after August 1, 1998, have a total waste disposal volume of more than 40,000 m^3, and accept only municipal waste for disposal.

Design specifications are required to be provided in a written report and address the following:

- A legal site plan;
- An up to date plan and description of the site;
- Detailed plans, specifications and descriptions for the design of the site;

- A hydrogeological assessment;
- A surface water assessment and control;
- Groundwater protection design;
- Leachate disposal and contingency plan;
- Mitigation measures for subsurface and atmospheric landfill gas; and
- Operations and Maintenance Procedures.

In addition, financial assurance must be provided by the owner and operator of the landfill and include provision for any contingency plans for the site.

4.1.2.6 R.R.O. 1990, Regulation 347 General – Waste Management

This regulation deals with the following aspects of waste management:

- Designation and exemption of wastes;
- Waste disposal sites and waste management systems;
- Standards for waste disposal sites;
- Management of asbestos waste;
- Waste generation facilities, registration, and requirements;
- Waste carrier requirements, and waste transportation within, out of, into, and through Ontario;
- Refusals;
- On-site thermal treatment equipment;
- Wood waste combustor sites;
- Waste-derived fuel sites;
- Existing hospital incinerators;
- Stationary and mobile refrigerant waste;
- Selected waste depots;
- Pesticide container depots; and

- Land disposal of hazardous waste.

4.2 POLICIES AND GUIDELINES

4.2.1 Middlesex Centre

The Municipality of Middlesex Centre is responsible for the implementation of provincial programs and creation of programs to address provincial requirements.

Guidelines for curbside recycling and solid waste pick up are set by BRA. Guideline for heavy items and yard waste are set by the municipality and were discussed in Section 3.0.

Middlesex Centre's Official Plan (OP) addresses landfilling. The following are listed in the OP and pertain to landfill sites:

- New landfill sites will require an amendment to the OP;
- The Municipality shall be consulted by approval authorities during site rehabilitation or land reclamation;
- No development will be permitted within the identified influence area of a landfill until satisfactory measures have been implemented to mitigate the impacts from the landfill site; and
- Prior to the consideration of development proposals in or within the influence of active or former landfill sites, the County or Municipality can require the completion of various studies.

4.2.2 The County of Middlesex

Middlesex Centre is located in the County of Middlesex and is subject to County by-laws and policies.

The County of Middlesex By-Law number 5622, which came into force July 2002, empowers the County to adopt household waste functions and assume household hazardous waste functions for all local municipalities that form part of the County.

4.3 ISSUES OF CONCERN TO REGULATORY AGENCIES

4.3.1 Ontario Ministry of the Environment

The WDA is the main legislation in Ontario used to promote reduction, reuse, and recycling of waste through the development, implementation, and operation of waste diversion programs. Programs incorporate principles of extended producer responsibility. The current view is a 'cradle-to-grave' approach which views waste as an inevitable by-product of production and consumption. The goal of the MOE is to "move towards a zero waste future". In order to do so

the ‘cradle-to-grave’ approach, where waste is an inevitable by-product requires a shift to ‘cradle-to-cradle’ approach, where there is zero waste. This approach focuses on opportunities that industry has to redesign products for greater reuse and encourages the development of innovative ways to make the wastes of one product into the inputs for another.

Moving towards a zero waste future requires tools that drive innovation, technological development, and a shift in societal behaviour. Through potential future iterations of the WDA, the MOE aims to work towards a zero waste future by building upon these four keys building blocks:

1. A clear framework built upon the foundation of extended producer responsibility;

2. A greater focus on waste reduction and reuse – the first and second of the 3Rs;

3. Increase the reduction and diversion of wastes from industrial, commercial, and institutional sectors; and

4. A greater clarity around roles, responsibilities, and accountabilities, to ensure that all players are contributing to a common goal.

The goal of zero waste and extended producer responsibility go hand-in-hand.

4.4 AGENCIES AND INDUSTRIAL GROUPS

4.4.1 Waste Diversion Ontario

Waste Diversion Ontario (WDO) is a non-governmental organization that was established under the WDA to establish, develop, implement, and operate waste diversion programs for a wide range of materials. Once the Minister of the Environment has designated a material through a regulation under the WDA, the Minister asks the WDO, working co-operatively with stewards, to develop a diversion program.

Examples of diversion programs developed by WDO include;

- The Blue Box Program Plan was approved by the Minister on December 22, 2003 and commenced on February 1, 2004;

- The first phase of the Municipal Hazardous or Special Waste Program Plan was approved by the Minister on February 19, 2008 and commenced on July 1, 2008;

- The first phase of the Waste Electrical and Electronic Equipment Program Plan was approved by the Minister on July 10, 2008 and commenced on April 1, 2009; and

- The Used Tires Program Plan was approved on April 9, 2009 and will commence on September 1, 2009.

4.4.2 Stewardship Ontario

Stewardship Ontario is Ontario's first Industry Funding Organization (IFO). It was created in 2002, in response to Sections 23 and 24 of the WDA, 2002 under which the Minister of the Environment is authorized to require Waste Diversion Ontario to develop a waste diversion program for a “designated waste” in conjunction with an Industry Funding Organization (IFO).

Stewardship Ontario is responsible for the Blue Box program and the Municipal Hazardous or Special Waste (MHSW) program.

The MHSW program diverts household hazardous waste and other materials that require special handling away from landfill sites, incinerators and our waterways. The materials addressed in the MHSW program are common household products such as paint, single use batteries, and antifreeze. Under the program, the companies that manufacture and market these products are taking stewardship responsibility and sharing in the cost of recovering left-over product or waste for reuse and recycling, and, if needed, for proper disposal.

Ontario's WDA requires all companies that introduce packaging and printed material into Ontario’s consumer marketplace ("Stewards") to share in paying 50% of the funding of Ontario's municipal Blue Box waste diversion programs. Since 2004, many residents in Ontario companies/organizations that are Brand Owners or First Importers, and whose products' packaging and/or printed material end up in Ontario residential Blue Boxes or in the municipal residential waste system have been required to register with Stewardship Ontario. Many of these companies are further obligated to file annual Stewards' Reports and pay fees to discharge their legal obligations.

4.5 ISSUES OF CONCERN TO THE PUBLIC

Issues of concern to the public were determined through the Class EA consultation process. Issues brought to attention from public consultation included the collection of electronic waste along with items specific to the agriculture industry.

As of April 1, 2009, Ontario residents have been able to return computers and televisions to drop off centre for recycling and safe disposal. By April 1, 2010, the list will have expanded to include:

- Telephones (Cell and Land);
- PDAs;
- Fax Machines;
- Copiers and Scanners; and
- Audio Visual Equipment.

This program is to be financed 100% by industry. Collection rate for the first year was approximately 27% with expectation of the rate to increase to 61% in the program's fifth year. Member municipalities of the BRA have the option of hosting events, with the promotion provided through industries, to drop off materials at the BRA head quarters in Huron Park.

Landscape Ontario has began work on creating a recycling network in which horticulture plastics would be recycled. The partnership is intended to include recycling companies, pot manufacturers, garden centres, nurseries, and growers with a focus on recycling pots, trays, tags, irrigation piping, and poly sheets.

5.0 20-Year Demand Growth

5.1 HOUSEHOLD WASTE

5.1.1 Current Waste Generation

Co-collection of municipal household waste and recyclables is carried out by the BRA. The overall waste generation volumes are slightly higher than other BRA municipalities, which can be attributed to the substantial urban commuter population in the community. Table 5.1 summarizes waste and recycling generated in the Municipality from 2002 to 2008.

Table 5.1: Historical Waste Generation

kg/hhld/yr	Waste	Recycling	Total
2002	305.23	217.37	522.60
2003	354.21	246.79	601.00
2004	360.32	279.75	640.07
2005	369.82	278.86	648.68
2006	366.12	271.47	637.59
2007	373.56	267.88	641.44
2008	372.03	268.17	640.20
2009	369.90	251.87	621.77
Average	358.90	260.27	619.17

5.1.2 Future Waste Generation

Future waste generation is based, in large part, on projected future populations, including number of households. How much of the waste generated by future populations will be destined for landfilling is, in part, based on future waste diversion programs and initiatives. With the introduction of governmental recycling and waste diversion programs the total amount of waste destined for landfilling will likely decrease, depending on the success of the program(s).

Based on the averages reported in Table 5.1, a set of possible future values for waste generation were calculated and are displayed in Table 5.2:

Table 5.2: Future Waste Generation

Year	Households	Waste	Recycling	Total
2019	6387	2,282,301	1,670,034	3,952,335
2029	7516	2,685,738	1,965,242	4,650,980

With over 68% of the average waste bag containing organic matter that can be composted or digested, the opportunity for great advances in waste reduction can be made. Composting on a large scale typically costs twice as much as landfilling the same material. However, if

municipalities are legislated to collect organic matter and taxes imposed on landfilling, the prices will likely become more competitive. In the meantime, the use of home composters and digesters should be promoted further.

5.2 COMMERCIAL/ INDUSTRIAL WASTE

Current diversion rates for the industrial, commercial and institutional (IC&I) sector are low and this sector is responsible for approximately two thirds of the waste generated in Ontario per year. The type and numbers of wastes generated by the IC&I sector make this sector difficult to target and therefore it is the IC&I waste generators, rather than the product manufacturers who tend to pay directly for costs associated with waste diversion.

The MOE, through the WDA, has several possible approaches to addressing increasing waste diversion for the IC&I sector. These include:

- Revising the 3Rs Regulations to promote increase IC&I diversion rates;
- Extend responsibility for wastes in the IC&I sector to producers; and
- Focus on specific sectors or specific materials or range of materials.

6.0 Regulator, Industry and Consumer Trends

6.1 REGULATORY TREND

Regulatory trends appear to be focused on the Zero Waste initiative, where the ultimate goal is to have complete diversion from landfills by introducing initiatives that shift the majority of the obligation onto the industry.

6.1.1 Mandated Programs

6.1.1.1 Blue Box Program

The Blue Box Program was launched in the mid-1980s as a partnership between industry and provincial and municipal governments. Today nearly 99% of the Ontario population has access to recycling. The framework of the Waste Diversion Act financially supports the Blue Box program. The net costs of the program are shared on a 50/50 basis between producers whose packaging is collected in the program, and the municipalities that have a Blue Box Program (that is all municipalities with a population greater than 5,000).

6.1.1.2 Municipal Hazardous or Special Waste

The MHSW Program was developed to divert certain household hazardous and special wastes from disposal in landfills, incineration, and sewers with the aim of making the disposal of household hazardous and special wastes safer, simpler, and more convenient. Phase 1 of this program has been in operation since July 2008 and shares responsibility between industry and municipalities along functional lines. Municipalities absorb the costs associated with collecting subject wastes, which producers assume financial responsibility for all post collection activities. The next phases of the program will expand the list of material to be diverted and may be fully funded by industry.

6.1.1.3 Waste Electrical and Electronic Equipment (WEEE) Program

The Waste Electrical and Electronic Equipment (WEEE) Program is intended to increase the amount of electronics reused, collected and recycled and may be implemented in 2009. This program is the first to address the designated material generated in all sectors and it is the first diversion program that is fully funded by producers.

6.1.2 Incentives for Diversion (Levies on Solid Waste)

Middlesex Centre, and the BRA, should continue to monitor the situation of waste diversion and make changes when necessary. Currently BRA recovers 90% of the available recyclables from blue boxes. An investigation into levies on solid waste at either the municipal or program wide level could provide details on increasing the effectiveness of waste diversion. Some

municipalities have implemented programs whereby the ratepayer selects a size of curbside waste container and dependent on the selected size either pays a levy or receives a rebate.

In many jurisdictions it is common place for levies to be placed on waste entering landfills. This levy can be as low as a few dollars and in some cases, such as the Netherlands, as high $142 per tonne. Clearly the more costly it is to dispose of waste in landfills the more incentive there is to avoid using landfills and brings the cost of diversion into a parallel economy.

6.1.3 Landfill Availability and Capacity

As a member of the BRA, Middlesex Centre does not need to independently administer landfills as this is provided via the BRA. Presently the BRA has access to 30 landfills, of which, Twin Creeks Landfill in Warwick Township is currently Middlesex Centre's disposal site, as per their agreement with BRA. So long as Middlesex Centre maintains its membership with the BRA, their security on landfill availability and capacity remains high.

6.2 INDUSTRY TRENDS

For the most part, industry trends will likely follow regulatory updates imposed by the various levels of government. The MOE produced a discussion paper in October 2008 titled "Toward a Zero Waste Future" in which the province proposes shifting the entire cost of the blue box program from a 50% municipality, 50% industry cost to one where the industry pays the full cost.

In 2010 all operating landfills that are larger than 1,500,000 m^3 will be required to install a methane collection system. It is hoped that by doing so a reduction of green house gases will occur while providing the operating authority the chance to use the collected gas to produce electricity and sell it back into the grid.

Landscape Ontario (full name Landscape Ontario Horticultural Trades Association) represents the many different professions relating to landscaping and horticultural activities. This association has investigated initiating a program that would see horticultural products: plastic pots, trays, tags, hoses, etc. all returned to point-of-purchase collection depots across Canada. The LCBO has done something similar in instigated a deposit and return program in 2007 with a return rate of 67%. The Beer Store has a return rate of 93% by comparison. In other sectors they are making due with less material in their packaging, such as Coca-Cola and Pepsi, who are reducing their bottle weight by 20%.

Overall the trend is to put more of the onus on the industry and producer when it comes to solid waste services, waste diversion, and creating less waste. This ethos reflects that over time the municipality will pay less of a burden for the materials produced by industry while providing the industry with a further incentive to increase its affect on waste diversion. The cost for this trend will most likely be passed on from the industry to the consumer.

6.3 CONSUMER TRENDS

As the Zero Waste philosophy becomes more prevalent, consumers can expect to be further educated on what to do with their solid waste; ways to reduce it, what can be recycled, and ways to reuse. Education and information would be required for any changes to the current collection system. This could include any changes to the way solid waste is streamed by the rate payer. These could include new items added to the blue box system, the use of wet and dry collection system, or the addition of an organic stream for curbside pickup. Currently the Municipality offers rate payers options to digest their own organic matter in the form of composters and digesters.

7.0 Summary of Opportunities and Threats

Waste management is dealt with by a third party organization, Bluewater Recycling Association, a membership of 21 separate municipalities, of which Middlesex Centre is one. With regards to future servicing of solid waste, Middlesex Centre has several options:

- Remain as a member of the Bluewater Recycling Association with the current level of service;
- Remain as a member of the Bluewater Recycling Association with a different level of service;
    - A lower level with the municipality or another third party maintaining existing level or an increased service level;
    - Higher level of service;
- Middlesex Centre to be sole service provider;
    - In full by the municipality;
    - With the assistance of another party; and
- Full service provided by a new third party.

Middlesex Centre's Servicing Principles indicate that complexity should be minimized, and as such, fragmenting the waste management collection by its components would go against this. Further, if the Municipality took over collection this would also produce start up and continued operating issues, whereas the Bluewater Recycling Association has been in operation for over 20 years and provides its service to 21 municipalities. In addition, by having the Bluewater Recycling Association as the service provider, any risk to the Municipality has become the responsibility of the Association.

Another principle is the notion of network servicing versus linear servicing. Normally this concept revolves around the thought that a network is easier and more efficient to service than an equivalent length linearly. Applying this to the Bluewater Recycling Association's collection system, both solid waste and recyclables are collected in a single truck and sorted at their facility as opposed to separate trucks for each stream.

Finally, as part of the Bluewater Recycling Association, the Municipality is subject to any threats to that organization; however, the threat is spread amongst 21 municipalities. Additionally, the Municipality is also subject to any opportunities that the Association may encounter. It is unlikely that a similar format could be found with a new third party collector. However, regular audits of the current system should be completed at the municipality's convenience.

8.0 Recommended Planning Solutions

Going forward, solid waste will continue to be a key component of municipal servicing. It is key for the Municipality to have a dynamic collection system that will be able to develop and evolve with changes in policy and environmental trends. It is also important to be able to provide input and direction in shaping future policies and solutions. As a member municipality in the Bluewater Recycling Association, Middlesex Centre will have these opportunities, as they are the largest rural regional collection providers in Ontario.

Currently the Bluewater Recycling Association represents 21 municipalities servicing nearly 150,000 residents and over 63,000 households and has been in operation for over 20 years. Now in its third decade, the BRA has continually adapted, changed, and been at the forefront of waste management and reduction. The current diversion rate for BRA is close to 30% which puts it in the middle of its category along with the volume of waste it collects per capita.

At this time the Municipality should continue collections with the current provider, the Bluewater Recycling Association, as it is unlikely that they will be able to find a similar provider with the abilities that the Bluewater Recycling Association has. However, at the Municipality's convenience, regular assessments of the systems function could be completed.

9.0 References

Waste Diversion Act, 2002

O. Reg 273/02 Blue Box Waste

O. Reg 542/06 Municipal Hazardous or Special Waste

O. Reg 33/08 Stewardship Ontario

O. Reg 85/03 Used Oil Material

O. Reg 84/03 Used Tires

O. Reg 393/04 Waste Electrical and Electronic Equipment

Environmental Protection Act, 1990

O. Reg 103/94 Industrial, Commercial and Institutional Source Separation Programs

O. Reg 104/94 Packaging Audits and Packaging Reduction Work Plans

O. Reg 101/94 Recycling and Composting of Municipal Waste

O. Reg 102/94 Waste Audits and Waste Reduction Work Plans

O. Reg 232/98 Landfilling Site

R.R.O. 1990, Regulation 347 General – Waste Management

Municipality of Middlesex Centre's Official Plan, Municipality of Middlesex Centre, 2009

By-Law number 5622, County of Middlesex , July 2002

Diversion Options: Municipality of Middlesex Centre 20 Year Master Servicing Plan, Bluewater Recycling Association, April 2009

2008 Annual Report, Bluewater Recycling Association, 2008

Toward A Zero Waste Future: Review of Ontario's Waste Diversion Act, 2002 – Discussion Paper for Public Consultation, MOE, October 2008

From Waste to Worth: The Role of Waste Diversion in the Green Economy – Minister's Report on the Waste Diversion Act 2002 Review, MOE, October 2009

Appendix 3.1: Diversion Options: Municipality of Middlesex Centre 20 Year Master Servicing Plan

Diversion Options

Municipality of Middlesex Centre 20 Year Master Servicing Plan

Prepared for: Stantec Consulting Ltd
Prepared by: Francis Veilleux, President

April 29, 2009

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Executive Summary

The Bluewater Recycling Association is responsible to collect residential and small institutional, commercial, and industrial waste from the municipality of Middlesex Centre. It has provided some of these services to parts of the community since 1990 and to the entire municipality since 1998.

Through the Association's current diversion programs, and the economic incentives provided by the garbage user pay program in effect throughout the municipality, a substantial portion of the waste stream has been diverted from disposal. Currently 42% of materials generated are diverted from landfill. When compared to the estimated generation rates from 1987, approximately 56% of the waste is being diverted.

Currently 90% of the available recyclables are recovered in the blue box leaving few opportunities to collect additional materials through this program.

The largest potential diversion opportunity is organics collection. More than 68% of the waste bag contains organic material that could easily composted. When non-recovered and no recyclable fibres are added, 80% (150 kg/hhld/yr) of the waste bag is compostable. The main barrier to composting at this time is the lack of capacity available locally to accept this materials. The other significant barrier is the cost associated with such recovery effort. Current provincial developments could eliminate these barriers.

A number of programs are currently under development to divert more materials from disposal at little or no cost to the municipalities in Ontario. Three main programs developing are the currently running and expanding Municipal Household Special Waste (MHSW), the Waste Electrical and Electronic Equipment (WEEE) program, and the upcoming Tire Recycling program. The first two program will help make items disposed in landfill sites less detrimental to the environment, while the last one will help with the volume of space used and reduce fire hazards and mosquito born diseases.

Waste Profile

WASTE GENERATION

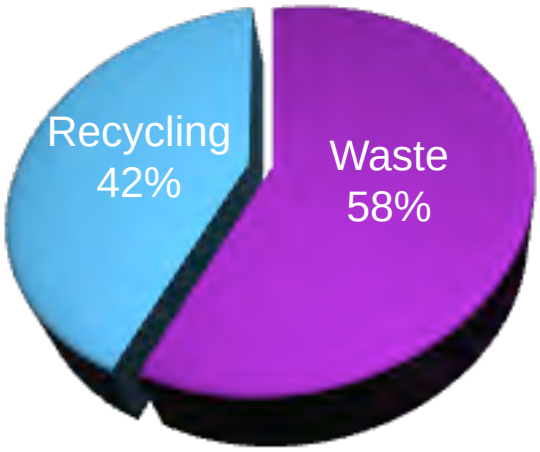
The Bluewater Recycling Association is responsible to collect residential and small institutional, commercial, and industrial waste from the municipality of Middlesex Centre It has provided some of these services to parts of the community since 1990 and to the entire municipality since 1998 after amalgamation of the current municipality.

For comparative purposes, all data is presented on a kilogram per household per year. The generation of waste by the residents of the municipality is consistent, albeit higher, with other municipalities in the area serviced by the Association under the same program conditions. The overall generation is slightly higher than others which can be attributed to the substantial urban commuter population in the community. This population tends to have an active lifestyle that has a tendency to generate more packaging because of their commuting habits.

kg/hhld/yr	Waste	Recycling	Total kg
2002	305.23	217.37	522.60
2003	354.21	246.79	601.00
2004	360.32	279.75	640.07
2005	369.82	278.86	648.68
2006	366.12	271.47	637.59
2007	373.56	267.88	641.44
2008	372.03	268.17	640.20
Average	**357.33**	**261.47**	**618.80**

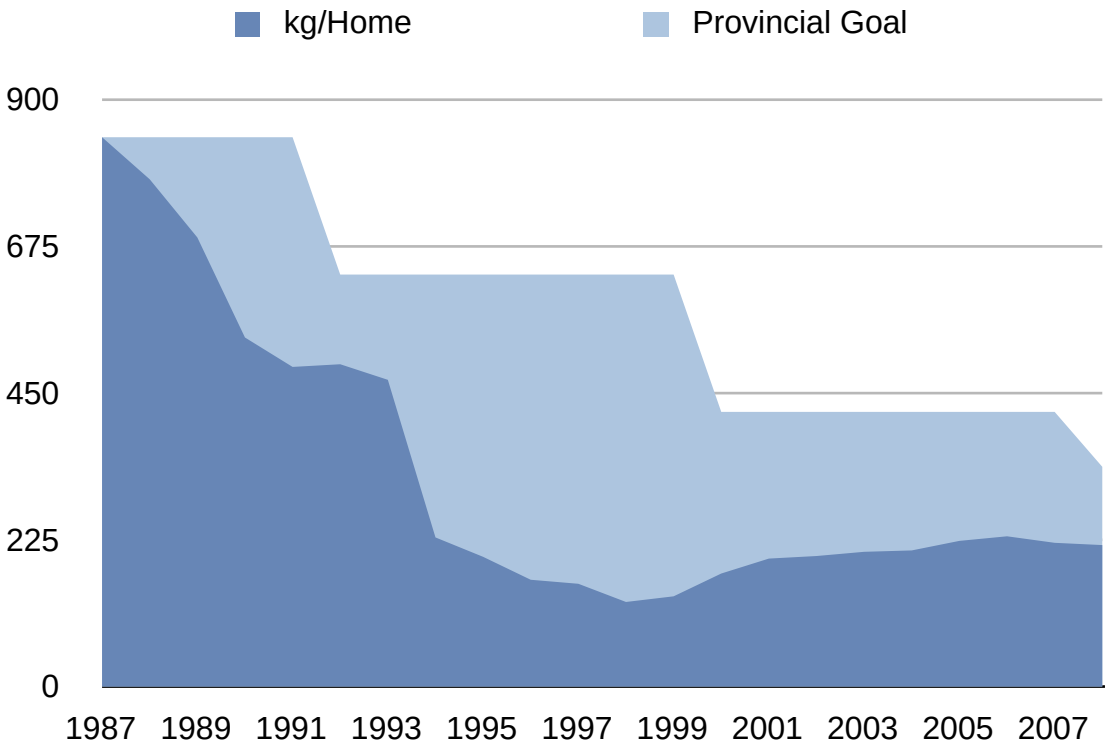
WASTE DISTRIBUTION

The current waste distribution depicts a 42% waste diversion rate. In reality the diversion rate is much higher in comparison to the original generation rate.



Given the lack of data available in the 80's and 90's we must rely on data collected in nearby communities. One such community is the municipality of Lambton Shores to the west with a similar population. The generation curve for that community has been tracked since 1987. The Province uses 1987 as the base year for all diversion programs.

The first significant reduction in the late 80's was the implementation of the blue box program with the subsequent distribution of backyard composters. In 1994, the introduction of user pay provided the incentive necessary to rethink consumption behaviour. While the blue box recovery rate jumped from 67% to 90% the most significant change was in the reduction of organic waste which was reduced as a result of behavioural changes. The 220 kg of waste per household generated today is 74% less the the 840 kg generated in 1987 and below the provincial goal.



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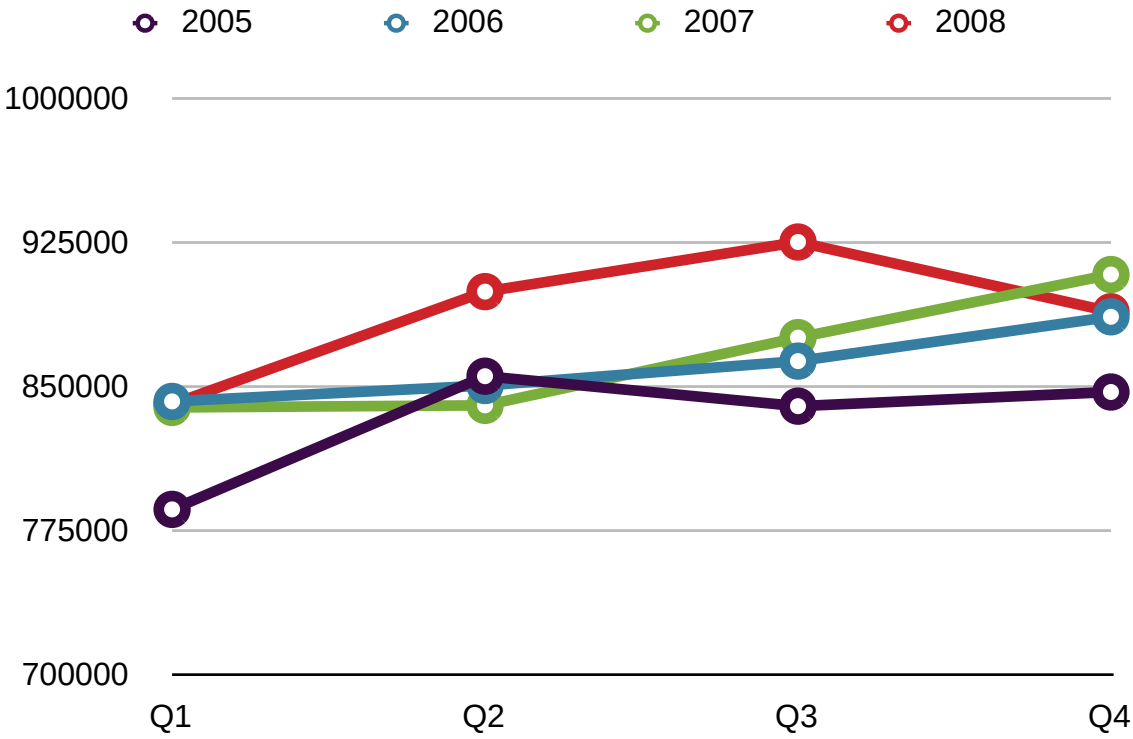
SEASONAL FLUCTUATION

As expected the generation of waste is only slightly seasonal. The fluctuation is illustrated in the chart below in total waste and recycling kilograms collected per fiscal quarter.



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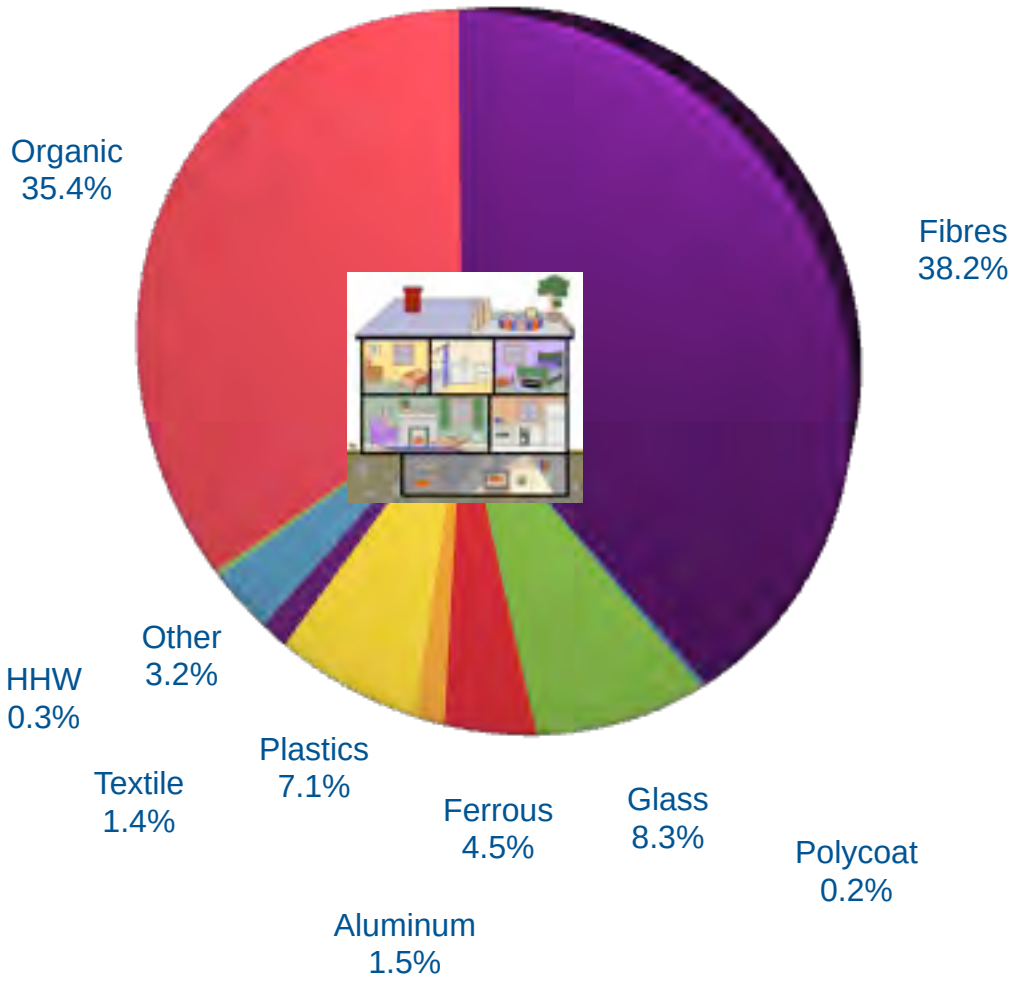
OVERALL COMPOSITION

In the late 90's, the Bluewater Recycling Association did a fair amount of work identifying the overall waste composition in the local waste stream. Some of the work consisted of auditing the waste and recycling contents set out at the curb by a sizeable sample of households in the former Village of Hensall. The Village is now part of the Municipality of Bluewater and the results remain representative of the expected waste composition. The data gathered at the time identified the overall waste and recycling generation to be in accordance with the following chart.

Waste Bag	kg/hhld/yr
Fibres	138
Polycoat	1
Glass	30
Ferrous	16
Aluminum	5
Plastics	26
Textile	5
Other	11
HHW	1
Organics	128
Total	**361**



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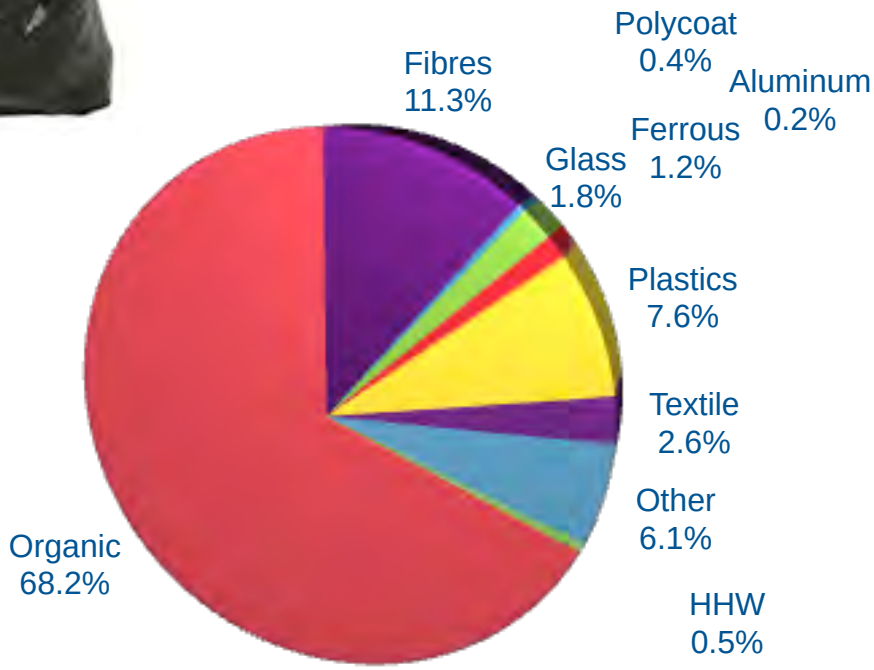
WASTE COMPOSITION

The contents of the waste bag destined for landfill were identified as follows. Clearly, the most significant waste component is organic (128.04 kg) in nature. The organic waste consists of kitchen leftovers (86.15 kg), diapers and sanitary products (24.97 kg), animal waste (14.13 kg), and yard waste (2.69 kg). Note that the samples were taken in February when yard waste is not a factor.

Waste Bag	kg/hhld/yr
Fibres	21
Polycoat	1
Glass	3
Ferrous	2
Aluminum	0
Plastics	14
Textile	5
Other	11
HHW	1
Organics	128
Total	**188**



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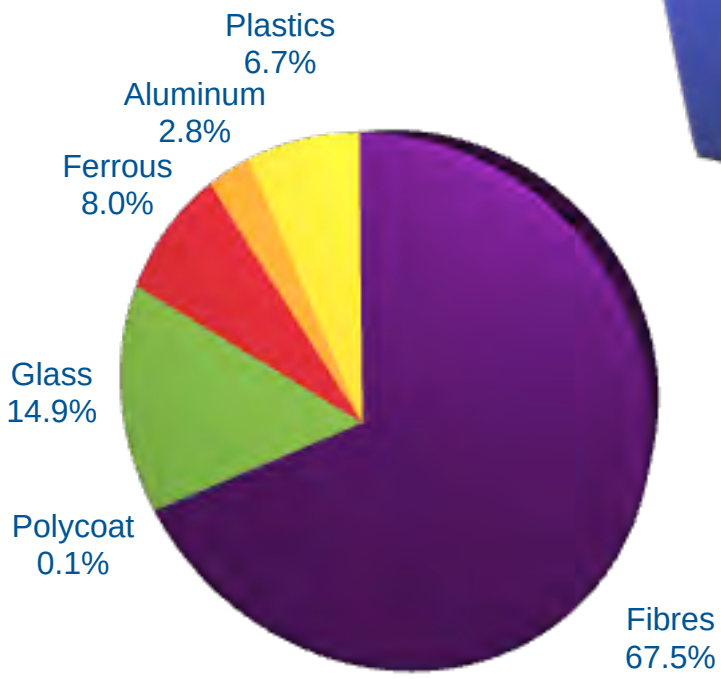
RECYCLING COMPOSITION

Blue Box	kg/hhld/yr
Fibres	117
Polycoat	0
Glass	26
Ferrous	14
Aluminum	5
Plastics	12
Total	**173**

Similarly, the contents of the blue box were analyzed. Of the 173.14 kilograms per household per year generated the following material distribution was identified.



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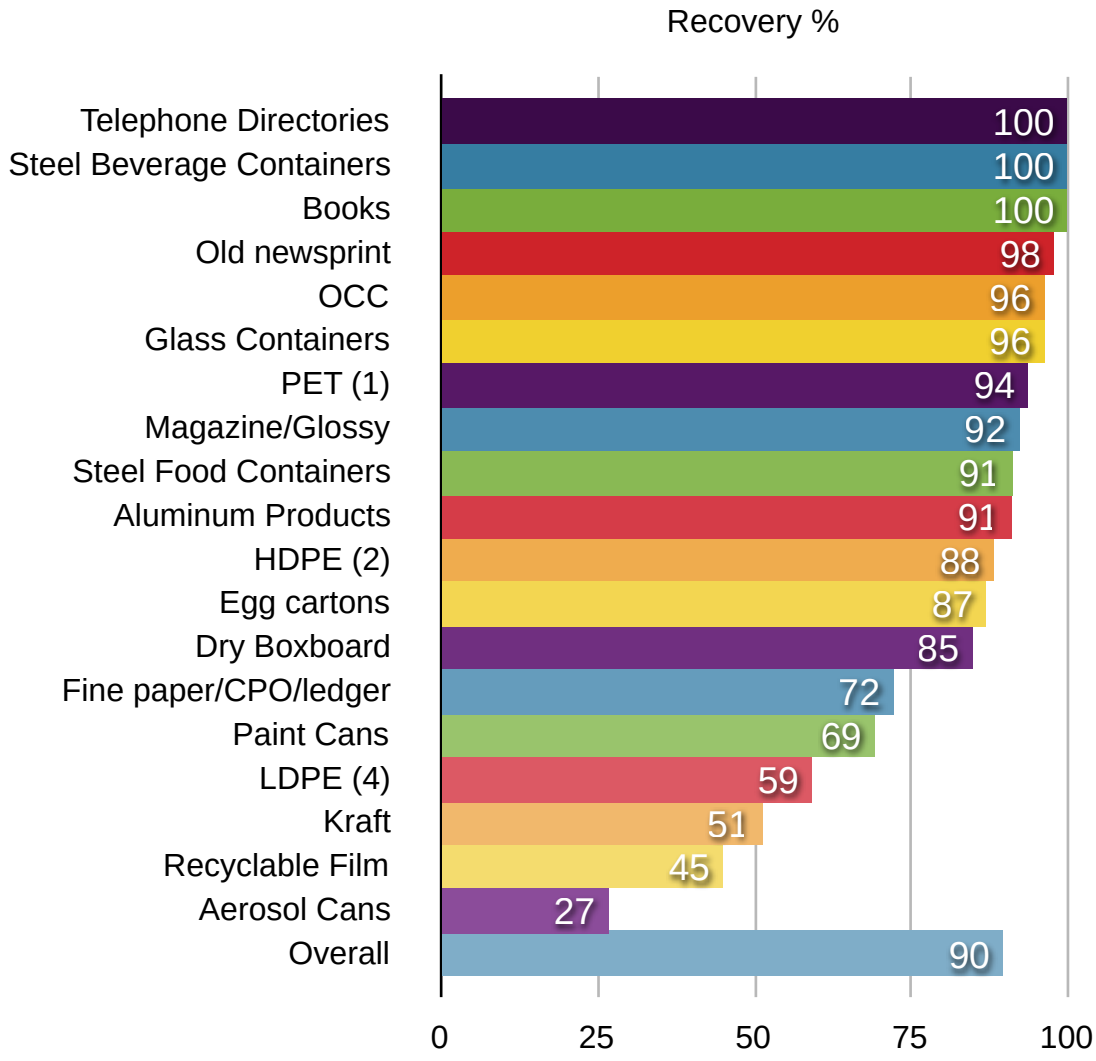
RECYCLING RECOVERY

The effectiveness of the blue box program is measured by comparing the recyclables collected in the blue box as compared with what was available to be collected in the blue box. The chart below illustrates the recovery rate for selected materials during a four week period in February. Clearly, traditional materials are readily recycled by homeowners. Some of the poorer performing materials are not readily known as recyclables and have a tendency to be contaminated (ie aerosol partially used, plastic bags used for kitchen waste, paint cans with residual, etc)



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Diversion Opportunities

RECYCLING POTENTIAL

There is limited opportunity to increase the amount of blue box recyclable materials to be recovered as the current recovery rate is 90%. There is limited potential for additional materials to be added. Some potential materials could include, polycoat containers, tetra paks, and styrofoam. Without considering the current market difficulties with those materials, if they were added to the blue box, they could add 2.2 kg per household per year to the recycling stream.

ORGANIC COLLECTION

The largest potential diversion opportunity is organics collection. More than 68% of the waste bag contains organic material that could easily composted. When non-recovered and no recyclable fibres are added, 80% (150 kg/hhld/yr) of the waste bag is compostable. The main barrier to composting at this time is the lack of capacity available locally to accept this materials. The other significant barrier is the cost associated with such recovery effort. Compost facilities typically cost $90 to $120 per tonne to operated while disposal fees at landfills are half.

It is expected that large urban municipalities will be legislated to collect organic materials within the next 5 years which will lead to the development of additional processing capacity in the province. If the province adopts a similar approach as the European countries with regards to landfilling and imposes landfill taxes, the economics will become favourable. In the mean time, less costly alternative such as back yard composters and digesters should be promoted.

OTHER PROGRAMS

A number of programs are currently under development to divert more materials from disposal at little or no cost to the municipalities in Ontario. Three main programs developing are the currently running and expanding Municipal Household Special Waste (MHSW), the Waste Electrical and Electronic Equipment (WEEE) program, and the upcoming Tire Recycling program. The first two program will help make items disposed in the landfill sites less detrimental to the environment, while the last one will help with the volume of space used and reduce fire hazards and diseases. More information about each program is provided below.

HAZARDOUS WASTE

Some municipalities have been accepting the phase one materials eligible for some funding effective July 2008. Other municipalities have opted to wait until 2010 when industry will be responsible for all the costs associated with most hazardous materials.

In the meantime, WDO reported that approximately 240 commercial collection sites have agreed to collect certain Phase 1 MHSW materials as of January 22 of this year. These include Home Depot for paints and batteries, RONA for paints and Jiffy Lube for oil filters, antifreeze and associated containers. It was noted that collection of paints includes all paints and coatings with the exception of aerosol containers due to restrictions under O.Reg. 347 which will hopefully be resolved through a Stewardship Ontario system Certificate of Approval. A list of all the retail locations accepting materials is available at www.dowhatyoucan.ca.

Material	July 2008	Early 2010
Paints and Coatings	√	
Solvents	√	
Oil Filters	√	
Oil Containers	√	
Dry Cell Batteries	√	
Antifreeze	√	
Propane Tanks	√	
Fertilizers, Fungicide, Herbicide, Insecticide, Pesticide	√	
Other Batteries		√
Aerosol Containers		√
Fire Extinguishers		√
Fluorescent Light Bulbs		√
Pharmaceuticals		√
Sharps		√
Mercury Switches		√
Thermostats, Thermometers, Barometers		√

E-WASTE

As of April 1, 2009 the electronic industry is responsible to recover computers and their accessories as well as televisions. One year later, the program is to be expanded to telephones, fax machines, PDA's, copiers, and audio/visual equipment. The recovery of these materials will be achieved through steward and retailer WEEE reuse, refurbishment and recycling activities, contracted municipal sites and events, contracted other collection sites and events, direct IC&I generators, contracted reuse, refurbishment and recycling sites. The Association is one of the registered site for collection of these materials.

Material	April 2009	April 2010
Computers and Accessories	√	
Televisions	√	
Telephones (Cell and Land)		√
PDA		√
Fax Machines		√
Copiers and Scanners		√
A/V Equipment		√

TIRES

Ontario Tire Stewardship will begin its Final Used Tires Program Plan on September 1, 2009.

Currently, most Ontario tire retailers charge customers a disposal fee to handle and dispose of customers' scrap tires and then pay a hauler to remove the scrap tires for disposal. Under the new Ontario plan, it is expected that the tire retailer will play a critical role as the primary collector of scrap tires in the province and as such the primary financial impact on the tire retailer will be the end of the need to pay haulers to pick-up scrap tires they have collected. Due to this tire retailers will no longer need to pass these costs along to customers, serving to reduce the incidence of illegal dumping. In addition the program will pay the Used Tire Collector under the program to cover the costs of handling and storing the used tire after it is removed from the vehicle.

Stockpile abatement is also a core requirement of the Used Tire Stewardship program, and is specifically required by the Minister's program request letter. The OTS program allocates sufficient funds to eliminate identified stockpiles in Ontario in three years.

Appendix 7.1:
Draft Stormwater Management Policy Document

DRAFT STORMWATER MANAGEMENT POLICY MANUAL MUNICIPALITY OF MIDDLESEX CENTRE

DISCUSSION DOCUMENT PREPARED FOR REVIEW AS PART OF THE MIDDLESEX CENTRE MASTER SERVICING PLAN

APRIL 2010

Table of Contents

Table of Contents

Table of Contents

Figures

Appendices

1.0 Introduction

1.1 PURPOSE OF THIS DOCUMENT

Stormwater collection and treatment is a service that is provided by a municipal government in urbanized and certain other areas within its jurisdiction. The purpose of this policy manual is to provide guidance for Middlesex Centre staff, Proponents of development, and other parties with regard to the operation of stormwater management (SWM) facilities throughout their lifecycle. The lifecycle of a SWM facility generally consists of the following stages:

1. Planning and Approvals;
2. Construction;
3. Pre-Municipal Assumption Operation;
4. Municipal Assumption;
5. Operation;
6. Facility Renewal; and
7. Facility Replacement.

SWM facilities are intended to be in operation for an extended period of time (greater than 25 years) prior to major renewal or replacement being required. They provide certain levels of mitigation of impacts to the environment due to urbanization of drainage areas from their previous natural or agricultural state. In all likelihood, the Municipality will be operating the facility in excess of 90% of its lifespan. Therefore, the Municipality has an interest with regard to SWM to:

1. Ensure that a Proponent who wishes to urbanize an area provides an acceptable level of protection to the public with regard to stormwater run off based on current accepted practices and the requirements of agencies having jurisdiction;
2. Ensure that a Proponent who wishes to urbanize an area provides an acceptable level of protection to the environment with regard to stormwater run off based on current accepted practices and the requirements of agencies having jurisdiction;
3. Ensure that the risk to the Municipality in operating these facilities is reasonable;
4. Ensure that the cost to the Municipality in operating these facilities is reasonable and is borne by the Proponent and/or the benefiting users;
5. Ensure that these facilities are planned, constructed and operated in a manner consistent with the Municipality's Master Servicing Plan Principles; and
6. Ensure that there is a policy in place so that all parties (municipal council, municipal staff, Proponents, regulators, members of the public, etc.) understand the roles and responsibilities that the Municipality has in this regard as well as that of the Proponent.

1.2 BACKGROUND

In Ontario, SWM is required when a rural area is urbanized and its intent is to mitigate impacts on the environment. Therefore, three aspects of SWM that need to be addressed in development and these are:

- Quantity Control, which is the name given to managing the amount of runoff generated by a drainage area and generally includes attempts to limit the maximum run off flow of the developed area to the rate of flow that occurred prior to development;
- Quality Control, which is the name given to managing the quality of the runoff generated from a drainage area and generally includes attempts to allow for an extended period of detention of storm water in order to encourage the settling out of pollutants within a facility for most frequent rainfall events; and
- Enhanced Protection, which is to provide for the protection of receiving streams from excessive erosion or to changes in stream morphology (structure of the channel).

Quantity impacts result from an increase of runoff as the urban development will have more impervious surface. This increase includes the total volume, flow rate and duration of run off from a rainfall event. This can cause serious erosion problems in creeks, rivers and outfalls into the water bodies. Quality impacts are the result of “non-point” sources of pollution, which can discharge from the result of human activity. Both rural and urban areas can contribute to non-point source pollution. Stormwater contaminants may include suspended solids, microbiological contamination, organic matter, petroleum hydrocarbons, salts, nutrients, and pesticides. Enhanced protection is typically mandated by agencies having jurisdiction over the receiving stream which in the case of Middlesex Centre is taken to be the Conservation Authority in whose area the SWM facility and outlet is located.

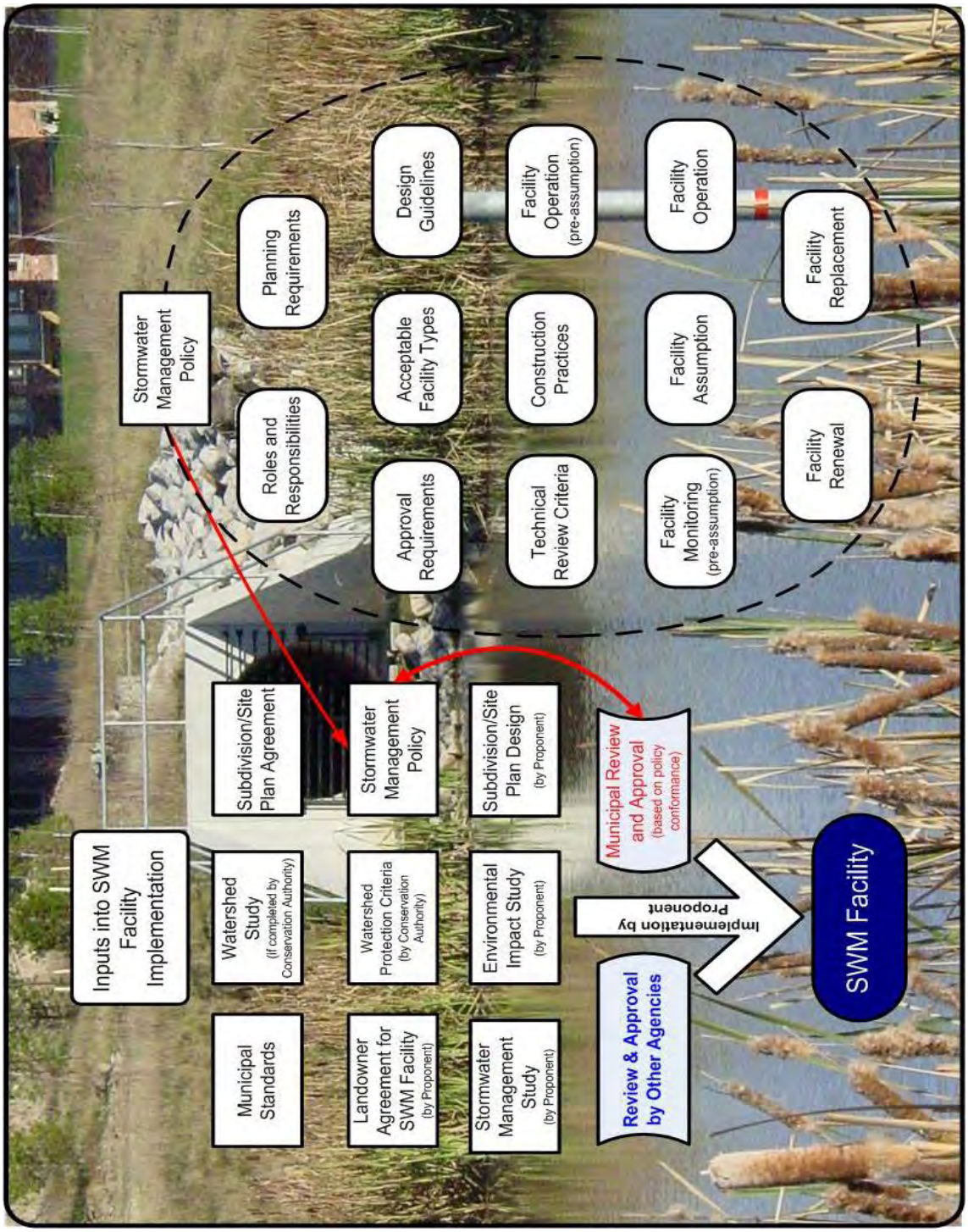

Figure 1.1 – Context of Stormwater Management Policy

1.3 INTENT OF STORMWATER MANAGEMENT IN MIDDLESEX CENTRE

When an area within the Municipality changes from rural to urban land use, stormwater management (SWM) techniques are to be used to mitigate any negative impacts due to changes in the quality and quantity of run off and excessive physical impacts on the receiving streams. This is to be accomplished through the application of current SWM practices within Ontario that rely on engineered, non-mechanical means of treatment. In addition, a net enhancement to the urban environment through the application of these standards must be achieved.

1.4 CONTEXT OF STORMWATER MANAGEMENT POLICY

The Municipality's SWM policy is one component in the process for a Proponent to have approval to build and operate a stormwater management facility. Figure 1.1 summarizes some but not necessarily all of the inputs that are required for implementation of a SWM facility.

2.0 Policy Background

2.1 SUMMARY OF ROLES AND RESPONSIBILITY

The implementation of SWM in Ontario involves the participation and co-ordination of numerous public agencies, each of whom have specific mandates towards which their comments, concerns and recommendations are aimed. Within Middlesex Centre, the following municipal and provincial agencies are involved in the review and approval of SWM in accordance with their respective mandates, as summarized below:

- Ministry of the Environment (MOE) is responsible for preparing provincial SWM design and implementation guidelines and issuance of Certificates of Approval for any collection and treatment of stormwater pursuant to Section 53 of the *Ontario Water Resources Act*;
- Ministry of Natural Resources (MNR) is charged with ensuring public safety in regards to flooding and erosion hazards, the plan review and approval responsibilities of which have been delegated to the local Conservation Authorities through Conservation Ontario;
- Conservation Authority is responsible for reviewing applications that involve development in or on Regulated Areas and permitting those that, in its opinion, incorporate measures to ensure that the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development within their watershed. In addition to its regulatory role, the Conservation Authority may also provide technical advice to the approval authorities (Municipality, MMAH) in regard to the aspects noted above and other technical aspects that may be of interest to its municipal partners;
- Upper-tier Municipality (Middlesex County) is responsible for approving subdivision, site plan and other *Planning Act* applications as the designated approval authorities under the Planning Act and must ensure that adequate SWM controls are in place to satisfy applicable Provincial and Municipal policies; and
- Lower-tier Municipality (Municipality of Middlesex Centre) is typically responsible for the safety, maintenance, and long-term monitoring and operation of SWM infrastructure, as they will take ownership of facilities on public land. In order to ensure that it can meet its obligations for ownership and operation, the lower tier municipality can require conditions in the subdivision and /or site plan agreement which require to the Proponent to meet.

These mandates provide guidance for decision-making and the context within which each agency participates in the management of stormwater within the Municipality of Middlesex Centre.

2.2 PROVINCIAL STATUTES, REGULATIONS, STANDARDS AND GUIDELINES

Note that the current statutes and regulations and guidance documents should be reviewed periodically by all parties to confirm current provincial requirements. At present information on current statutes and regulations is published and explained on the Ontario Government's E-Laws website (www.e-laws.gov.on.ca). Generally guidance document information can be obtained on the websites of those ministries which are responsible for their preparation. For example documents created on by the MOE can be found on its website (www.ene.gov.on.ca).

2.2.1 Ontario Water Resources Act (OWRA)

The purpose of the *Ontario Water Resources Act* (OWRA) is to provide for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being. This Act outlines the following headings pertaining to Ontario's waters:

- Administration;
- Waters & Water Bodies;
- Wells;
- Sewage Works;
- Water and Sewage Projects;
- Agency Agreements;
- Public Water or Sewage Service Area;
- Regulations;
- Work Done by Ministry;
- Records of Site Condition;
- Special Provisions Applicable to Municipalities, Secured Creditors, Receivers, Trustees in Bankruptcy, Fiduciaries and Property Investigators; and
- Other Miscellaneous Subjects.

The OWRA includes a general prohibition against the discharge of substances or materials into water that may "impair the quality of the water". It also states that "No person shall establish, alter, extend or replace new or existing sewage works except under and in accordance with an approval granted by a Director". Sewage projects undertaken under this Act are also subject to the requirements of the Ontario Environmental Assessment Act. Sewage works include works for the conveyance of stormwater and SWM facilities.

2.2.2 Sustainable Water and Sewage Systems Act, 2002

The intent of the *Sustainable Water and Sewage Systems Act, 2002* is to ensure that municipalities can finance municipal water and wastewater services. The Act is intended to ensure municipalities have full cost recovery in place for municipal water and wastewater services.

In compliance with this Act, there is a two step process which municipalities must undertake. Municipalities must first prepare a full cost report and the second is to prepare and implement a cost recovery plan. The report must contain the following:

- Inventory and management plan for infrastructure;
- Assessment of full costs of providing services, including operating, financing, renewal and replacement, and improvement costs; and
- Revenue obtained to provide services.

The report must be approved by the Minister of the Environment, and once completed; a Cost Recovery Plan must then be drafted and submitted to the Ministry. The regulations under this Act can also limit the maximum increase in rates that a municipality may charge for services.

This Act has been passed in the legislature, but has not been proclaimed in force as the applicable regulations have not yet been completed.

2.2.3 Environmental Protection Act

In Ontario, the principle legislation governing the environment is the province's *Environmental Protection Act* (EPA). The purpose of this document is to provide for the protection and conservation of the natural environment. A breach of the statute is considered to have occurred if an action or inaction by a person, persons or an organization has resulted in an 'Adverse Effect' on the environment. Water pollution can be defined as any use, discharge or incident involving water which causes an "adverse effect."

An "adverse effect" on the environment is defined in the act as one or more of the following:

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

- Interference with the normal conduct of business.

2.2.4 Drainage Act

As most of the Municipality's area is rural and agricultural in nature, drainage issues are governed by the *Drainage Act*. SWM is intended as a municipal service provided to urbanized area to provide certain levels of mitigation of impacts to the environment due to urbanization of drainage areas from their previous natural or agricultural state. The *Drainage Act* has no provisions in it to address SWM. Therefore, if areas are to have urban development (residential, commercial, institutional and industrial), the Municipality should, depending upon the scale of development, abandon the Municipal Drain (per *Drainage Act* definition) as allowed in Section 84 of the *Drainage Act*. The costs associated with this abandonment should be generally borne by the Proponent whose plan for the urban development initiates this requirement. Section 84 states:

> **Abandonment of all or part of drainage works**
>
> **84.** (1) Upon the written request of three-quarters of the owners of land assessed for benefit in respect of a drainage works, who, according to the last revised assessment roll, own not less than three-quarters of the area assessed for benefit as shown in the by-law or by-laws under which the drainage works exist, asking for the abandonment of such drainage works or a part thereof, the council of the initiating municipality shall forthwith notify all owners of land assessed for the drainage works by prepaid mail, at their addresses as shown in the last revised assessment roll, of its intention to abandon such drainage works, or such part thereof as is specified in the notice, unless any owner within ten days of the mailing of such notice, gives to the clerk of the municipality written notice that the owner requires a report of an engineer to be made on such proposed abandonment. R.S.O. 1990, c. D.17, s. 84 (1).
>
> **Idem**
>
> (2) The council of the initiating municipality may give notice as in subsection (1) of its intention to abandon a drainage works or such part thereof as is specified in the notice without any written request. R.S.O. 1990, c. D.17, s. 84 (2).
>
> **Engineer's report may be required**
>
> (3) If, within such period of ten days, any owner notifies the clerk, the council shall appoint an engineer to examine the drainage works and report recommendations as to the proposed abandonment, any necessary work in connection therewith, the sale of any assets, the cost of abandonment and all other appropriate matters and shall assess all costs, including the engineer's compensation, and damage allowances against persons liable to assessment in connection with the drainage works in such proportions as appear just. R.S.O. 1990, c. D.17, s. 84 (3).
>
> **Procedures on report**
>
> (4) All proceedings, including appeals, with respect to a report under subsection (1) shall be the same with necessary modifications as on a report for the construction of a drainage works. R.S.O. 1990, c. D.17, s. 84 (4).
>
> **Abandonment by council**
>
> (5) If no notice is mailed to the clerk in accordance with subsection (1) or if the engineer's report, as it may be altered on appeal, recommends the abandonment of the drainage works, the council may by by-law abandon the drainage works, and thereafter the municipality has no further obligation with respect to the drainage works. R.S.O. 1990, c. D.17, s. 84 (5).

Disbursement of remaining funds

(6) Any money remaining to the credit of the drainage works after it is abandoned shall be divided proportionately among the owners of lands and roads assessed therefore. R.S.O. 1990, c. D.17, s. 84 (6).

2.2.5 MOE 2003 SWM Manual

The basis for the SWM Planning and Facility Standards of Middlesex Centre is presently the MOE's *Stormwater Management Planning and Design Manual March 2003* (MOE 2003 SWM Manual). Should the MOE update this document, the latest version of this manual is to apply. The preface to this document describes its purpose as:

> "The "state-of-the-art" of stormwater management has been rapidly evolving and this manual is one step in this evolutionary process. The manual provides technical and procedural guidance for the planning, design, and review of stormwater management practices. It is important that the manual be viewed as a tool for understanding the performance requirements of stormwater management projects and not as a rulebook for all stormwater management solutions. The manual provides practical guidance which has been found effective in specific circumstances."

2.2.6 West Nile Virus

Recent issues such as the West Nile Virus and its potential presence in SWM facilities have been discussed in the MOE web publication *Best Practices for Reducing the Risk of West Nile Virus in Stormwater Management Ponds, March 2008*. This guidance document does not provide design based solutions which reconcile with the guidance provided in the MOE 2003 SWM Manual particularly with regard to permanent pond and safe slopes within the pond. Therefore, West Nile Virus control will need to be dealt with by active measures such as a larvicide program. It would be recommended that the SWM facility owner contact the Middlesex-London Health Unit to confirm appropriate measures required for control.

2.3 MIDDLESEX COUNTY

Since July 1, 1998, the Province of Ontario has designated County of Middlesex as the Approval Authority for Official Plans, Official Plan Amendments and Plans of Subdivision/ Condominium within the County. Applications for local municipal Official Plan Amendments are made at the local municipality and if adopted by local Council, the Official Plan Amendment is forwarded to the County for consideration. The County is a commenting agency for local Zoning By-laws, Consents, Minor Variances, and Site Plans. Local municipalities are required by regulation under the *Planning Act* to circulate planning applications to the County for comment. The *County of Middlesex Official Plan, August 2006* has as a general policy in Section 2.4.5.1:

> "The County shall:

j) Encourage local municipalities to implement suitable and economically viable methods of reducing urban storm water run off and improve its quality in the furtherance of the Resource Management policies of this Plan. "

2.4 MIDDLESEX CENTRE

The Municipality's current Official Plan is the *Official Plan of the Township of Middlesex Centre March 31, 2009*. The purpose of the Official Plan is to provide for the orderly growth and development of the Municipality, and provide guidance in the management of change. In particular, the Official Plan includes goals and policies relating to land use, agricultural and settlement areas, the classification of a natural areas system, economic, social and servicing matters. The Official Plan uses a 20 year planning horizon, from 1999 to 2019. With regard to the Official Plan, some but not necessarily all of the portions that are relevant to SWM are as follows:

- The majority of growth within the Township will be directed to Urban Settlement Areas as established in this Plan. Such areas will accommodate growth on full municipal servicing, with such growth being permitted where adequate servicing capacities are established. More limited growth will be permitted within Community Settlement Areas, subject to issues of servicing availability and other policies of this Plan (Section 1.8 (c));
- These areas (Urban Settlement Areas) either provide or have the potential to provide full municipal services. All new proposed development shall be fully serviced by municipal water and sewage disposal systems. Urban Settlement Areas are expected to have the highest concentration and intensity of land uses, and will be the focus for future growth by accommodating a significant portion of expected growth over the Official Plan's planning period (Section 5.1.1);
- The primary municipal services in the Township are water supply, sewage disposal and storm water management (Section 9.3.1 (a));
- It is the policy of this Plan that future development within settlement areas proceed on the basis of full municipal services, with partial services potentially being permitted on an interim basis where proper justification is provided (Section 9.3.1 (c));
- The Township will undertake the preparation of Community Storm Water Management Studies in settlement areas where deemed appropriate and necessary (Section 9.3.1 (d)); and
- In processing development applications, the Township and the applicants shall have regard to the principles of storm water management so that new development does not significantly increase downstream flows above existing levels or degrade water quality (Section 9.3.2 (f)); and
- (for SPA # 3 in Delaware) The lands must be graded to control storm water run-off quantity and quality in accordance with the grading plan approved by the Township.

No lot may be developed without confirmation that the creation of the lots will not prejudice future storm water management efforts of the area and depending on the scale of development, the Township may request the preparation of a Storm Water Management Study to be completed to the satisfaction of the Upper Thames River Conservation Authority prior to development preceding (Section 11 SPA # 3 (g)).

2.5 CONSERVATION AUTHORITY

2.5.1 Introduction

Figure 2.1 shows the boundaries between the various conservation authorities who have jurisdiction in Middlesex Centre. Table 2.1 summarizes which Conservation Authority has jurisdiction in each of the Urban and Community Settlement Areas in the municipality.

Table 2.1 Conservation Authority Jurisdiction

Settlement Area	Conservation Authority
Ilderton	Upper Thames River Conservation Authority (UTRCA)/ St. Clair Region Conservation Authority (SCRCA)
Kilworth	UTRCA
Komoka	UTRCA
Arva	UTRCA
Delaware	UTRCA, Lower Thames River Conservation Authority (LTRCA)

Both Ilderton and Delaware have a conservation boundary within their settlement areas hence the reason that more than one conservation authority is listed in Table 2.1. The role of the UTRCA, SCRCA and the LTRCA in the implementation of SWM occurs at two general levels: regulatory and advisory. From a regulatory perspective, the permission of the UTRCA, SCRCA and the LTRCA are required prior to undertaking certain works within their jurisdictions in accordance with:

- *Ontario Regulation 157/06 Upper Thames River Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*;
- *Ontario Regulation 171/06 St. Clair Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*; and
- *Ontario Regulation 152/06 Lower Thames River Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*.

From an advisory perspective, the UTRCA, SCRCA and the LTRCA can provide technical comments in a review capacity to local municipalities and Provincial ministries as input to

Planning Act applications and environmental assessments. Understanding the difference between these two roles, and the corresponding responsibilities both accepted by, and delegated to the UTRCA, SCRCA and the LTRCA is key to understanding their role in the review and approval process.

2.5.2 Regulatory Authority

Ontario Regulation 157/06 (O.Reg. 157/06) allows the UTRCA to prevent or restrict development in areas susceptible to flooding, erosion and other hazards, such as floodplain areas, steep slopes, wetlands and watercourses, in order to prevent the creation of new hazards or the aggravation of existing ones in their area of jurisdiction. Similarly for SCRCA and LTRCA, O.Reg. 171/06 and O.Reg. 152/06 applies respectively. Any development, a term defined to include SWM facilities and outlets, within or adjacent to such features is not permitted without the prior written permission of the Conservation Authority. Permission will only be granted if, in the opinion of the Conservation Authority, the control of flooding, erosion, dynamic beaches, pollution, or the conservation of land will not be affected by the development. In regards to SWM, a Permit is required for such activities as the construction, site grading, or any alterations associated with a SWM facility, storm sewer or outlet, including associated berming and grading if such activities occur within a Regulated Area.

2.5.3 Advisory Capacity

Conservation authorities were created by the province in order to enforce regulations made under the *Conservation Authorities Act* to prohibit filling in floodplains below the high water mark in 1946. Since inception, their role has evolved to include the provision of leadership and management, in cooperation with the community, in the maintenance and enhancement of watershed resources. In this regard, and through various formal (i.e. Memorandum of Understanding) and informal agreements, the Conservation Authorities can provide technical review comments to local municipalities in response to applications made under the Planning Act, such as subdivisions, site plans, and severances. These comments are generally based on their review of technical documents, such as SWM Plans and Environmental Impact Studies (EIS), typically submitted as part of a complete application to the municipality for circulation to the commenting agencies.

It is the responsibility of the Conservation Authority to review proposed plans and supporting documents to ensure compliance with applicable natural hazard policies, as outlined in the Provincial Policy Statement and local municipal Official Plans, as well as natural heritage policies where agreed to by the local municipality. A Conservation Authority's comments are provided within the context of its mandate as a watershed management agency in regards to ensuring that development is not affected by, nor negatively impacts on, natural hazards, natural heritage features, water quality and the interconnections between such features.

In regards to natural heritage and other environmental concerns, the Conservation Authority's review role is derived from various formal and informal agreements with area municipalities to undertake a technical review of development applications on their behalf.

In regards to natural hazards, a Conservation Authority's plan review authority has been delegated to them by the MNR through Conservation Ontario in regards to Policy 3.1 of the Provincial Policy Statement. As such, the Conservation Authority undertakes a technical review of planning applications to ensure compliance with the Provincial Policy Statement in regards to flooding, erosion, and other natural hazards either affecting or affected by the proposed development.

Conservation Authority comments are provided as technical advice for consideration by the County, who act as the decision making body (i.e. the approval authority) responsible for Planning Act applications. In regards to SWM, these comments are intended to advise the County as to whether the proposed SWM system will provide the necessary control of stormwater from the proposed development to ensure that the receiving environment will not be negatively impacted.

The Proponent should confirm with the Conservation Authority their role in the approval process and the requirements for their approval based on their role as a regulator and where they have assumed this role on behalf of other regulators through agreement.

2.6 MIDDLESEX-LONDON HEALTH UNIT

There may be instances when health related issues may arise with regard to a SWM Facility and where no definitive guidance is provided by Federal or Provincial regulations or guidelines or recognized municipal standards. In these instances the Municipality should be informed by guidance provided by the Middlesex-London Health Unit.

2.7 RISK MANAGEMENT

While SWM facilities are designed to reduce the risk of flooding and environmental impact, this is not the type of risk discussed in this section. This section is intended to address the issue of managing risk associated with the operation of a SWM facility.

Due to the nature and function of SWM facilities, there is an inherent risk in their operation. This risk is assumed by the Municipality on assumption of ownership of a SWM facility. SWM facilities will typically contain a permanent pool of water as well as areas which will have temporarily ponded water of various depths from time to time. Ponded water does pose risks to the public, especially children.

Potential incidents which may result in death, injury and/or property damage associated with SWM facilities include but are not limited to:

1. Drowning/submergence in water;
2. Falling from height;
3. Human/wildlife encounters;
4. Transmission of water borne diseases such as West Nile Virus;
5. Malfunction of facility due to vandalism or improper use;
6. Encroachment of private structures into facility; and
7. Odour and or flooding complaints.

The Municipality must determine the level of risk that it wishes to assume in the operation of SWM facilities based on balancing the following factors:

1. The requirement to maintain the core function of SWM facilities as engineered treatment facilities for stormwater;
2. The need to provide for public safety;

3. The integration of SWM facilities into open spaces and the natural environment which provides in general a net benefit to the community;

4. The climate of legal liability and the standard of care required by the Municipality to maintain a defendable level of due diligence; and

5. The cost associated to maintain the SWM facility based on balancing of risk factors.

The above factors must be reviewed and evaluated on a periodic basis to ensure that the Municipality's risk control strategies meet its corporate risk tolerance. Based on this review, the risk control strategies employed can be adjusted.

The general strategies to control risk that are available to the Municipality are:

1. To take measures to reduce the frequency of incident occurrence; and

2. To take measures to reduce the severity of an incident.

These risk control strategies should reviewed and inform both the Municipality's SWM policy and the Municipality's review of specific SWM facilities. SWM Pond design features have been identified in this document to reduce the risk of injury to children (aged1 to 8 years), while maintaining facility function. In addition to these the Proponent must consider safety features to restrain access to deep standing water through a series of spatial, physical, natural and aesthetic barriers or through alternatives to direct access.

2.8 FUTURE TRENDS

At present, most guidance documents on SWM and municipal policies in Ontario focus on the early lifecycle phases of a SWM facility those being:

1. Planning and Approvals;
2. Construction;
3. Pre-Municipal Assumption Operation;
4. Municipal Assumption; and
5. Operation.

As SWM has been introduced as a major component of urban development only in the past 25 years in Ontario, the focus on these early phases is understandable to ensure its successful implementation. However, SWM facilities age and their components and overall efficacy will deteriorate over time as to that of other infrastructure types. Therefore, Middlesex Centre should look at having policies in place to proactively address the later lifecycle phases for SWM facilities namely:

6. Facility Renewal; and
7. Facility Replacement.

An issue that will face Middlesex Centre in the long term is that the design of SWM facilities tends to promote their naturalization by native plant and animal species. In SWM facilities it is not uncommon for fish or aquatic species to have been introduced either by people or through natural processes. Plant species likewise will migrate to a SWM facility if it provides suitable habitat.

Over time, within a SWM facility increased vegetation and sediment deposition will reduce storage volume available to provide quantity control for large run off events. Efforts by the Municipality to restore the required storage volumes would typically require the SWM facility to be drained and partially reconstructed following the removal of excess vegetation and sediment. With the naturalization of SWM facilities, it would be expected that the MNR would become involved in the regulation of this practice. For example, fish which habitat the pond (provided they are not an invasive species) would have to be removed in a “fish rescue” which is a specific protocol. Likewise there may be a requirement to review the SWM facility to confirm if any locally identified protected plant or animal species are resident prior to work commencing.

Therefore, it would be in the best interest of Middlesex Centre if its SWM Policy contained initiatives to minimize the long term complexity and costs associated with SWM Facility refurbishment.

3.0 Requirements

3.1 PLANNING REQUIREMENTS

3.1.1 Proponent Responsibility

The Proponent must undertake the required process for the approval of a subdivision or site plan which requires a SWM facility and satisfy the requirements under the *Ontario Planning Act* (OPA) as well as all of those agencies having jurisdiction in the development approval process. For other projects where a SWM facility is required, the Proponent must undertake the required process for the planning and approval through the requirements of the Ontario *Environmental Assessment Act* or the Municipal Engineers Association (MEA) *Municipal Class Environmental Assessment 2007 Update* (Class EA).

Conformance to the requirements of this policy by a Proponent does not necessarily mean nor should it be construed to mean that requirements under the other mandated approval processes required by legislation or those required by other agencies and having jurisdiction have been met by the Proponent. It is the sole responsibility of the Proponent to ensure all requirements to allow for the construction and operation of a SWM facility are met prior to it being constructed.

3.1.2 Requirement for Positive Site Drainage

The Proponent for the approval of a subdivision or site plan is responsible to identify and confirm a drainage outlet for stormwater flow. All sites must have positive drainage; that is all site run off must be conveyed off site toward an acceptable outlet. Acceptance of an outlet is at the discretion of the Municipality and any other agency or party having jurisdiction over that outlet. Any stormwater conveyance system which involves any mechanical components to convey flows is not allowed to connect to the Municipality's municipal infrastructure.

3.1.3 Prohibition on Infiltration Facilities

The Municipality considers SWM facilities which rely on infiltration as their primary method of stormwater control not to be acceptable for assumption into the Municipality's municipal infrastructure. This is due to the high risk of failure of these systems due to impairment of the pervious material over time and the fact that these facilities can provide for a ready route of surface contamination to groundwater. Infiltration facilities include but are not necessarily limited to: soak away pits, infiltration trenches, wet swales, pervious pipes\catchbasins, exfiltration systems, infiltration systems, and infiltration basins.

3.1.4 Facility Sizing and Cost Apportionment

As the Municipality will own and operate SWM facilities within Middlesex Centre unless they are on private property, it is in the interest of the Municipality to minimize the number of facilities.

Therefore, Proponents need to size facilities to accommodate the ultimate urban drainage area as defined by the Municipality and to route external flows from non-urban areas through the urban stormwater conveyance system in a safe manner. With regard to the definition of an ultimate drainage area, the Municipality will typically look to define this as the upstream area from the subdivision or site plan area which are within the current settlement boundary as defined by the Official Plan and/or additional areas which have been identified as supporting future urban growth through Municipality accepted studies such as the Master Servicing Plan.

The cost for SWM facility construction including land costs are to be borne by the Proponent and in the case of multiple parties being involved it is up to them to agree to cost sharing for this undertaking amongst themselves. For larger urban drainage areas, the Municipality may at their discretion allow a SWM facility to be implemented in phases with the minimum initial phase being built for the complete drainage area of the subdivision or site plan. The Municipality will generally endorse reserves dedicated to the Proponent along future municipal right of ways in order for the Proponent to be reimbursed by future Proponents for their share of the costs of a SWM facility which has been constructed.

3.2 APPROVAL REQUIREMENTS

Each SWM facility needs to be considered within the unique context of its drainage area and the general environment. Concurrence with the requirements of the Municipality's SWM policy and the will be determined by the Municipality's Engineer, in consultation with Public Works, Parks and Recreation and Planning. The SWM Facility requirements are:

1. Ensuring compliance with all applicable municipal requirements, standards, policies and provincial legislation, thus ensuring that the life and health of the public will be adequately protected;
2. Maintaining and promoting the enhancement of urban ecosystems, including integration of SWM facilities within open space in a manner that is consistent with the Community's Natural Heritage System; and
3. Ensuring an implementation of safe, well engineered, and cost-effective stormwater management sites.

Based on Ontario Water Resources Act (OWRA) Section 53, SWM works are subject to Certificate of the Approvals for this work and must be in compliance with the MOE requirements associated with the Storm/drainage and SWM servicing works, as well as be in compliance with the Municipality's SWM design requirements as follows:

1. Permanent SWM facilities are required to be located on lands that the Proponent shall dedicate to the Municipality of Middlesex Centre.
2. Temporary SWM facilities are required to be located on lands that are dedicated to the Municipality as an easement by the Proponent to ensure that the Municipality will be

able to comply with the emergency requirements in accordance with the Environmental Protection Act and Ontario Water Resources Acts.

3. Temporary SWM facilities that become permanent SWM facilities based on the Master Plan and/or Class EA recommendations will be required to be located on lands that the Proponent shall dedicate to the Municipality of Middlesex Centre.

Designs shall have due regard for appropriate provincial legislation and the Municipality's design standards policies, and guidelines.

3.3 INNOVATIVE DESIGN

SWM Designs may incorporate innovative approaches, provided the intent of the SWM Pond requirements, goals, aims and purposes derived for public benefit are achievable. Cost effectiveness shall depend on capital, Maintenance and Operations cost requirements, as well as a cost/benefit analysis of those factors which are more difficult to define from an economic perspective (i.e. safety, environmental/social benefits). Such determination and approval of intent will be at the discretion of the Municipality's Engineer, in consultation with other Municipality staff.

3.4 PRELIMINARY SWM SUBMISSIONS

The first level of comprehensive SWM submission typically includes a Preliminary Stormwater Management Report to accompany the initial draft plan submission and various other environmental and servicing reports. This document outlines the existing hydrologic and hydraulic conditions of the area, as well as the proposed development and associated SWM concepts. It should cover all land use and SWM issues that could affect the layout of the development. The primary objective of Middlesex Centre's review includes confirmation that the proposed Plan incorporates SWM system blocks sufficiently sized to meet environmental objectives. While recognized as a "preliminary" submission, sufficient design details should be included to provide Middlesex Centre (and other review agencies) the confidence that minor design changes associated with final design will not require significant modifications to the Draft Plan. The Preliminary SWM Report should provide:

1. A summary of the Proponent's correspondence with all agencies having jurisdiction and confirmation that consultation is being undertaken including a listing of their design and approval requirements and the status of the Proponent's work in satisfying these requirements;
2. Definition of the catchment area and the ultimate urban catchment area based on consultation with the Municipality;
3. The characteristics of the existing conditions of the catchment area including physical parameters affecting hydrology or hydraulics, existing or approved development on or adjacent to the site, and the opportunities or constraints for stormwater management at the specific property within the context of the catchment;

4. A summary of those physical characteristics of greatest importance from a SWM perspective including the topography, soils, land use, and hydrogeological characteristics of the site and contributing drainage areas;
5. The characteristics of the watercourse receiver, including but not limited to aquatic habitat, local and/or regional significance, human and wildlife water use;
6. An assessment of the suitability or legality of the proposed outlet to accept drainage from the proposed development;
7. Proposed SWM design criteria pertaining to runoff water quality, quantity, and water balance based on the assessment of the receiving systems and associated agency discussions;
8. Proposed SWM design strategy including the details of Blocks set aside for infrastructure. This should include all lot level, conveyance, and end-of-pipe infrastructure components;
9. Proposed erosion and sediment control strategy reflective of the characteristics of both the development area and the anticipated runoff receiver;
10. Monitoring and maintenance plans proposed for implementation prior to, during, and after construction;
11. Confirmation of proposed ownership and maintenance obligations of all SWM infrastructure;
12. Plans and reports that are signed and sealed by a Professional Engineer having competence in the discipline of hydrology and SWM;
13. All detailed calculations, modelling, as well as any monitoring and calibration work completed in support of the proposed design, in sufficient detail to allow the replication and verification of all work. Further, any qualified person must be able to recognize and understand all of the methods, approaches, basic data, and rationale used in the calculations. Supporting analytic information should include:
    a. Assumptions and justification for the choice of hydrologic / hydraulic model employed,
    b. All hydrologic modelling parameters including rainfall data, drainage areas, impervious ratios, infiltration parameters, initial abstraction and depression storage, basin or subcatchment lag, time of concentration (TC) or inlet times, routing, etc.,
    c. With the exception of copy written or proprietary models, equations should be given for all provided calculations. Calculations are to be provided in paper and digital form. All formulae and values used by the program must be clearly identified on the paper copy,
    d. Modeling schematics for each of the pre- and post-development conditions,
    e. Calculations of the required storage volumes at SWM facilities,
    f. Stage-storage-discharge relationships of SWM facilities,

g. Summary table(s) of the proposed operating characteristics for various design events, and

h. Analysis substantiating the capacity of proposed major overland flow routes;

14. Associated plans that illustrate the pre- and post-development drainage characteristics of the subject site and adjacent lands, proposed minor and major system drainage systems, SWM facilities, maintenance access, blocks for major flow, easements, and proposed locations of at-source controls (preliminary grading plans may be required to adequately size facilities). Preliminary design plans for SWM facilities should include spot elevations at: pond outlet, pond bottom, top of berm, side slopes, and functional planting requirements;
15. A preliminary erosion and sediment control (ESC) strategy describing existing site conditions, erosion potential, downgradient risk assessment, and anticipated controls. The site layout and facility design should reflect the potential impacts of failure of control during construction, maintainability, and potential for mitigation and restoration;
16. The anticipated monitoring programs proposed to establish baseline conditions prior to construction, to ensure that ESC systems are functioning during construction, and to confirm that the SWM facilities are functioning as designed post-construction. With respect to SWM, monitoring programs should include aspects such as water quality, hydrologic operating regimes, SWM function, and ESC measures; and
17. A summary of anticipated contents of any Final SWM documents should be provided highlighting, in particular, any design components not included within the Preliminary design documentation.

3.5 FINAL SWM SUBMISSIONS

The second level of reporting provides the final design details pertaining to the drainage and SWM components of the proposed development, including information on how draft plan conditions are being met. This will outline the performance of the proposed SWM facilities, erosion and sediment control, and monitoring programs undertaken to date and anticipated. Barring large-scale changes in approach from that proposed and approved at preliminary stages, the completion of final design submissions should be relatively straightforward, largely representing an update to the designs previously completed. In this regard, final SWM submissions should include, but may not necessarily be limited to, the following:

1. A summary of the Proponent's correspondence with all agencies having jurisdiction and confirmation that consultation has been undertaken as a listing of their design and approval requirements and the status of these approvals including which approvals are outstanding;
2. Final definition of the catchment area and the ultimate urban catchment area based on consultation with the Municipality;
3. A final report detailing the proposed SWM system(s) and providing confirmation of all the items in the preliminary SWM or justification for any variance;

4. Final design calculations incorporating the results of the final grading and the minor system design;
5. Detailed engineering drawings for all elements of SWM system including grading and servicing plans, major/minor system layout, and functional planting and landscaping plans;
6. Final ESC strategy and plans;
7. Monitoring/maintenance plans must be prepared to highlight standard operating conditions and guide the site owner through anticipated maintenance requirements for all aspects of the stormwater management system. Maintenance plans must specify trigger point depths for the removal of sediment from the forebay and the permanent pool area that are set to ensure proper function of the SWM facility;
8. A landscaping plan for end of pipe treatment systems must be submitted for review prior to final approval. The MOE SWMP Design Manual identifies plantings as a feature that contributes to the proper function of stormwater management ponds. Appropriate planting within stormwater facilities also prevents the release of sediment into local creeks and tributaries by stabilizing the side slopes of the pond;
9. All plans and reports are signed and sealed by a Professional Engineer having competence in the discipline of hydrology and SWM;
10. The report should incorporate all detailed calculations, modelling, as well as any monitoring and calibration work completed in support of the proposed design, in sufficient detail to allow the replication and verification of all work. Further, any qualified person must be able to recognize and understand all of the methods, approaches, basic data, and rationale used in the calculations. Supporting analytic information should include:
    a. Assumptions and justification for the choice of hydrologic / hydraulic model employed,
    b. All hydrologic modelling parameters including rainfall data, drainage areas, impervious ratios, infiltration parameters, initial abstraction and depression storage, basin or catchment/subcatchment lag, TC or inlet times, routing, etc.,
    c. With the exception of copy written or proprietary models, equations should be given for all provided calculations. Calculations are to be provided in paper and digital form. All formulae and values used by the program must be clearly identified on the paper copy,
    d. Modeling schematics for each of the pre- and post-development conditions,
    e. Calculations of the required storage volumes at SWM facilities,
    f. Stage-storage-discharge relationships of SWM facilities,
    g. Summary table(s) of the proposed operating characteristics for various design events, and
    h. Analysis substantiating the capacity of proposed major overland flow routes;

11. Associated plans should illustrate the pre- and post-development drainage characteristics of the subject site and adjacent lands, proposed minor and major system drainage systems, SWM facilities, maintenance access, blocks for major flow, easements, and proposed locations of at-source controls (grading plans may be required to adequately size facilities). Final design plans for SWM facilities should include sufficient information to support construction efforts, and include design characteristics and elevations at pond outlet, pond bottom, top of berm, side slopes, and functional planting requirements. Plans depicting the extent of ponding or flooding associated with the greater of the 100-year or Regional storm events along major flow routes are also required;
12. A final erosion and sediment control (ESC) strategy describing existing site conditions, erosion potential, downgradient risk assessment, and anticipated E&S controls is also required. The site layout and facility design should reflect the potential impacts of failure of control during construction, maintainability, and potential for mitigation and restoration;
13. Draft Operations and Maintenance Manual developed by the Proponent's Consulting Engineer and approved by the Municipality; and
14. The Final SWM Report should also detail programs undertaken to establish baseline conditions prior to construction, ensure that ESC systems are functioning during construction, and a minimum 2 year monitoring program to be undertaken prior to assumption to confirm that the SWM facilities themselves are functioning as designed post-construction. With respect to SWM, monitoring programs should include aspects such as water quality, hydrologic operating regimes, SWM function, and ESC control measures.

4.0 Facility Design Guidelines

4.1 SWM FACILITY TYPES

Acceptable facility types are as follows for facilities which are to become part of Middlesex Centre's infrastructure:

1. Extended Detention Ponds for each drainage area;
2. Wet Ponds for each drainage area;
3. Constructed Wetlands for each drainage area; and
4. Combined facilities serving multiple drainage areas.

The characteristics of these facilities are detailed in Chapter 4 of the MOE 2003 SWM Manual in addition to the information provided in this document. The minimum drainage area which is required for a SWM facility to be owned by the Municipality is 5 hectares.

4.2 INFILL SITUATIONS AND MEASURES IN LIEU OF SWM FACILITIES

For situations with new development with drainage areas of less than 5 hectares or new development that is within an existing urban drainage area where SWM facilities do not exist, specific guidelines for design will need to be addressed in updates of this document.

4.3 DESIGN GUIDELINES

4.3.1 Introduction

A Professional Water Resources Engineer (Proponent's Consulting Engineer) is responsible for recommending all SWM modeling parameters to ensure the application of adequate engineering knowledge is applied. At the same time, the Municipality's Engineer is required to review the proposed SWM systems and selection of the SWM modeling parameters/criteria to ensure compliance with Municipality and Provincial standards, requirements and practices, and also to ensure the adequate protection of the people and properties of the Municipality of Middlesex Centre.

4.3.2 Design Requirements

4.3.2.1 General

SWM facilities (temporary and/or permanent) shall meet engineering, maintenance, safety, planning, environmental, aesthetic and economic requirements. SWM Pond requirements for private property/ developments are to generally conform to the design criteria in this policy, all to the satisfaction of the Municipality's Engineer.

4.3.2.2 References

The basis for implementing these requirements will be a design criteria that includes but is not limited to the following references:

1. *Design Manual for the Municipality of Middlesex Centre*;
2. MOE 2003 SWM Manual;
3. The SWM criteria and environmental targets for the drainage area accepted by Municipality Council;
4. Municipality of Middlesex Centre Official Plan;
5. Applicable Development Charges By-law;
6. Specific requirements as approvals for site or draft plans or stated within site control or subdivision agreements;
7. Requirements of other agencies such as the Conservation Authority having jurisdiction; and
8. All applicable municipal requirements and provincial legislation.

If two or more criterion are specified for the same design element then the most rigorous criteria is to be applied by the Proponent.

4.3.2.3 SWM Facility Inlet Pipe Design Criteria

The SWM facility inlet pipe should represent a free outlet. Therefore, the inlet pipe invert is to be above the projected 2-year storm ponding elevation. Non-compliance with this standard may create surcharge conditions within the new storm sewer system requiring additional maintenance associated with the potential sediment accumulation, as well as create potential liabilities under the Ontario Highway Act should surface ponding occur on streets. If, in rare cases, there is a need to consider deviation on the above noted design criteria, the Proponent's consulting engineer will be required to undertake an engineering analysis to demonstrate that the proposed deviation will have a minimum effect on the proposed sewer Hydraulic Grade Line and will not create an adverse effect on the system.

4.3.2.4 Specific Design Features

Facility Design Guidelines

The following are specific design features to be incorporated into all SWM Facility designs in the Municipality of Middlesex Centre:

1. A sediment forebay is incorporated to induce treatment and improve pollutant removal by trapping larger particles near the inlet of the pond, design features to include:
    a. forebay is to be 1.2-1.5m deep to minimize potential resuspension,
    b. the sediment forebay sizing must be done in accordance with the MOE's SWM Practices Planning and Design Manual, and the sediment forebay should be constructed with a maintenance access route to permit future monitoring and maintenance as well as provide access in the event of an emergency;
2. A permanent pond depth of 1.5-2.0m is preferred with a maximum facility depth not exceeding 3.0 m with a maximum 0.3 m freeboard;
3. A positive overland flow path must be provided at the 3.3m water level;
4. The permanent pool depth in wet SWM facilities must be 1.0-1.5m deep. A naturalized low flow channel with a shallow channel depth (0.3 to 0.6m preferred) leading to the area of pond drawdown is required;
5. Level gauges must be installed in the deepest part of areas where there permanent water pooling to allow for water depth measurement in order to monitor the performance of the facility;
6. SWM facility inlet sewers must be designed to enter the facility as free outlet systems during 2-year storm events;
7. For extended detention and wet facilities 5:1 side slopes or flatter, for dry facilities 4:1 side slopes or flatter, must be applied around the perimeter of the sediment forebay and upper and lower cell;
8. Slopes may vary around a facility to create a natural appearance with the preferred slopes being maximums;
9. Steeper slopes (maximum 3:1) maybe allowed to be used when these slopes are:
    a. Representing only 15-20% from the total area,
    b. Combined with a minimum buffer of 5.0m from 0.3 m above the 100 year storm event elevation to the property line; and
    c. Combined with unfriendly vegetation;
10. The 2 year storm event extended detention and storage component of wet facilities should discharge over a 24 to 48 hour period and the quality control ponds are not allowed to be located in line;
11. The permissible discharge for all facilities is based on detailed engineering analysis;
12. All maintenance holes located within stormwater management ponds require hard surface access;

13. Consideration to provide for safe access and relatively easy means for the recovery of inlet and outlet water quality samples by the facility owner;
14. Access roads below the 100 year flood line will require a turfstone surface on a granular base. The turfstone voids shall be filled with granular A;
15. Stormwater from the forebay shall be held in a permanent wet retention pond and should be located in the facilities lower cell (assuming the general main cell design reflects an overall safety criteria of gentle slopes and aquatic safety benches or suitable barriers);
16. Any SWM facility proposed to be located within Flood Plain lands are subject to:
    a. Conservation Authority guidelines and approvals,
    b. Forebays being located above the 50 year storm line with any deviation from this requirement being subject to specific technical justifications approved by the Municipality,
    c. Main facilities being located above the 25 year flood line;
17. A naturalized landscape plan, approved by the Municipality is required for all stormwater retention and detention facilities. This landscape plan should include design measures to reduce or deter Canada Geese from using the facility as habitat based on the recommended measures in the Environment Canada publication *Canada Geese and Shoreline, Seasonal techniques to deter geese* which is attached to this document (attached as Appendix 4.1 for reference);
18. Landscape plans shall conform to the required standards of Middlesex Centre;
19. Seeding of exposed sol surfaces should be done as soon as possible after fine grading is complete;
20. All landscape treatments specified in the approved plan should be installed after seed has established, but within two years of registration of a subdivision plan or development agreement;
21. Continuous 1.6 m chain link fencing is to be provided at the property line of any residential lots, schools or child care facilities which immediately abut the SWM facility;
22. Within open space and park areas in lieu of fencing, unmowed vegetated buffers will be required around the perimeter. This buffer should be comprised of tall grasses and wild flowers, followed by trees and densely planted shrubs. A densely vegetated margin on the aquatic safety bench is to serve as an aesthetic amenity and an additional natural barrier;
23. This dense unfriendly vegetation should act as a natural barrier to all but the most determined individuals. Openings can be provided if warnings are posted advising those who approach the facility of its purpose, operation and potential safety hazards;
24. Posted warning signs should be visible at emergency access points in the event that the barrier is penetrated. The standard warning sign is shown in Figure 4.1;

Figure 4.1 Standard Middlesex Centre SWM Pond Warning Sign

25. An aquatic safety bench must be constructed around the forebay and the main treatment cells with the lower edge to be located 0.9 m above the pond bottom with a minimum 2 m width and incorporate a slope of 10:1 or flatter;
26. Pedestrian and cycle paths must always be located no lower than the 10 year storm event water elevation with at least 0.9 m freeboard from the permanent pool of water and are only permitted where the safety bench is present and have adequate signage to warn the public of potential safety hazards during pond operation;
27. Access roads below the 10 year storm event water elevation are to be posted with hazard signage Paths below this point and leading to the lower portions of a facility to warn the public of potential safety hazards during pond operation;
28. The minimum buffer width (separation area between the SWM Facility and land features such as ESA, main watercourses, significant ecological features and open space,

designation, etc.), is subject to the Official Plan requirements, Provincial and Federal Acts, Policies and Requirements; and

29. Specific requirements for the protection of adjacent natural areas may be required as outlined in the relevant Environmental Impact Statement for the development.

These requirements must be applied to all SWM applications. It is recognized that in some instances, unique circumstances may arise where some requirements cannot be accommodated. In these cases, the onus is on the Proponent to demonstrate how the proposed design deviates from the requirements yet still meets the intent of this overall document. Deviations must be approved by Municipal Council.

4.3.2.5 Maintenance Hole Access

All maintenance holes located within stormwater management ponds require hard surface access. Access roads below the 100 year flood line will require a turfstone surface on a granular base. The turfstone voids shall be filled with Granular 'A '. For all other requirements refer to the *Design Manual for the Municipality of Middlesex Centre*.

4.3.2.6 Emergency Sanitary Sewer Overflow

Emergency sanitary sewer overflow (SSO) outletting upstream of the SWM facility directly to SWM Facilities is not permitted.

4.4 TECHNICAL REVIEW CRITERIA

4.4.1 SWM Facility Design Report

Stormwater conveyance systems are to be sized based upon the current requirements of the Municipality's Design Standards. SWM facilities are to be sized for flows using up to date versions of hydrological modeling software that is in common usage in the Province of Ontario by water resource engineers. Consultants may make use of available water resources management manuals and texts as a reference to aid in the selection of hydrologic modeling parameters. Any externally referenced material employed in parameter selection should be properly referenced in the SWM Report and included in the document appendices.

4.4.2 SWM Facility Sizing Parameters

4.4.2.1 Imperviousness

Impervious percentage is described by two parameters, Total Impervious Percentage (TIMP) and Directly Connected Impervious Percentage (XIMP) values. TIMP represents the ratio of area covered by an impervious surface (e.g. asphalt, concrete) to the entire area. XIMP represents the ratio of impervious area as directly connected to the conveyance system (parking lots, a portion of roof areas, driveways, or roads that contain catchbasins draining to the storm

sewer, etc.). In order to ensure that the proposed SWM volumes, land requirements and the size of the SWM block are estimated correctly, impervious percentage selection is extremely important. Table 4.1 below lists current Municipality of Middlesex Centre preferred TIMP and XIMP values based on land use. These allowable ranges for TIMP and XIMP should be applied at the conceptual/preliminary design stage to ensure sufficient land is allocated for the proposed facility. Adjustment of Impervious Percentage values at the functional/detailed design stage will always be considered and accepted, subject to the consulting engineer providing engineering calculations to justify the revision of these parameters.

Table 4.1 - Acceptable Ranges for Impervious Values

Land Use	TIMP (average range)	XIMP (average range)
Residential	55% 51% - 60%	45% 43% - 48%
Medium and High Density	70% 65% - 75%	55% 45% - 55%
Commercial/Industrial	75% - 90%	70% - 80%

For the Preliminary Stormwater Management Report TIMP and XIMP should be assigned the maximum (not average) imperviousness allowed by the Municipality. At the detail design stage, TIMP and XIMP can be assigned the "actual" imperviousness.

4.4.2.2 Determining Site Runoff

Site runoff for both pre-development and post-development conditions is determined by subtracting the predicted infiltration volume from the estimated total rainfall volume. There are multiple models and methods for determining infiltration and thus total runoff. Middlesex Centre will consider the following methods/models for determining infiltration and runoff:

1. SCS Method;
2. Horton Method; and
3. Green-Amp Method.

4.4.2.3 Initial Abstraction

Initial abstraction (I_a) represents the interception, infiltration, and surface depression storage of rainfall at the beginning of storm events. Middlesex Centre modeling values for I_a are summarized below for the following land covers:

1. Impervious 2 mm;
2. Pervious - lawns 5 mm;
3. Pervious - meadows 8 mm; and
4. Pervious - woods 10 mm.

The Municipality is concerned that facilities may potentially be undersized due to overestimation of initial abstraction values, resulting in overtopping of the facility during storm events. In order to consider any deviation from these recommend I_a values, the proposed SWM modeling will need to be tested in the field and technical data presented to confirm the suitability of the calibrated parameters. Any proposed deviation will need to be approved by the Municipality's Engineer.

4.4.2.4 Curve Number

The curve number (CN) is a parameter used to determine the extent of rainfall that infiltrates, rather than becoming surface runoff for a given type of soil. It is a measure of a watershed's hydrologic response potential and is usually selected from available government documents and handbooks that are in common usage in the Province of Ontario. Currently, the Municipality of Middlesex Centre does not have a specific table of CN values to be used in modeling practices. However, CN values must be consistent with provincial guidelines and standard water resources management practices and correspond with the specific geotechnical conditions of proposed developments. Selection of CN should be correlated with the applied Initial Abstraction (I_a). If a hydrological software model in common usage in the Province of Ontario incorporates the CN concept by a different means, this should be stated in all submissions to the Municipality.

4.4.2.5 Design Storm Selection

In the design of individual SWM Facilities, a 3–hour Chicago Rainfall Distribution should be applied or as recommended by the Conservation Authority for the subwatershed. The Chicago distribution is widely accepted as a synthetic distribution to be used in the design of urban areas. Where:

$$\text{Rainfall intensity (mm/hr)} = \frac{A}{(t+B)^C}$$

The values for A, B and C are detailed in Table 4.2.

Table 4.2 - Chicago Storm Parameters

Parameter	Return Period (years)					
	2	5	10	25	50	100
A	724.69	1330.31	1497.19	1455.00	1499.06	1499.53
B	5.500	7.938	7.188	5.000	4.188	3.297
C	0.800	0.855	0.850	0.820	0.809	0.794

4.4.2.6 250-Year, Larger Area Storms

The Proponent's consulting engineer is required to evaluate all applicable storms and is required to recommend the most appropriate on a case-by-case basis. For each problem (i.e. Flood Control, Erosion Control), a "critical" storm should be selected for design purposes.

4.4.3 Minimum Water Quality Storage Volumes

The water quality storage volumes per hectare are established in Table 3.2 of the MOE 2003 SWM Manual and consist of two components: 40m^3/ha of extended detention quality control storage (live storage) and the remaining portion represents permanent pool quality storage (dead storage). The required 40 m^3/ha of quality extended detention storage is constant and required in all cases. The remaining permanent pool component of water quality storage is dependent upon the following three factors:

1. Impervious percentage (TIMP, XIMP);
2. Protection Level of the Receiving Watercourse (as determined by the requirements of the Conservation Authority having jurisdiction); and
3. The proposed type of SWM facility (i.e. wet pond, dry pond, wetland).

Additional extended detention storage may be required for erosion control/stream morphology and attenuation control as per the requirements of the Conservation Authority having jurisdiction and/or to address lack of conveyance capacity in the outlet system. These parameters are to be established by the Proponent's Consulting Engineer all to the satisfaction of the Municipality.

4.4.4 SWM Facility Safety Factor

As discussed in Section 2 of this document, SWM facility refurbishment should be deferred as long as possible due to the adverse environmental impacts that this may have. Therefore to lengthen the service life, individual SWM facilities should be oversized by 10% with regard to treatment volume for the design storms selected in Sections 4.4.2 and 4.4.3.

5.0 Facility Construction and Operation to Assumption

5.1 FACILITY CONSTRUCTION

The Proponent must undertake all studies as detailed in the Final SWM Report to establish baseline conditions prior to construction and to the satisfaction of agencies having jurisdiction prior to construction commencing. The ESC plan for the development will be implemented prior to any construction activities being undertaken on site by the Proponent. The SWM facility will be constructed and made operational prior to the development's storm drainage system being constructed. The SWM facility is to be constructed in accordance with the approved drawings based upon the design parameters established in the Final SWM submission. Following construction and within four (4) weeks of commencement of operation, the Proponent is to provide a letter from the Professional Engineer(s) preparing the approved drawings for the SWM facility that it has been constructed in general conformance with the Final SWM submission and the approved drawings.

5.2 SWM FACILITY MAINTENANCE AND OPERATIONS MANUAL

Within four (4) weeks of commencement of operation, the Proponent is to provide a final Maintenance and Operations Manual for the facility prepared by the Proponent's Consulting Engineer. A sample table of contents and standard forms are attached as Appendix 5.1.

5.3 FACILITY OPERATION AND MONITORING (PRE-ASSUMPTION)

5.3.1 Facility Operation

Operation of the SWM facility, prior to the Municipality's assumption, shall be in compliance with the Maintenance and Operations Manual developed by the Proponent's Consulting Engineer and approved by the Municipality. During the operation of the SWM facility the Proponent is to monitor depths of sediment from the forebay and the permanent pool area that are set to ensure proper function of the SWM facility as per the approved Maintenance and Operations Manual and remove sediment immediately once these depths are met or exceeded.

5.3.2 Facility Monitoring and Reporting

Monitoring of the SWM facility prior to Municipality's assumption must:

1. Be carried out by the Proponent to demonstrate the effectiveness of the performance of these facilities in accordance with the approved design construction practices;
2. Be in compliance with the Municipality's policies and Chapter 6 of the MOE 2003 SWM Manual;
3. Be in accordance with the approved Maintenance and Operations Manual and include semi annual review and inspection of the facility;

4. Be carried out by the Proponent, prior to the Municipality's assumption at no cost to the Municipality;
5. Include all other site specific monitoring requirements as a result of an Environmental Assessment, an Environmental Impact Study or as directed by other approving agencies for the facility or development;
6. Ensure all landscape materials are to be maintained in a healthy state in accordance with the approved landscape plan until the time of assumption; and
7. Be coordinated with the ESC plan and ensure that ESC systems are functioning during and up until completion of development construction (including lot level work) to minimize stresses on the SWM facility.

5.3.3 Sediment Monitoring, Sampling and Removal

During the operation of the SWM facility the Proponent is to monitor depths of sediment from the forebay and the permanent pool area that are set to ensure proper function of the SWM facility as per the approved Maintenance and Operations Manual and remove sediment immediately once these depths occur.

To ensure the sediment sampling is representative, samples will be taken from at least two areas of the pond to form a composite sample for each test. However, if the physical characteristics of the sediment, such as colour, sheen, or texture of one area appear to be different from the other areas, this area should be analyzed separately.

The quality of the sediment must be analyzed prior to the removal to assess the proper disposal location. All sampling procedures and locations should be performed and selected by qualified technicians under the direction of the Proponent's Consulting Engineer based upon on-site conditions. Samples are to be submitted for analysis to an Accredited Laboratory. Sample recovery and handling (including use of required bottles provided by the laboratory and handling techniques) are to be in accordance with the procedures of the Accredited Laboratory. A formal chain of custody form from the Accredited Laboratory is to be maintained.

Sediment sampling and removal is to be undertaken with regards to the following:

1. Environmental Protection Act,
2. Regulations made under the Environmental Protection Act, specifically
    a. *Regulation 347 General — Waste Management*,
    b. *Regulation 153/04 Records Of Site Condition — Part XV.1 of The Environmental Protection Act*;
3. The MOE guidance document *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of The Environmental Protection Act*;
4. Any revisions and changes to the above act, regulation and guideline; and

5. Any other applicable statutes, regulation or by-law.

As a note to the Proponent, sediment removal may require dewatering prior to removal from site to meet the acceptance requirements of the receiver of the material. Following sediment removal, the SWM facility is to be restored including the replacement of all damaged and/or removed vegetation. As sediment removal typically requires heavy equipment all required ESC is to be in place prior to removal and to remain in place until all vegetation has sufficiently reestablished itself.

5.4 FACILITY ASSUMPTION

5.4.1 Assumption Timing and Process

At a threshold determined by the Municipality and most likely included in the Subdivision or Site Plan Agreement, the process of municipal assumption will commence. The threshold will typically be reached when most if not all of the construction work including lot level work has been completed. The monitoring program and all operations and maintenance will be the responsibility of the Proponent until the Municipality assumes the facility. The assumption process will include the following components:

1. Monitoring program undertaken by Proponent;
2. Interim SWM Facility Report(s) by Proponent;
3. Final SWM Facility Report by Proponent;;
4. Assumption preparation by Proponent;
5. Assumption inspection by Municipality;
6. Proponent correction of deficiencies identified in the assumption inspection;
7. Warranty period;
8. Transfer of C of A for SWM Facility to Municipality;
9. Warranty inspection by Municipality; and
10. Proponent correction of deficiencies identified in warranty inspection.

5.4.2 Monitoring Program

The Proponent is required to ensure that any other monitoring required by the specific requirements of the Subdivision or Site Plan Agreement and/or other approval agencies is carried out.

5.4.2.1 Minimum Monitoring Program

The process of assumption commences with a minimum two (2) year monitoring program to be undertaken by the Proponent prior to confirm that the SWM facility is functioning as designed. The Proponent shall ensure that competent staff is employed by their engineering consultant to undertake the required sampling program. Inlet and outlet grab samples are required to confirm that quality objectives are being met based on sampling for the following parameters:

1. Total suspended solids;
2. Nitrate;
3. Phosphorus; and
4. F1-F4 Petroleum Hydrocarbons.

Annual sampling to include:

1. One (1) spring sample (April 1 to May 15);
2. Five (5) summer samples (May 15 to September 30);
3. One (1) fall sample (October 1 to November 3); and
4. One (1) winter sample (December 1 to March 31).

Grab samples are to be taken within 90 minutes of the onset of a rainfall event and only when there is sufficient inlet and outlet flow to recover samples. Samples are to be submitted for analysis to an Accredited Laboratory. Sample recovery and handling (including use of required bottles provided by the laboratory and sampling techniques) are to be in accordance with the procedures of the Accredited Laboratory. A formal chain of custody form from the Accredited Laboratory is to be maintained.

During each sampling event accurate measurements of the pond water elevations and the discharge rate will be taken. Reporting for each sampling event will include rainfall data from the closest available Environment Canada or Conservation Authority rain gauge to corroborate the run off event with a rainfall event.

5.4.2.2 Standard of Treatment

If specific treatment standards are not set by the Municipality or other agencies having jurisdiction, the key but not necessarily the only standard by which the efficacy of a SWM facility will be judged is that it must provide for the removal of total suspended solids. Therefore, over a one year (four season) sampling period, the average reduction of inlet to outlet for suspended solids must be greater than 50%. Other parameters which are sampled are to be evaluated by the Proponent's Consulting Engineer to confirm if there are any concerns with the level of

treatment being provided or if there are point source or non-point source pollution issues which may need to be addressed in the catchment area.

5.4.3 Interim and Final SWM Facility Report

5.4.3.1 Interim Report(s)

The Proponent's engineering consultant will prepare an annual report on the SWM facility's performance within 90 days of the anniversary date of the first sample being collected as part of the assumption monitoring program and annually until the development is ready for assumption. This report will include as a minimum the following:

1. Water Quality Sampling of Facility
    a. Summary Results,
    b. Commentary on Results (explanation of variances, treatment efficacy),
    c. Attachment of Certificates of Analysis and Chains of Custody;
2. Facility Maintenance and Condition
    a. Current Condition of Facility based on latest bi-annual inspection as per the Operations and Maintenance Manual,
    b. Summary of Biannual Condition Reports since operation,
    c. Summary of Maintenance Activities to date including but not limited to:
        i. Repairs
        ii. Sediment removal,
    d. Recommended maintenance activities to be undertaken to ensure facility is in operational condition;
3. Review of all other monitoring activities undertaken required for the SWM facility required by the specific requirements of the Subdivision or Site Plan Agreement and/or other approval agencies and the status of satisfying the conditions; and
4. Summary of actions to be taken in the second year of the monitoring program
    a. Ensure water quality results meet required treatment standard,
    b. Address any noted maintenance issues,
    c. Address any noted issues from other monitoring activities,
    d. Plan and schedule for Proponent to prepare SWM facility for assumption by the Municipality.

Submission of this report does not mean that the Municipality necessarily accepts the contents. If the Municipality deems that it does not meet the level of detail required, the information is not complete nor are the action plans sufficiently detailed to fully review and assess the condition of the SWM facility, the Proponent at their own cost will be required to revise and resubmit this report.

5.4.3.2 Final Report

The Proponent's engineering consultant will prepare a final report on the SWM facility's performance within 90 days of the later of the second anniversary date of the first sample being collected as part of the assumption monitoring program or when the development is ready for assumption by the Municipality. This report will include as a minimum the following:

1. Water Quality Sampling of Facility from all previous reports
    a. Summary Results,
    b. Commentary on Results (explanation of variances, treatment efficacy),
    c. Attachment of Certificates of Analysis and Chains of Custody;
2. Facility Maintenance and Condition
    a. Current Condition of Facility based on latest bi-annual inspection as per the Operations and Maintenance Manual,
    b. Summary of Biannual Condition Reports since operation,
    c. Summary of Maintenance Activities to date including but not limited to:
        i. Repairs
        ii. Sediment removal,
    d. Recommended maintenance activities to be undertaken to ensure facility is in operational condition;
3. Review of all other monitoring activities undertaken required for the SWM facility required by the specific requirements of the Subdivision or Site Plan Agreement and/or other approval agencies and the status of satisfying the conditions; and
4. Summary of actions to be taken to allow for assumption by the Municipality including but not limited to
    a. Ensure water quality results meet required treatment standard,
    b. Address any noted maintenance issues,
    c. Address any noted issues from other monitoring activities,
    d. Update plan and schedule for Proponent to prepare SWM facility for assumption by the Municipality.

Submission of this report does not mean that the Municipality necessarily accepts the contents. If the Municipality deems that it does not meet the level of detail required, the information is not complete nor are the action plans sufficiently detailed to fully review and assess the condition of the SWM facility, the Proponent at their own cost will be required to revise and resubmit this report.

5.4.4 Preparation for Assumption

Immediately prior to assumption the Proponent will:

1. Remove all sediment deposits from the SWM facility as per Section 5.3.3;
2. Prepare and submit the Final SWM Report;

3. Restore the SWM facility to a condition where it meets all of the performance requirements set out within the Final SWM submission and the approved drawings in accordance with the Final SWM Report as reviewed and accepted by the Municipality; and
4. Undertake all maintenance to correct all deficiencies such as erosion, restoration of plantings or vegetation which has not been taken, has died or was removed as part of the sediment removal processes in accordance with the Final SWM Report as reviewed and accepted by the Municipality.

5.4.5 Assumption Inspection

The Municipality will undertake an assumption inspection of the SWM facility. The Municipality will provide a list of deficiencies that are required to be corrected by the Proponent. If the Proponent does not repair the deficiencies within 45 days of receipt of the list provided by the Municipality, at its discretion, may order the Proponent to resume the Monitoring program, update the Final SWM report and undertake the preparatory steps for assumption as detailed in Section 5.3.4.

5.4.6 Post Assumption Requirements

The Proponent will prepare, pay for and submit to the MOE on behalf of the Municipality the required C of A application and fee to have the SWM facility and all related infrastructure under the facility's C of A ownership transferred to the Municipality.

5.5 FACILITY WARRANTY PERIOD

On or about the one (1) year anniversary of the assumption of the SWM facility, the Municipality will undertake a warranty inspection of the SWM facility. The Municipality will provide a list of deficiencies that are required to be corrected by the Proponent. Any security being held by the Municipality for the warranty period of the SWM facility will not be released to the Proponent until the Municipality judges that the deficiencies have been satisfactorily repaired.

6.0 Facility Operation by Municipality

Operation of the SWM facility after the Municipality's assumption will be carried out by the Municipality and will include periodic dredging of silt deposits from the sediment forebay of the SWM pond. Removal of potentially contaminated sediments may require compliance with regulations under the Environmental Protection Act. Lawn mowing, litter removal, trail maintenance and vegetation inspection (especially where a SWM facility is part of an open space) will be subject to the Municipality's maintenance and operations budget. Specific procedures for operation may be further addressed in updates of this document.

7.0 Acknowledgements and References

7.1 ACKNOWLEDGEMENTS

In order to build on the current municipal knowledge with regard to SWM policy and to provide for efficiencies to Proponents and Consultants who work in and around Middlesex Centre, this policy document has utilized and modified portions of the City of London's *Design Specifications and Requirements Environmental and Engineering Services Department, October 2003 Updated December 2005 Chapter 6 Stormwater Management Pond Requirements*. Major areas of commonality include Sections 3.3 and 3.4 dealing with SWM submission requirements, Section 4.3 Design Guidelines and Section 4.4 Technical Review Criteria.

In order to frame the policy background with regard to SWM, this document has utilized the Ausable Bayfield Conservation Authority's *Stormwater Management Policies and Technical Guidelines*, prepared by Stantec Consulting Ltd. This document provided the basis for Section 2.1 Summary of Roles and Responsibility and Section 2.5 Conservation Authority.

7.2 REFERENCES

Ausable Bayfield Conservation Authority. *Stormwater Management Policies and Technical Guidelines, Approved by ABCA Board of Directors, June 18, 2009.*

City of Cambridge. City of Cambridge *Stormwater Management Policies and Guidelines, (Revised) May 1997.*

Environment Canada, 2009*. Canada Geese and Shorelines*.

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Government of Ontario. Regulations made under the *Conservation Authorities Act*. Latest amendment to February 1, 2010:

Ontario Regulation 157/06 Upper Thames River Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses;

Ontario Regulation 171/06 St. Clair Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses; and

Ontario Regulation 152/06 Lower Thames River Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.

Government of Ontario. Regulations made under the *Environmental Protection Act*. Latest amendment to February 1, 2010:

Ontario Regulation 347 General — Waste Management; and

Regulation 153/04 Records of Site Condition — Part XV.1 of The Environmental Protection Act

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APPENDICES

APPENDIX 4.1

Environment Canada publication

Canada Geese and Shorelines

Environment Canada | Environnement Canada

Canada Geese and Shorelines

Seasonal techniques to deter geese

Canada

Eric Dresser

Canada Geese in Southern Ontario

Canada Geese are beautiful birds and, until recent years, the sight of a flock carving a V in the spring sky was a welcome one for everyone. But geese that breed in temperate regions, such as southern Ontario, have become unwelcome residents of some lakeside properties.

Conflicts between people and Canada Geese arise when landowners are unable to deter the birds from taking up residence each spring. Once geese have nested successfully, their numbers tend to increase in future years.

Groups of the large birds feeding on the property may be simply inconvenient, or people may be concerned about feeding damage and an abundance of bird droppings. If landowners object to the presence of the birds, the best approach is timely, seasonal deterrence to discourage geese from settling on the property.

Eric Dresser

Timing is everything

There is no one solution to discourage Canada Geese. However, timely and careful attention to deterrent techniques may be enough to encourage geese to nest and feed elsewhere. Take the time to identify potential nesting and rearing sites on the property, and prepare to discourage the birds as soon as they arrive – as early as February. Monitor potential sites for newly arriving birds and act immediately. The birds are extremely reluctant to move on once they have begun moulting their flight feathers, in early June.

In the long term, attractive nesting and rearing habitat will continue to draw geese each year. Habitat modification may be necessary, along with seasonal deterrence, to discourage the geese more effectively over time.

If geese successfully establish a nest, do not destroy it. It is illegal to do so, and the geese will very likely rebuild another nearby.

Ian Parsons, Canadian Wildlife Service

Arrival		*Rearing-Moulting*		*Fall Migration*
February / March	Mid March to early May	Early May to late July	Late July to mid November	Mid November to December
	Breeding-Nesting		*Foraging flights*	

Sub-arctic breeding Canada Geese breed and raise their young in remote northern locations, stopping in southern Ontario to rest and feed during spring and fall migrations. These geese migrate between summer breeding grounds in the muskeg and tundra regions of northern Canada and their wintering areas in the United States.

Temperate-breeding Canada Geese live and breed in southern Ontario. Some may move south to the eastern United States for the winter period if snow and ice cover their feeding and roosting areas. Many remain year-round in southern Ontario. The expanding population and range of temperate-breeding geese have led to increased conflicts with people, particularly near water bodies.

Canada Geese: Protected by law

The Canada Goose is a migratory bird, protected under Canadian law by the *Migratory Birds Convention Act.* The Canadian Wildlife Service, part of Environment Canada, manages wildlife matters that are the responsibility of the federal government, including protection and management of migratory birds.

It is illegal to disturb, damage or destroy the nest or eggs of Canada Geese. However, special permits may be obtained from the Canadian Wildlife Service to use acceptable deterrent techniques. To request a permit, contact the Permits Officer at (905) 336-4464.

Seasonal deterrent techniques

Reduce the attractiveness of the site for breeding Canada Geese. Grassy expanses near water provide ideal goose habitat. Canada Geese are grazers and eat mainly short grasses such as those found in lawns, parks and golf courses. Geese also prefer good visibility to detect predators. They feed in open areas with clear flight access to ponds, lakes or marshes. Adjacent docks, beaches and yards provide secure places for preening and loafing.

• Modify the grass

It's a fact: Canada Geese prefer manicured lawns. Let the grass adjacent to the water body grow a little longer or plant coarse, tall grasses that are less appealing to geese.

• Obstruct the shoreline

Maintain an unmowed shoreline buffer of grasses, shrubs and wildflowers. Obstruct bird access to the shoreline with low fences or rock walls. Natural barriers include trees, densely spaced brush, hedge or shrubbery near the shorelines of lakes, ponds, wetlands and streams.

• Discourage nesting with "scare" techniques

Disturb the birds as soon as they arrive to deter them from settling on the property. Short-term techniques include noisemakers, strobe lights, recorded distress calls, and the use of trained dogs. Combine techniques (e.g., noise and light) and vary the sequence continuously or the birds will quickly adapt to the disturbance. Landowners may wish to consult with a wildlife professional about new technologies.

• Obtain a permit to discharge a firearm

A permit from the Canadian Wildlife Service is required for this technique. Where bylaws allow, permits may be issued authorizing the use of a firearm as a noisemaker to disturb the geese. The applicant must demonstrate that other techniques were tried without success.

• Obtain a permit to sterilize eggs

A permit from the Canadian Wildlife Service is required for this technique. If the birds have nested, use this technique within 10 days after the last egg is laid. Sterilize the eggs by coating them with non-toxic vegetable or mineral oil. Or addle (shake) the eggs to destroy the developing embryo. The goose will continue to incubate her eggs beyond the normal hatching date and will not re-nest.

• Erect temporary barriers

Keep broods (adults with goslings) away from designated areas with temporary barriers. Low fences marked with "Birdscare-Flash-Tape", fluttering strands of shiny Mylar tape, or other highly visible material can repel geese. Place the barrier at goose and gosling height between the water and the area to be protected. Adults can fly over the barrier but goslings will not follow – and the adults will not leave their goslings behind.

Report Leg Bands 1-800-327-BAND

Please call to report bird band numbers. The Canadian Wildlife Service bands more than 3,000 geese each year in southern Ontario. Band reports support decisions in monitoring and managing bird populations.

Population management

The Canadian Wildlife Service estimates that there are more than 400,000 temperate-breeding Canada Geese in Ontario today, far more than would have occurred without human interference. In some areas, the expanding goose population can bring about conflicts, mess and damage for community parks, recreational or agricultural properties, and lakeside homes and cottages.

Eric Dresser

The Canadian Wildlife Service employs various measures to manage the population:

- *periodic surveys* to monitor the population size and range;
- *leg banding* to track individual survival, movements and number harvested;
- *advice and permits* to landowners to mitigate conflicts with Canada Geese;
- *hunting regulations* to provide harvest opportunities and limit population growth.

Walter B. Fechner

Understanding Canada Geese

A brief history

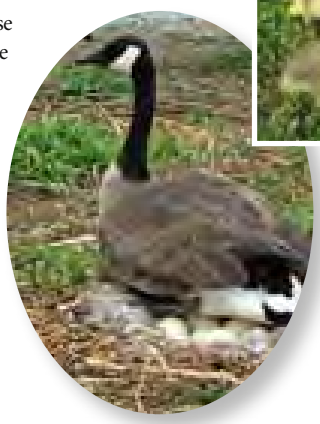
Accounts by seventeenth century explorers show that Canada Geese were part of the area's original fauna and were very abundant in the extreme southwest, where prairie and wetlands covered hundreds of square kilometres. Settlers in the late eighteenth century cleared most forests in southern Ontario – improving goose habitat – and local wildlife was hunted to support growing families. Unrestricted harvests drastically reduced goose populations and, by the turn of the twentieth century, Canada Geese had disappeared from nearly all of their former breeding range within southern Ontario.

In the late 1960s and early 1970s, the Ontario Ministry of Natural Resources and local conservationists reintroduced Canada Geese to southern Ontario. A combination of factors contributed to the success of this effort. Manicured parks, lawns, golf courses, and agricultural crops flanked by ponds or watercourses provided ideal breeding habitat. Few predators remained in the region. In addition, geese are remarkably adaptable. Geese have been reported nesting in trees, roadside ditches, adjacent to swimming pools, and even on flat rooftops.

Biology basics

Breeding: Most pairs of Canada Geese mate for life, but a new mate will be selected if one dies. Canada Geese usually breed for the first time in their third year. Many live longer than 10 years and some as long as 25 years. Pairs seek nesting sites during the first warm days of February. By mid to late March, most pairs have a well-established breeding territory and begin laying clutches of two to eight eggs.

Nesting: By mid-April, most female geese are sitting on their nests. Preferred sites are near water, such as small islands, and the shorelines of ponds and wetlands. While nesting, geese may become aggressive toward people or their pets in defence of the nest. If the nest is destroyed, geese may attempt to re-nest nearby.



The Giant Canada Goose is the most common sub-species of Canada Geese breeding in rural southern Ontario.

Walter B. Fechner

Rearing: Conflicts between landowners and geese often occur in late spring and early summer when the geese are raising their young and feeding heavily. Peak hatching occurs in May. Rearing a brood requires more security and accessible food so adult pairs often move goslings some distance. High quality sites may attract several family groups.

Moulting: A few weeks after the goslings hatch, adult geese moult their wing feathers, leaving them flightless for up to six weeks. During this period, the adults are vulnerable and highly reluctant to leave the rearing-moulting area. By mid-July, many goslings and adults can fly. By the end of July, most geese move to roosting areas on larger bodies of water, from which they fly daily to feed. If the rearing-moulting area provides food, water and security, some family groups may remain until early September.

Fall migration: Temperate-breeding geese are joined in fall by sub-arctic breeding geese as they migrate. The length of stay for northern migrants depends on weather, food availability, and local hunting pressure. Peak numbers usually occur in mid to late October. By early December, the majority of sub-arctic breeding geese have flown south. If winter conditions occur in early to mid December, many temperate breeding geese also move south to the United States, some as far as Tennessee.

Glenn Barrett, Canadian Wildlife Service

Contact the **Canadian Wildlife Service**

By telephone:
London: (519) 472-1406 Nepean: (613) 952-2405

By fax:
London: (519) 472-3062 Nepean: (613) 952-9027

By e-mail:
Wildlife.Ontario@ec.gc.ca

To request a permit, contact the Permits Officer at (905) 336-4464.

www.on.ec.gc.ca/wildlife

CW66-255/2006
0-662-69586-0

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APPENDIX 5.1

Sample Table of Contents
and standard forms for
SWM Maintenance
and Operations Manual

Table of Contents

List of Attached Forms

FACILITY REVIEW FORM 1

Review Date: _____ By: _____
(name)

of: _____

Reason for Review: Regular Semi-Annual: _____ Other: _____

If other, provide brief description reason for review: _____

_____

ITEMS OF REVIEW

.1 Water detention area bottom: Description of detention area condition. Take photographs.

_____

_____

Number of photographs taken: _____

.2 Ground Cover: Condition of vegetation. Take Photographs

Mostly grass: _____

Weeds: _____ Bullrushes: _____ Shrubs: _____

Other: _____

Vegetation appears healthy: Yes _____ No _____ If no:

Lack of irrigation: _____ No _____ Other: _____

Number of photographs taken: _____

.3 Facility Safety Measures (signs, fencing, berming, safety benching, plantins): Description of conditions of safety measures. Is any use being made of facility other than for treatment (fishing, skating in winter, etc.). Are any additional measures required to discourage use other than for treatment? Take photographs.

_____

_____

_____

_____

Number of photographs taken: _____

.4 Wildlife issues (Canada Geese, mosquitoes, etc.). Description issues. Is there evidence that wildlife is impacting facility function or overall safety? What measures are required to mitigate if any? Take photographs.

_____

_____

Number of photographs taken: _____

.5 Access roads. Description of access road conditions. Take photographs.

_____

_____

Number of photographs taken: _____

.6 Outlet Structure: Description of condition. Describe any faults with outlet structures. Take photographs.

_____

_____

Number of photographs taken: _____

.7 Berm and Overflow Weirs. Description of conditions. Describe any evidence of erosion. Take photographs.

_____

_____

Number of photographs taken: _____

.8 Depth of sediment. Describe each area where depth taken.

Inlet Sediment Forebay: _____ Depth: _____ cm

.9 Exfiltration Berm/Inlet structure. Description of condition. Take photographs.

_____

_____

Number of photographs taken: _____

.10 Downstream erosion. Description of condition. Take photographs.

_____

_____

Number of photographs taken: _____

MAINTENANCE LOG FORM 2

FROM _____ TO _____

	Litter Removed	Channel Cleaning	Concrete Repairs	Grate/Rails Repairs	Inspection Report *	Sediment Removed **
Date:						
Initial:						
Date:						
Initial:						
Date:						
Initial:						
Date:						
Initial:						
Date:						
Initial:						
Date:						
Initial:						
Date:						
Initial:						
Date:						
Initial:						

* Complete Facility Report Form 1

** Complete Sediment Removal Form 3

NOTES: _____

FACILITY PERFORMANCE FORM 3

Date: _____

Name: _____

Time	Water Level (m)	Surface Area (m^2)	Volume Exfiltrated (m^3)	Exfiltration Rate (m^3 / s)

COMMENTS: _____

SEDIMENT REMOVAL FORM 4

Date: _____ Removed by: _____

Description of precautions taken to prevent effluent fouling during removal of sedimentation:

_____

_____

_____

_____

Volume of sediment removed: _____ m^3

Samples Taken: _____ yes; _____ no

Analyzed by: _____

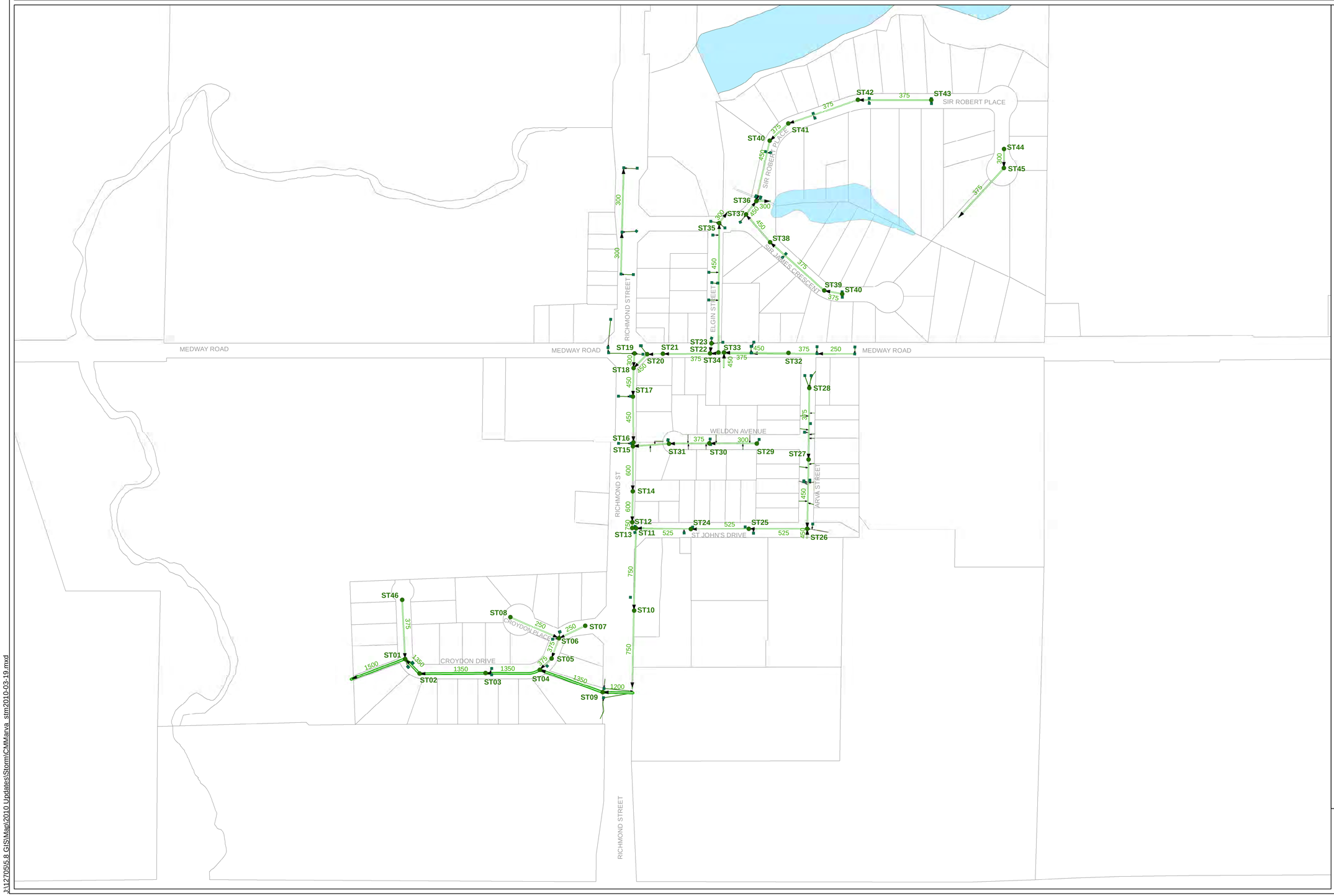
Results: _____

Sediment disposed at: _____

_____

Appendix 7.2:
Stormwater Management Network Maps

Arva Stormwater System



Municipality of Middlesex Centre

Legend

- 450 — 250mm Through 750mm
- 1200 — 1200mm Through 1500mm
- Lateral Service Connection
- ST10 — Maintenance Hole
- Catch Basin
- Pond
- Parcel

0 150 300

Metres

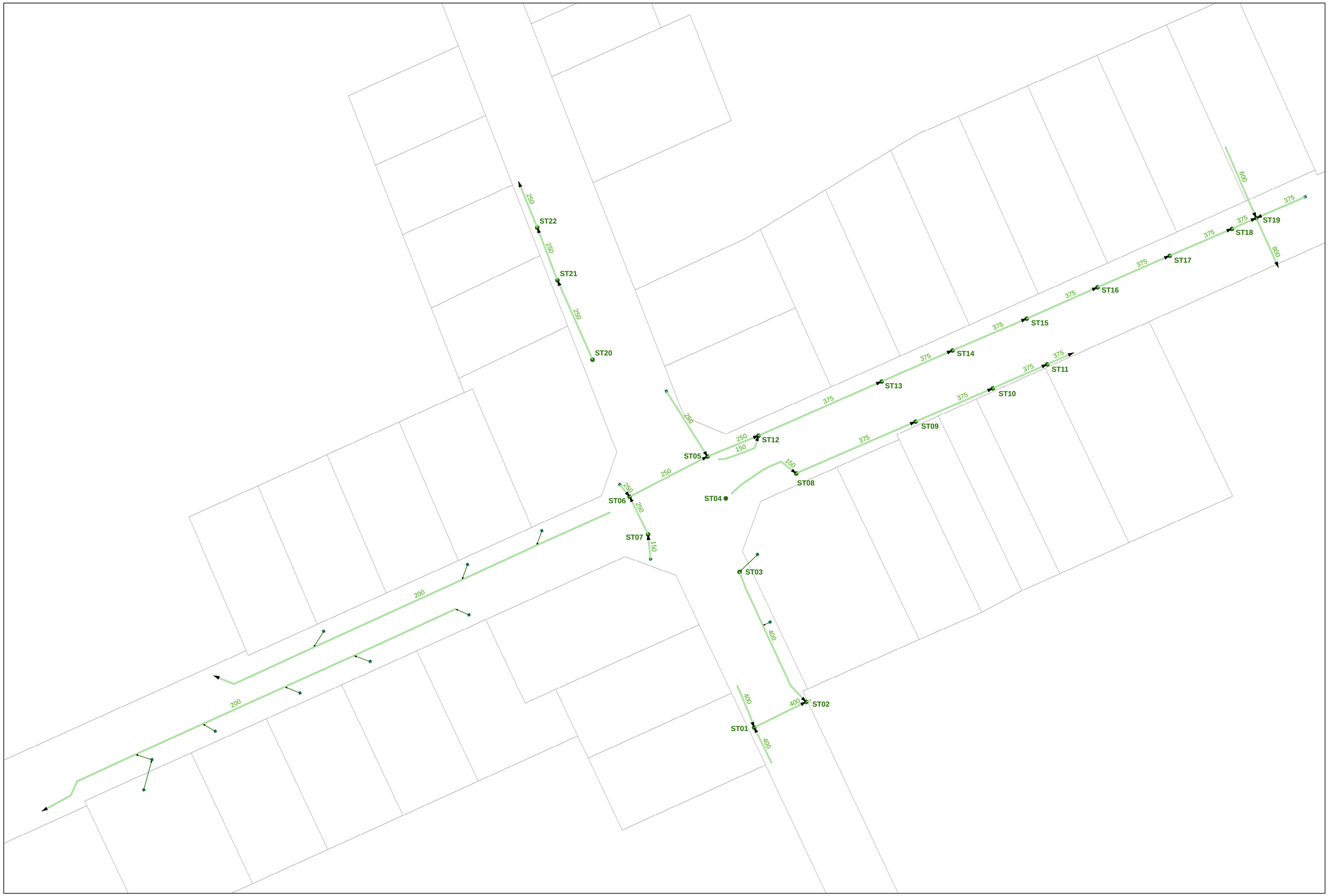
(22X34 Layout) 1:2,500

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

J:\112705\5.GIS\Map\2010 Updates\Storm\CMMarva_stm2010-03-19.mxd

Ballymote Stormwater System



Municipality of Middlesex Centre

Legend

- 150 — 150mm Through 800mm
- Lateral Service Connection
- ST17 — Maintenance Hole
- Catch Basin
- Parcel

0 35 70
Metres

(22X34 Layout) 1:750

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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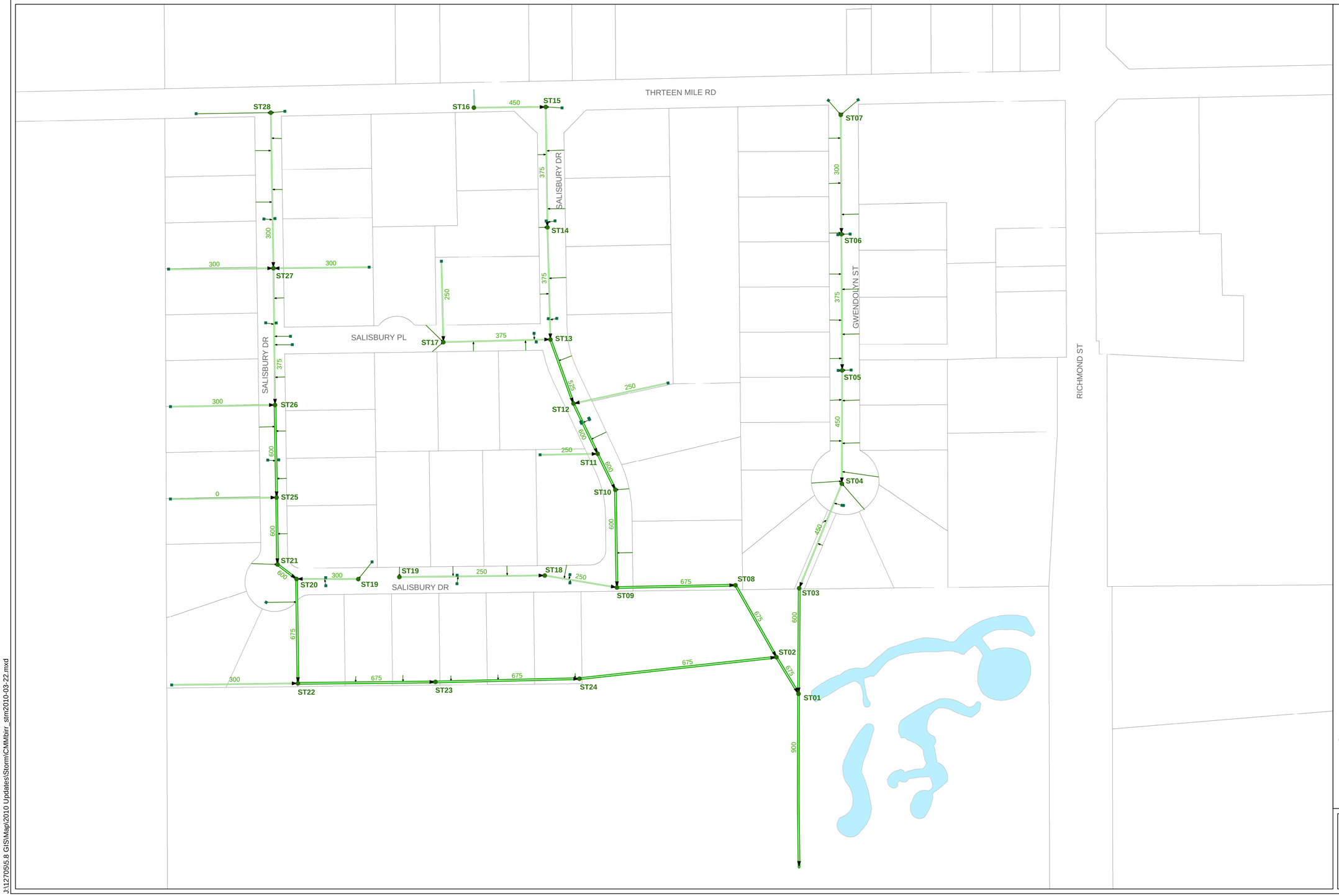
Birr Stormwater System



Municipality of Middlesex Centre

Legend

- 450 — 250mm Through 450mm
- 675 — 525mm Through 900mm
- Lateral Service Connection
- ST17 — Maintenance Hole
- Catch Basin
- Pond
- Parcel

0 75 150

Metres

(22X34 Layout) 1:1,250

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

J:\127055.8 GIS\Map\2010 Updates\Storm\CMMbirr_stm2010-03-22.mxd

Delaware Stormwater System

Municipality of Middlesex Centre

Legend

- 200 — 150mm Through 200mm
- 450 — 250mm Through 450mm
- 525 — 525mm Through 750mm
- Lateral Service Connection
- ST51 — Maintenance Hole
- Catch Basin
- Parcel

0 150 300 Metres

(22X34 Layout) 1:3,500

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

J:\12705\5.8 GIS\Map\2010 Updates\Storm\CMMdelaware_stm2010-03-22.mxd

Denfield Stormwater System

Municipality of Middlesex Centre

Legend

- 375mm Through 450mm
- 525 mm Through 900mm
- Lateral Service Connection
- ST02 Maintenance Hole
- Catch Basin
- Parcel

0 75 150 Metres

(22X34 Layout) 1:1,250

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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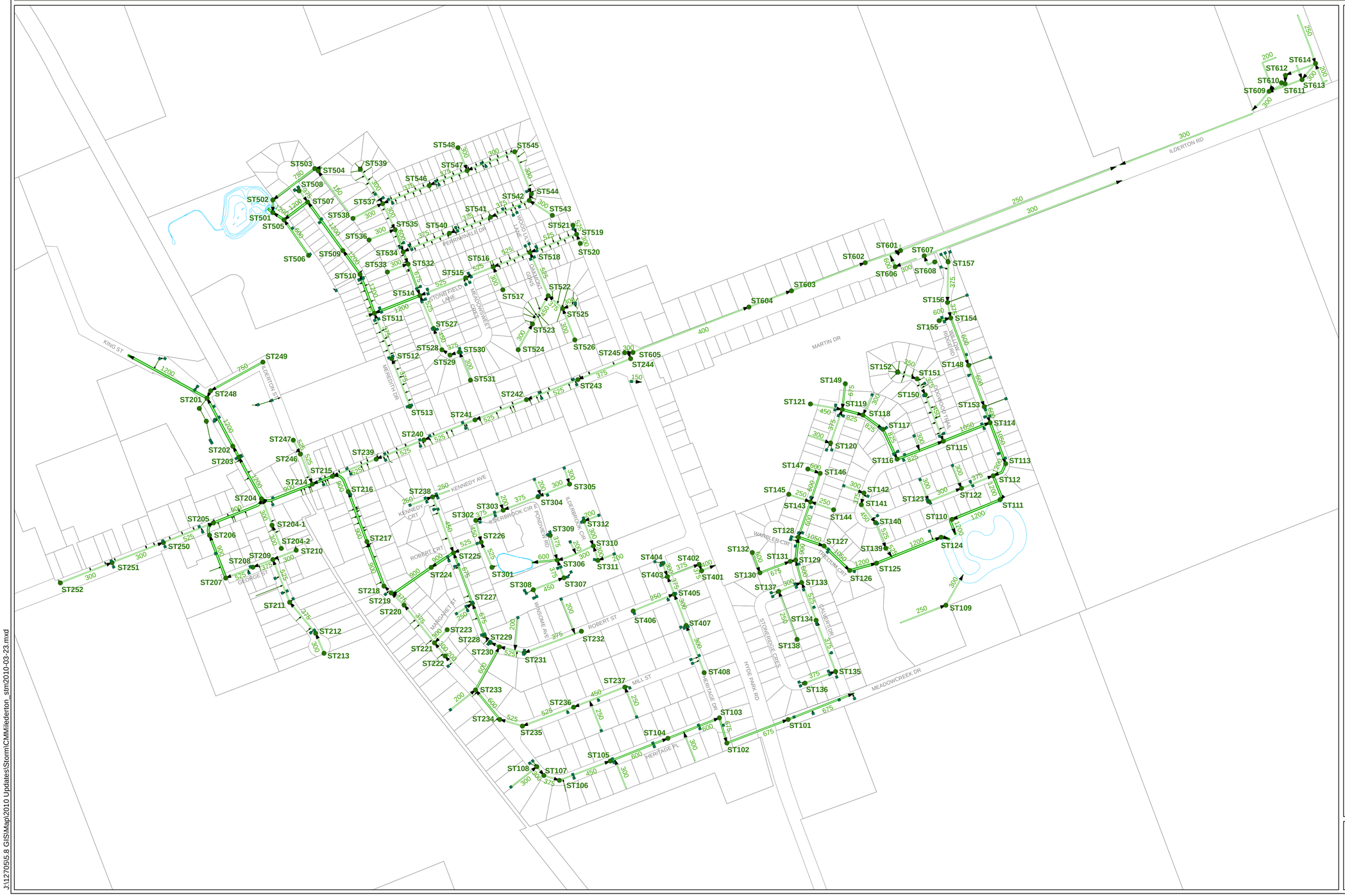
Ilderton Stormwater System



Municipality of Middlesex Centre

LEGEND

- 300 — 150mm Through 300mm
- 525 — 350mm Through 525mm
- 600 — 600mm Through 750mm
- 1200 — 900mm Through 1200mm
- Lateral Service Connection
- ST142 — Maintenance Hole
- Catch Basin
- Stormwater Management Pond
- Parcels

1:3,500 (22" X 34")

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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Kilworth Stormwater System

Municipality of Middlesex Centre

LEGEND

- 250 → 250mm Through 450mm
- 525 → 525mm Through 750mm
- 825 → 825 Through 975mm
- 1350 → 1350mm Through 1500mm
- Lateral Service Connection
- ST129 Maintenance Hole
- Catch Basin
- Stormwater Management Pond
- Parcels

0 75 150 300 Metres

1:3,000

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Revision Date: March 31, 2010

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Komoka Stormwater System

Municipality of Middlesex Centre

LEGEND

- 150 → 150mm Through 300mm
- 350 → 350mm Through 525mm
- 600 → 600 Through 750mm
- 900 → 900mm Through 1200mm
- Lateral Service Connection
- Ko-56 Maintenance Hole
- Catch Basin
- Parcels

0 100 200 400 Metres

1:3,500 (22" X 34")

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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Melrose Stormwater System

Municipality of Middlesex Centre

Legend

- 450 — 300mm Through 675mm
- 400 — 250mm, 400mm, and 1050mm Municipal Drain
- Lateral Service Connection
- ST14 — Maintenance Hole
- Catch Basin
- Stormwater Management Pond
- Parcel

0 75 150
Metres

(22X34 Layout) 1:1,250

Drawn by: JG (IBI Group)
Revision Date: March 31, 2010

IBI GROUP

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Appendix 8.1:
Transportation Assessment Technical Memorandum

Middlesex Centre Master Servicing Plan
Technical Memorandum – Transportation Assessment

Technical Memorandum –
Transportation Assessment

April 2010

Table of Contents

1.0 Introduction

1.1 BACKGROUND

The purpose of the transportation component of the Master Servicing Plan (MSP) is to determine the long-term (20-year) needs of the transportation network, including roads and bridges. The transportation review will identify strategies to accommodate anticipated growth and related policies required to support these strategies.

The transportation review components include:

- Network Analysis;
- Transportation Master Plan (including Needs Analysis, Transportation Recommendations, Alternative Modes); and
- Policy Development (including traffic management measures, noise, accessibility, integration of capital planning).

The Transportation Assessment is a comprehensive, long-range planning review that will guide transportation system decision-making over the next 20-years to meet the objectives of the long term community vision while supporting local municipal growth management strategies and Official Plan.

It will help set the direction for transportation infrastructure capital programs and provide a basis for budget planning. The plan will provide a balance between current and future transportation standards and needs, as well as between public safety, the environment, business needs and aesthetic considerations.

The Transportation Assessment has been undertaken to reflect the social, environmental and economic realities and encompasses a range of issues, as follows:

- Identify transportation network strengths, weaknesses, needs, and if necessary alternatives and constraints
- Identify alternatives to improve traffic flow through and around urban areas as/if necessary (including truck traffic considerations)
- Enhance transportation links to isolated parts of the Municipality
- Identify congestion problems and recommending alternatives

- Identify the need for improvements alternatives for active modes of transportation (pedestrian and cycling), including policy/practice requirements

- Identify the potential need for Park n' Ride locations to connect to London transit system

- Confirm policy and service needs to protect communities from unacceptable traffic noise levels; protect transportation corridors through access management; recommend safety improvements to mitigate locations with potentially high risk

- Develop performance and roadway standards that balance safety and service

- Ensure design considerations/standards accommodate all road users (active modes; farm/agricultural vehicles and equipment)

1.2 OBJECTIVES

The Transportation Assessment:

- Provides a context for how best to utilize transportation resources;

- Gives direction on what policies, services and infrastructure should be implemented to address community values, desires and mobility needs in an effective and responsible manner;

- Recognizes that the Municipality is a vital economic centre within Southwestern Ontario, with unique transportation challenges of significance to the entire area;

- Reflects the rural and urban character of the Municipality, and its high quality of life;

- Recognizes the importance of the transportation network to the economic competitiveness of the Municipality;

- Considers how community values, emerging trends, environmental considerations, financial constraints and other societal trends have changed the public's focus on transportation; and

- Provides a framework, from a transportation perspective, for the establishment of an economically sustainable and environmentally respectful growth management strategy, which supports the growth objectives articulated in the Municipality's Official Plan.

1.3 APPROACH

The general approach to the assessment is as follows:

- Assessment of Existing Conditions

    - Preliminary assessment of key transportation issues;

- Identify existing travel demands and infrastructure deficiencies;
    - Identify travel patterns;
    - Peak hours; and
    - Link deficiencies.
- Identify level of development that can be accommodated without enhancements or improvements (reserve capacity);
- Prepare evaluation criteria to qualitatively and quantitatively assess role and function of infrastructure. Develop road classification system and define standards; and
- Complete review of existing rail, commercial goods route, transit, cycling, and pedestrian infrastructure that serves, or has the capability to serve, the needs of the community and how they might serve a role in reducing auto demands.

The existing conditions assessment must recognize the location and role of roadways relative to adjacent municipalities, i.e. access to/from London and the jurisdictional hierarchy of area roads.

- Assessment of Future Conditions
    - Identify future (20 year) travel demands;
    - Assess ability of existing infrastructure to serve demands;
    - Identify deficiencies in network;
        - Changes in travel patterns; and
        - Need for improvements.
    - Identify opportunities at a strategic level;
    - Assess transportation service options, from a rural and urban context; and
    - Develop short-, medium- and long-term solutions required to serve growth strategy that is balanced and can be staged.

2.0 Description of Existing Transportation System

2.1 OVERVIEW OF TRANSPORTATION INFRASTRUCTURE

2.1.1 Existing Road Network

One of the elements in achieving a strategic transportation direction for the Municipality is to balance all modes of transportation within designated corridors and right-of-ways. Roads have a variety of functions, ranging from the provision of direct access to adjoining properties to the provision of facilities for long distance trips.

Roadways within the Municipality can be classified based on the amounts of traffic they carry or service they provide. There are three primary roadway classifications: local, collector, and arterial.

Local Roads: The primary function of these roads is to provide direct access to adjacent lands and provide for on-street parking. Through vehicular movements are discouraged by the design and traffic control measures.

Collector Roads: These roads are intended to serve both through and land-access functions in relatively equal proportions. Collector roads are subdivided into urban and rural categories.

Arterial Roads: These roads primarily provide service for through-traffic movement. Although some land-access service may be accommodated off arterial roads, it is clearly a minor function. Roadway design and traffic controls are intended to provide efficient through movement. Arterial roads are subdivided into urban and rural categories

2.1.2 Transit Services

Conventional and accessible public transit services are not presently offered within Middlesex Centre. Conventional transit service is provided to the municipal boundary by London Transit but there are no formal linkages to the system.

2.1.3 Active Transportation (Walking and Cycling)

The term Active Transportation (and Recreation) could be described as any form of human-powered, non-motorized travel using on-road and off-road infrastructure. These forms generally include cycling, walking, jogging, in-line skating, skateboarding, riding manual wheelchairs, cross-country skiing, snowshoeing and horseback riding. Some jurisdictions (i.e. Northern Ontario) may assume a broader definition of Active Transportation to include certain motorized vehicles such as All-Terrain Vehicles (ATV's) and snow mobiles.

The purpose of the Active Transportation component is therefore to guide the implementation of active transportation infrastructure that would improve the mobility for pedestrians and cyclists

and would contribute to the overall quality of life in Middlesex Centre. Developing an integrated on-road and off-road pedestrian and bicycling infrastructure plan with associated policies and design guidelines is therefore required.

2.1.4 Commercial Vehicles

Trucks are a significant component of the transportation system and the local economy. Middlesex Centre is the northern and western gateway to the City of London and a conduit for access to Highway 402 and Highway 401. The Municipality's location between London and Sarnia, and London and Stratford contributes to:

- Truck related issues through communities;
- The importance of identifying reasonable truck routes; and
- The importance of maintaining a hierarchy of roadway classifications.

While truck traffic is important for the movement of goods within the urban and rural communities it must be recognized that increasing volumes of truck traffic can also negatively impact the adjacent community in terms of:

- Traffic operations (ease of traffic movements);
- Traffic noise; and
- Traffic safety (requiring higher design standards).

Few restrictions currently exist within the Municipality for the movement of truck traffic. Accommodating truck traffic within the roadway network along the highway and arterial links helps to limit their impacts upon local residential neighbourhoods.

Access to individual industrial and commercial properties can suitably be provided by designated collector roadways. The Municipality is currently utilizing permissive truck routing signage to encourage the use of appropriate roadways.

Identified transportation and safety issues related to truck traffic within the Municipality include:

- Operational problems resulting from the mix of vehicles (transports, tractors, combines, etc.);
- Impacts of truck traffic being directed through the community centres;
- Increasing volumes of truck traffic;
- Agricultural / farm transportation (including, but not limited to tractors, combines, grain trucks, etc.); and

- Slower moving truck traffic and limited opportunities to pass is perceived to create delays on Highway 4 and other arterial roads.

2.2 EXISTING TRANSPORTATION CONDITIONS

2.2.1 Road Network

The road network within Middlesex Centre comprises of freeway, rural highway, arterial, collector and local roads. Not all of these roadways fall under the jurisdiction of the Municipality. Freeway links fall under the jurisdiction of the Province while many of the major arterials fall under the jurisdiction of the County. However, it is important to understand the vital role that these facilities play in the quality of life and level of service experienced by residents of the Municipality.

Traffic data was obtained from the County of Middlesex and MTO for their road network in the Municipality. The MTO data was recorded in 2004, the City of London data was recorded for 2002, while the County data ranged from 2002-2009 (2002-2004 Road Needs Study; 2007 traffic counts, 2009 Roads Needs Study).

The existing traffic volumes on key road sections within Middlesex Centre (under the jurisdiction of others) are as follows:

- Highway 401: The Annual Average Daily Traffic (AADT) is 28,000 to 30,000 on Highway 401 west of Highway 402
- Highway 402: The AADT is approximately 20,000 to 25,000 on Highway 402 west of Highway 401
- Highway 4 (Richmond Street): The AADT ranges from 7,900 to 12,900
- Highway 7/County Road 7 (Elginfield Road): The AADT ranges from 5,000 to 6,500
- County Road 14 (Glendon Road): The AADT is approximately 7,100
- County Road 16 (Ilderton Road) : The AADT ranges from 250 to 3,900
- County Road 17 (Nairn Road) : The AADT is approximately 3,100
- County Road 20 (Denfield Road) : The AADT is approximately 2,500
- County Road 22 (Egremont Drive) : The AADT is approximately 7,700
- County Road 23 (Highbury Avenue) : The AADT ranges from 9,000 to 9,500
- County Road 28 (Medway Road) : The AADT ranges from 1,500 to 6,300

- County Road 38 (Vanneck Road) : The AADT is approximately 1,500
- County Road 38 (Littlewood Drive) : The AADT ranges from 1,500 to 2,500
- Hyde Park Road: The AADT ranges from 2,500 to 5,700

Apart from the volumes of the 400 series highway volumes, these volumes are typical of 2 lane, arterial roadways with good levels of service (well within capacity thresholds).

2.2.2 Transportation System Performance

Screenlines are imaginary lines drawn in as east-west and north-south directions cutting various north-south and east-west roads respectively, for analysis purposes. **Figure 1** shows the screenlines used for the analysis of existing and horizon year traffic forecasts.

A strategic assessment of the corridor and facility performance was conducted by assessing critical screenline locations throughout the Municipality to identify capacity deficiencies. The traffic forecasting and travel demand analysis is structured to provide sufficient detail to define the future need for major transportation corridor improvements within the Middlesex Centre.

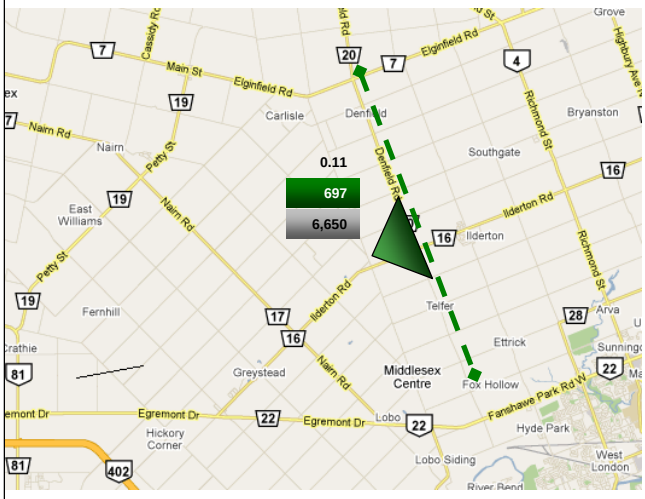
In the case of link volumes, a level of service (LOS) is assigned on the basis of volume to capacity (v/c) ratios (the volume of traffic versus the ability of the roadway to accommodate traffic flow). The v/c ratio provides a measure of traffic volume demand to the available capacity, with a capacity condition represented by a v/c ratio of 1.0 (i.e. volume equals capacity).

The capacity of a link is dependant on the prevailing speed, the number of lanes to serve demand, and the role and function of the roadway. The more side street access, driveway access and intersection of roadways, the less effective capacity is available on the roadway. The relationship between LOS and v/c ratio is defined in **Table 1**.

Table 1: Level of Service Definitions

Level of Service	V/C Ratio	Flow Type	Service Description
A	< 0.59	Free Flow	Uncongested
B	0.60 to 0.69	Stable Flow	Low potential for congestion
C	0.70 to 0.79	Stable Flow	Moderate potential for congestion
D	0.80 to 0.89	Unstable Flow	High potential for congestion
E	0.90 to 0.99	Capacity	Congested
F	>1.0	Forced Flow	Congested with high potential for diversion in network that results in system wide failure

Screenline Key Map



Level of Service Good
V/C <0.70
Required Action: *Consider minor physical and/or operational improvements to roadway intersections*

Level of Service Unstable
V/C = 0.70 – 89
Required Action: *Implement minor physical and/or operational improvements as warranted. Begin planning for road improvements and/or new facilities.*

Level of Service Poor
V/C > 0.90
Required Action: *Implement improvements and/or new facilities.*

Direction of Peak Travel

0.13 **Volume/Capacity Ratio**

405 **Volume**

4,650 **Screenline Capacity**

Screenlines
Screenlines are imaginary lines drawn across major transportation facilities in a corridor. Screenlines are used to analyze travel demand and system performance at strategic locations around the Municipality

Volume/Capacity Ratio
A measure of capacity sufficiency, that is, whether or not a link can provide sufficient capacity for the movement of vehicles

Level of Service
A quantitative measure of the service provided by available transportation infrastructure.

Peak Period
The time periods during the day with the greatest travel volumes, generally the two- or three-hour periods during a weekday.

Peak Hour
The consecutive sixty minutes within a 24-hour period with the highest traffic volume. Peak values are often expressed as a percentage of daily traffic volume.

Figure 1: Analysis Screenline

The screenline analysis indicates where network deficiencies exist. Analysis of links can specify where network improvements such as road widening are necessary. In the network performance, a forced flow condition is realized where the volume to capacity ratio exceeds 1.0.

Table 2 provides a summary of the existing volumes on a screenline and link basis for the study area.

Table 2: Existing P.M. Screenline Traffic Volumes

Screenlines	Roads		Existing Condition					
			Volume		Capacity		V/C	
			NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
North Boundary Screenline	South of Fernill Drive	Wood Road	30	20	750	750	0.04	0.03
		Poplar Hill Road	30	20	500	500	0.06	0.04
		Coldstream Road	38	25	500	500	0.08	0.05
		Nairn Road (CR 17)	187	125	900	900	0.21	0.14
		Bear Creek Road	7	4	750	750	0.01	0.01
		New Ontario Road	22	14	500	500	0.04	0.03
		Vanneck Road	92	61	750	750	0.12	0.08
		Subtotal	**405**	**270**	**4,650**	**4,650**	**0.09**	**0.06**
	South of Elginfield Road	Denfield Road (CR 20)	143	95	900	900	0.16	0.11
		Hyde Park Road	142	95	750	750	0.19	0.13
		Wonderland Road	103	69	900	900	0.11	0.08
		Richmond Street (Hwy 4)	474	316	900	900	0.53	0.35
		Adelaide Street (CR 41)	124	82	750	750	0.16	0.11
		Highbury Avenue (CR 23)	558	372	900	900	0.62	0.41
		Clarke Road	11	8	500	500	0.02	0.02
		Prospect Hill Road	85	57	900	900	0.09	0.06
		Subtotal	**1,639**	**1,093**	**6,500**	**6,500**	**0.25**	**0.17**
		TOTAL	**2,044**	**1,363**	**11,150**	**11,150**	**0.18**	**0.12**
East Boundary Screenline	W of Prospect Hill Road	Elginfield Road (Hwy 7)	293	358	900	900	0.33	0.40
		Sixteen Mile Road	4	4	500	500	0.01	0.01
		Fifteen Mile Road	11	13	500	500	0.02	0.03
		Fourteen Mile Road	21	26	500	500	0.04	0.05
		Thirteen Mile Road	4	4	500	500	0.01	0.01
		Plover Mills Road	75	92	900	900	0.08	0.10
		Ilderton Road (CR 16)	10	12	500	500	0.02	0.02
		Ten Mile Road	7	9	500	500	0.01	0.02
		Nine Mile Road	14	17	500	500	0.03	0.03
		Eight Mile Road	4	5	500	500	0.01	0.01
		Medway Road (CR 28)	258	315	900	900	0.29	0.35
		TOTAL	**699**	**855**	**6,700**	**6,700**	**0.10**	**0.13**
West Boundary Screenline	E of Amiens Road	Fernhill Drive	4	6	900	900	0.00	0.01
		McEwen Drive	4	6	500	500	0.01	0.01
		Greystead Drive	4	6	500	500	0.01	0.01
		Charlton Drive	5	8	500	500	0.01	0.02
		Egremont Drive (CR 22)	308	462	900	900	0.34	0.51
		Hedley Drive	5	8	500	500	0.01	0.02
		Ilderton Road	27	41	500	500	0.05	0.08
		Ivan Drive	4	6	500	500	0.01	0.01
		Sinclair Drive	5	8	500	500	0.01	0.02
		Lamont Drive	4	6	500	500	0.01	0.01
		Gold Creek Drive	6	9	500	500	0.01	0.02
		Melrose Drive	5	7	500	500	0.01	0.01
		Oxbow Drive	40	60	500	500	0.08	0.12
		Glendon Drive (CR 14)	287	430	750	750	0.38	0.57
		Subtotal	**708**	**1,063**	**8,050**	**8,050**	**0.09**	**0.13**
	Between Hwy 402 and Gideon Drive	Longwoods Road (CR 2)	715	1,073	1,500	1,500	0.48	0.72
	East of Springer Road	Westminster Drive	4	6	500	500	0.01	0.01
		Jones Drive	4	6	500	500	0.01	0.01
		Littlewood Drive (CR 35)	88	132	750	750	0.12	0.18
		Little Church Drive	4	6	500	500	0.01	0.01
		Southdel Bourne	28	42	500	500	0.06	0.08
		Subtotal	**843**	**1,264**	**4,250**	**4,250**	**0.20**	**0.30**
		TOTAL	**1,551**	**2,327**	**12,300**	**12,300**	**0.13**	**0.19**
Central East Screenline	East of Richmond Street (Hwy 4)	Elginfield Road (Hwy 7)	260	390	900	900	0.29	0.43
		Sixteen Mile Road	3	5	500	500	0.01	0.01
		Fifteen Mile Road	10	14	750	750	0.01	0.02
		Fourteen Mile Road	19	28	500	500	0.04	0.06
		Thirteen Mile Road	11	16	750	750	0.01	0.02
		Twelve Mile Road	4	7	500	500	0.01	0.01
		Ilderton Road (CR 16)	103	155	900	900	0.11	0.17
		Ten Mile Road	7	10	500	500	0.01	0.02
		Nine Mile Road	11	16	500	500	0.02	0.03
		Eight Mile Road	12	19	500	500	0.02	0.04
		Medway Road (CR 28)	248	372	900	900	0.28	0.41
		TOTAL	**688**	**1,032**	**7,200**	**7,200**	**0.10**	**0.14**
Central West Screenline	East of Denfield Road	Elginfield Road (Hwy 7)	201	302	900	900	0.22	0.34
		Sixteen Mile Road	4	7	500	500	0.01	0.01
		Fifteen Mile Road	4	6	500	500	0.01	0.01
		Fourteen Mile Road	4	6	500	500	0.01	0.01
		Thirteen Mile Road	8	12	750	750	0.01	0.02
		Twelve Mile Road	4	6	500	500	0.01	0.01
		Ilderton Road (CR 16)	155	232	900	900	0.17	0.26
		Ten Mile Road	3	5	500	500	0.01	0.01
		Nine Mile Road	12	18	500	500	0.02	0.04
		Eight Mile Road	7	11	500	500	0.01	0.02
		Medway Road (CR 28)	62	94	500	500	0.12	0.19
		TOTAL	**465**	**697**	**6,550**	**6,550**	**0.07**	**0.11**
Middlesex Centre-London Boundary Screenline	South of Medway Road	Clarke Road (CR 42)	276	118	900	900	0.31	0.13
		Highbury Avenue (CR 23)	672	288	900	900	0.75	0.32
		Adelaide Street (CR 41)	361	155	900	900	0.40	0.17
		Richmond Street (Hwy 4)	903	387	900	900	1.00	0.43
		Wonderland Road (CR 56)	298	128	900	900	0.33	0.14
		Hyde Park Road (CR 20)	400	172	900	900	0.44	0.19
		TOTAL	**2,909**	**1,247**	**5,400**	**5,400**	**0.54**	**0.23**
	East of Denfield Road	Sunningdale Road	13	15	500	500	0.03	0.03
		Fanshawe Park Road (CR 22)	419	512	900	900	0.47	0.57
		Gainsborough Road (CR 17)	254	311	900	900	0.28	0.35
		Subtotal	**686**	**838**	**2,300**	**2,300**	**0.30**	**0.36**
	South of Gainsborough Road	Denfield Road	3	2	500	500	0.01	0.00
		Westdel Bourne / Frank's Lane	3	2	500	500	0.01	0.00
		Subtotal	**6**	**5**	**1,000**	**1,000**	**0.01**	**0.00**
	West of Woodhull Road	Oxford Street (CR 14)	468	572	900	900	0.52	0.64
		Gideon Drive (CR 3)	127	156	900	900	0.14	0.17
		Elviage Drive	5	6	500	500	0.01	0.01
		Subtotal	**600**	**733**	**2,300**	**2,300**	**0.26**	**0.32**
	East of Woodhull Road	Longwoods Road (CR 2)	402	492	900	900	0.45	0.55
		Sharon Drive	35	43	750	750	0.05	0.06
		Westminster Drive	2	3	500	500	0.00	0.01
		Subtotal	**439**	**537**	**2,150**	**2,150**	**0.20**	**0.25**
		Woodhull Sub	**1,039**	**1,270**	**4,450**	**4,450**	**0.23**	**0.29**
		TOTAL	**1,731**	**2,113**	**7,750**	**7,750**	**0.22**	**0.27**
	South of Hwy 402	Westdel Bourne	17	21	750	750	0.02	0.03
		Cook Road	5	6	500	500	0.01	0.01
		Subtotal	**22**	**26**	**1,250**	**1,250**	**0.02**	**0.02**
	West of Colonel Talbot Road	Decker Drive	3	4	500	500	0.01	0.01
		Little Wood Drive (CR 35)	70	85	750	750	0.09	0.11
		Subtotal	**73**	**89**	**1,250**	**1,250**	**0.06**	**0.07**
		TOTAL	**94**	**115**	**2,500**	**2,500**	**0.04**	**0.05**
		TOTAL	**4,734**	**3,475**	**15,650**	**15,650**	**0.30**	**0.22**

For the base year scenario the entire network is operating at level of LOS 'C' or better, meaning that there is low potential for congestion throughout the network. This is illustrated in **Figures 2 and 3**.

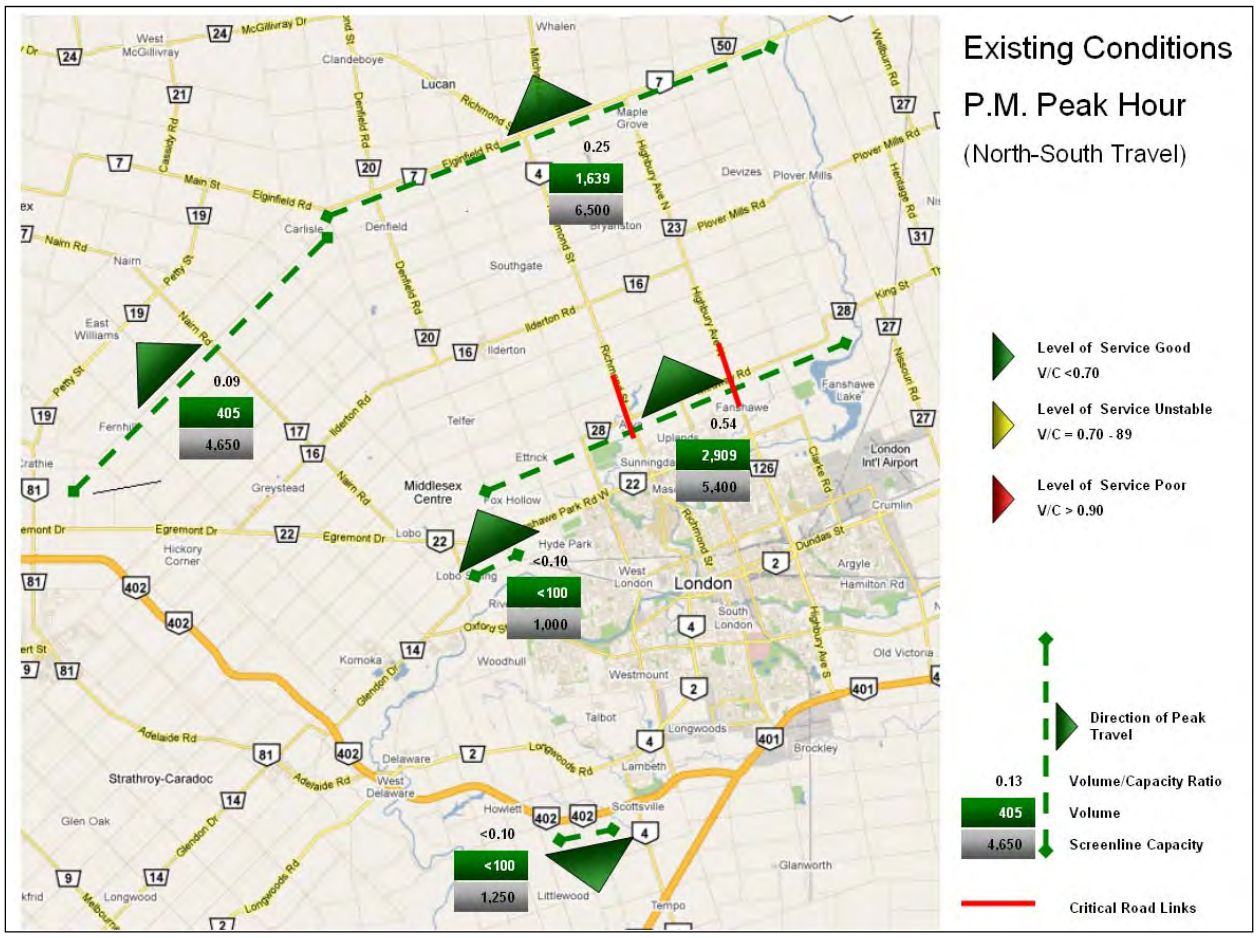


Figure 2: Existing Conditions Screenline Analysis, P.M. Peak Hour, North-South Travel

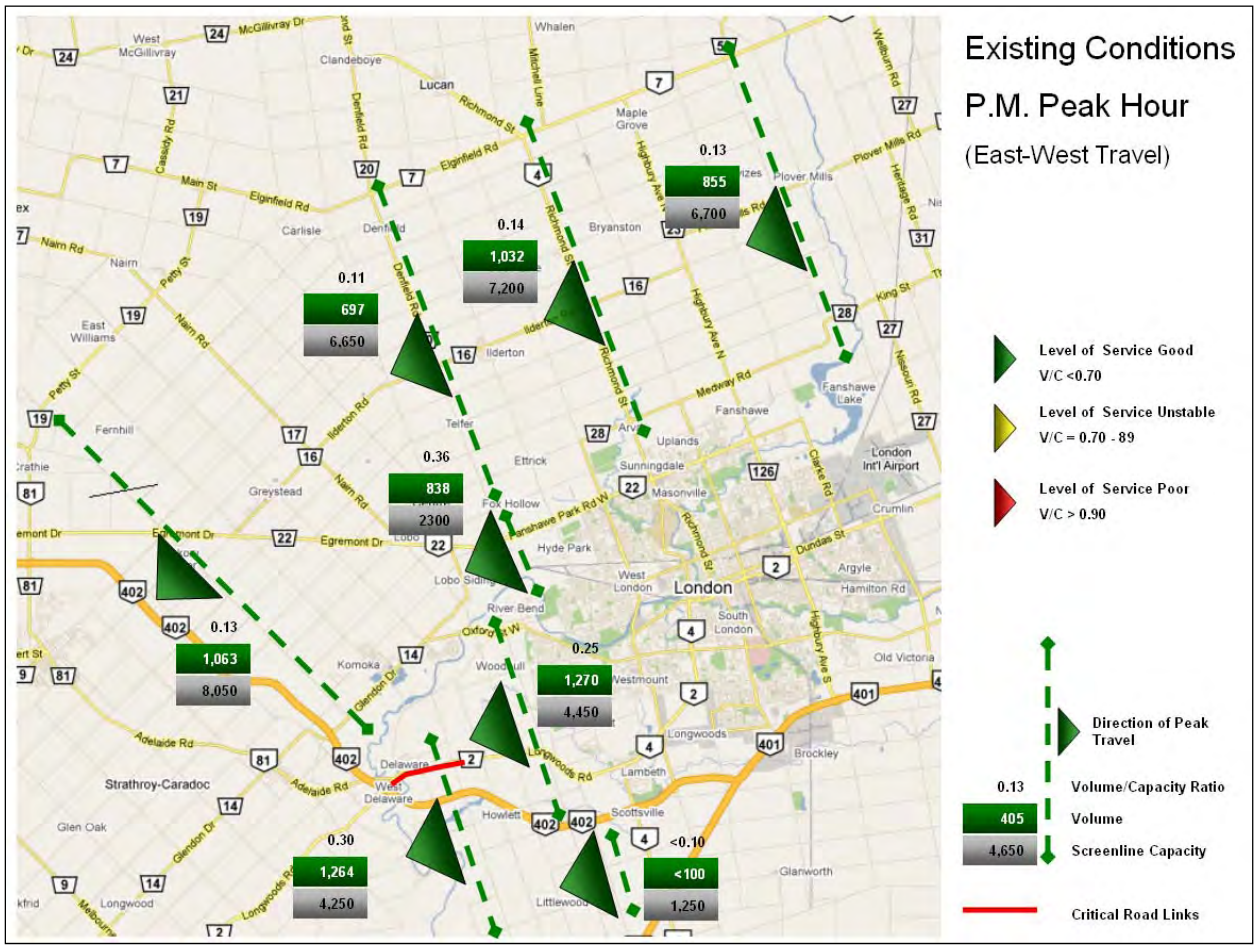


Figure 3: Existing Conditions Screenline Analysis, P.M. Peak Hour, East-West Travel

2.2.3 Description of Existing Transportation System Deficiencies

Based on the preceding analysis the following conclusions are reached with respect to the operation of the transportation network (under jurisdiction of others) for the existing condition:

- Municipal screenlines operating well within accepted levels of service;
- Richmond Street (Highway 4) operating at threshold of capacity north of Middlesex Centre/City of London Boundary; and
- Highbury Avenue operating under unstable conditions (refer to Table 1 for the definition of unstable condition).

The following local areas of concern were noted (under the jurisdiction of others):

- Richmond Street in communities of Birr and Arva;
- Ilderton Road and Hyde Park Road in community of Ilderton (Hyde Park Road under Middlesex Centre jurisdiction north of Ilderton Road);
- Ilderton Road and Egremont Drive in the community of Coldstream-Poplar Hill; and
- Egremont Drive in communities of Lobo and Melrose.

3.0 Future Transportation System

3.1 FUTURE LAND USE ASSUMPTIONS

Land use data for the area was derived from several sources as follows:

- Municipality of Middlesex Centre Official Plan;
- Middlesex County Official Plan; and
- City of London Employment, Population, Housing and Non-Residential Construction Projections (2006 Update).

Future population estimates were derived from the County of Middlesex Official Plan. **Table 3** provides a summary of municipal population levels for existing and future long term horizons.

Table 3: Population Forecasts

Population Reference Scenario			
	2006	**2026**	**% Growth / Year**
County of Middlesex	69,593	70,474	0.06%
Middlesex Centre	15,304	16,995	0.53%
North Middlesex	7,009	6,131	-0.67%
Lucan Biddulph	4,255	3,841	-0.51%
Thames Centre	13,321	14,092	0.28%
Adelaide Metcalfe	3,248	3,228	-0.03%
Strathroy Caradoc	20,292	21,145	0.21%

A very small amount of growth is expected in the County over the next 16 years. Middlesex Centre is expected to have the most population growth in the County but that growth is still less than 1% per year. Growth is likely to be focused on small development parcels in each of the communities across the Municipality.

The City of London is the region's largest economic and employment centre. Volume flows on the major highway and arterial network will be greatly impacted by employment growth in the City of London. From the 2006 update study, growth in London employment over the long term is expected to be in the order to 1.2% per year.

Area growth therefore is expected to be between 1% and 2% per year for the next 20 years. This growth is consistent with historical growth which has been identified as 1.0-1.2 % per year.

3.2 TRAFFIC FORECASTS

The main objective of the future forecasting component of the transportation assessment is to determine the expected travel demand associated with the forecasted land use and to evaluate physical and operational improvements and policy initiatives that will satisfy the transportation needs identified. A strategic assessment of the Municipality's transportation network was performed by assessing the demand versus the provided capacity.

Historical traffic data was reviewed in conjunction with future land use and development potential for the Municipality in order to determine future traffic volume on a system wide basis for Middlesex Centre.

Growth rates related to land use and development activity were applied to existing traffic conditions at a facility level. A 2% per year growth rate was applied to County roads (major arterials). A 1% per year growth rate was applied to Municipal roads (minor arterials and collector roads).

Table 4 provides a summary of the resultant forecasts on a screenline and link basis.

Table 4: Future P.M. Screenline Volumes, 20 Year Horizon

Screenlines	Roads		Future (20-Year) Condition					
			Volume		Capacity		V/C	
			NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
North Boundary Screenline	South of Fernill Drive	Wood Road	37	24	750	750	0.05	0.03
		Poplar Hill Road	37	24	500	500	0.07	0.05
		Coldstream Road	46	31	500	500	0.09	0.06
		Nairn Road (CR 17)	278	185	900	900	0.31	0.21
		Bear Creek Road	8	5	750	750	0.01	0.01
		New Ontario Road	26	18	500	500	0.05	0.04
		Vanneck Road	112	75	750	750	0.15	0.10
		Subtotal	**544**	**362**	**4,650**	**4,650**	**0.12**	**0.08**
	South of Elginfield Road	Denfield Road (CR 20)	212	141	900	900	0.24	0.16
		Hyde Park Road	211	141	750	750	0.28	0.19
		Wonderland Road	126	84	900	900	0.14	0.09
		Richmond Street (Hwy 4)	704	470	900	900	0.78	0.52
		Adelaide Street (CR 41)	184	123	750	750	0.25	0.16
		Highbury Avenue (CR 23)	829	552	900	900	0.92	0.61
		Clarke Road	14	9	500	500	0.03	0.02
		Prospect Hill Road	126	84	900	900	0.14	0.09
		Subtotal	**2,406**	**1,604**	**6,500**	**6,500**	**0.37**	**0.25**
		TOTAL	**2,949**	**1,966**	**11,150**	**11,150**	**0.26**	**0.18**
East Boundary Screenline	W of Prospect Hill Road	Elginfield Road (Hwy 7)	435	531	900	900	0.48	0.59
		Sixteen Mile Road	4	5	500	500	0.01	0.01
		Fifteen Mile Road	13	16	500	500	0.03	0.03
		Fourteen Mile Road	26	32	500	500	0.05	0.06
		Thirteen Mile Road	4	5	500	500	0.01	0.01
		Plover Mills Road	112	136	900	900	0.12	0.15
		Ilderton Road (CR 16)	12	14	500	500	0.02	0.03
		Ten Mile Road	9	11	500	500	0.02	0.02
		Nine Mile Road	16	20	500	500	0.03	0.04
		Eight Mile Road	5	6	500	500	0.01	0.01
		Medway Road (CR 28)	383	468	900	900	0.43	0.52
		TOTAL	**1,019**	**1,246**	**6,700**	**6,700**	**0.15**	**0.19**
West Boundary Screenline	E of Amiens Road	Fernhill Drive	5	7	900	900	0.01	0.01
		McEwen Drive	5	7	500	500	0.01	0.01
		Greystead Drive	5	7	500	500	0.01	0.01
		Charlton Drive	6	9	500	500	0.01	0.02
		Egremont Drive (CR 22)	458	687	900	900	0.51	0.76
		Hedley Drive	7	10	500	500	0.01	0.02
		Ilderton Road	33	50	500	500	0.07	0.10
		Ivan Drive	5	7	500	500	0.01	0.01
		Sinclair Drive	6	10	500	500	0.01	0.02
		Lamont Drive	5	7	500	500	0.01	0.01
		Gold Creek Drive	7	11	500	500	0.01	0.02
		Melrose Drive	6	8	500	500	0.01	0.02
		Oxbow Drive	49	73	500	500	0.10	0.15
		Glendon Drive (CR 14)	426	640	750	750	0.57	0.85
		Subtotal	**1,023**	**1,534**	**8,050**	**8,050**	**0.13**	**0.19**
	Between Hwy 402 and Gideon Drive	Longwoods Road (CR 2)	1,063	1,594	1,500	1,500	0.71	1.06
	East of Springer Road	Westminster Drive	5	7	500	500	0.01	0.01
		Jones Drive	5	7	500	500	0.01	0.01
		Littlewood Drive (CR 35)	131	196	750	750	0.17	0.26
		Little Church Drive	5	7	500	500	0.01	0.01
		Southdel Bourne	34	51	500	500	0.07	0.10
		Subtotal	**1,242**	**1,862**	**4,250**	**4,250**	**0.29**	**0.44**
		TOTAL	**2,264**	**3,396**	**12,300**	**12,300**	**0.18**	**0.28**
Central East Screenline	East of Richmond Street (Hwy 4)	Elginfield Road (Hwy 7)	386	580	900	900	0.43	0.64
		Sixteen Mile Road	4	6	500	500	0.01	0.01
		Fifteen Mile Road	12	18	750	750	0.02	0.02
		Fourteen Mile Road	23	34	500	500	0.05	0.07
		Thirteen Mile Road	13	20	750	750	0.02	0.03
		Twelve Mile Road	5	8	500	500	0.01	0.02
		Ilderton Road (CR 16)	154	231	900	900	0.17	0.26
		Ten Mile Road	8	12	500	500	0.02	0.02
		Nine Mile Road	13	19	500	500	0.03	0.04
		Eight Mile Road	15	23	500	500	0.03	0.05
		Medway Road (CR 28)	369	553	900	900	0.41	0.61
		TOTAL	**1,002**	**1,503**	**7,200**	**7,200**	**0.14**	**0.21**
Central West Screenline	East of Denfield Road	Elginfield Road (Hwy 7)	299	449	900	900	0.33	0.50
		Sixteen Mile Road	5	8	500	500	0.01	0.02
		Fifteen Mile Road	5	7	500	500	0.01	0.01
		Fourteen Mile Road	5	8	500	500	0.01	0.02
		Thirteen Mile Road	9	14	750	750	0.01	0.02
		Twelve Mile Road	5	7	500	500	0.01	0.01
		Ilderton Road (CR 16)	230	345	900	900	0.26	0.38
		Ten Mile Road	4	5	500	500	0.01	0.01
		Nine Mile Road	14	22	500	500	0.03	0.04
		Eight Mile Road	9	13	500	500	0.02	0.03
		Medway Road (CR 28)	76	114	500	500	0.15	0.23
		TOTAL	**662**	**993**	**6,550**	**6,550**	**0.10**	**0.15**
Middlesex Centre-London Boundary Screenline	South of Medway Road	Clarke Road (CR 42)	410	176	900	900	0.46	0.20
		Highbury Avenue (CR 23)	998	428	900	900	1.11	0.48
		Adelaide Street (CR 41)	536	230	900	900	0.60	0.26
		Richmond Street (Hwy 4)	1,342	575	900	900	1.49	0.64
		Wonderland Road (CR 56)	443	190	900	900	0.49	0.21
		Hyde Park Road (CR 20)	595	255	900	900	0.66	0.28
		TOTAL	**4,323**	**1,853**	**5,400**	**5,400**	**0.80**	**0.34**
	East of Denfield Road	Sunningdale Road	15	19	500	500	0.03	0.04
		Fanshawe Park Road (CR 22)	623	761	900	900	0.69	0.85
		Gainsborough Road (CR 17)	378	462	900	900	0.42	0.51
		Subtotal	**1,016**	**1,242**	**2,300**	**2,300**	**0.44**	**0.54**
	South of Gainsborough Road	Denfield Road	3	3	500	500	0.01	0.01
		Westdel Bourne / Frank's Lane	3	3	500	500	0.01	0.01
		Subtotal	**7**	**5**	**1,000**	**1,000**	**0.01**	**0.01**
	West of Woodhull Road	Oxford Street (CR 14)	695	850	900	900	0.77	0.94
		Gideon Drive (CR 3)	189	231	900	900	0.21	0.26
		Elviage Drive	5	7	500	500	0.01	0.01
		Subtotal	**890**	**1,088**	**2,300**	**2,300**	**0.39**	**0.47**
	East of Woodhull Road	Longwoods Road (CR 2)	598	731	900	900	0.66	0.81
		Sharon Drive	43	52	750	750	0.06	0.07
		Westminster Drive	3	3	500	500	0.01	0.01
		Subtotal	**643**	**786**	**2,150**	**2,150**	**0.30**	**0.37**
		Woodhull Sub	**1,533**	**1,874**	**4,450**	**4,450**	**0.34**	**0.42**
		TOTAL	**2,556**	**3,121**	**7,750**	**7,750**	**0.33**	**0.40**
	South of Hwy 402	Westdel Bourne	21	26	750	750	0.03	0.03
		Cook Road	5	7	500	500	0.01	0.01
		Subtotal	**26**	**32**	**1,250**	**1,250**	**0.02**	**0.03**
	West of Colonol Talbot Road	Decker Drive	4	4	500	500	0.01	0.01
		Little Wood Drive (CR 35)	30	37	750	750	0.04	0.05
		Subtotal	**34**	**41**	**1,250**	**1,250**	**0.03**	**0.03**
		TOTAL	**60**	**73**	**2,500**	**2,500**	**0.02**	**0.03**
		TOTAL	**6,939**	**5,047**	**15,650**	**15,650**	**0.44**	**0.32**

3.3 FUTURE TRANSPORTATION SYSTEM PERFORMANCE

Based on the established area growth and the resultant traffic forecasts for the existing network, an assessment was undertaken for the Study Area screenlines in order to assess the performance of the network from a strategic corridor and individual facility perspective. **Figures 4 and 5** illustrate the results of this assessment.

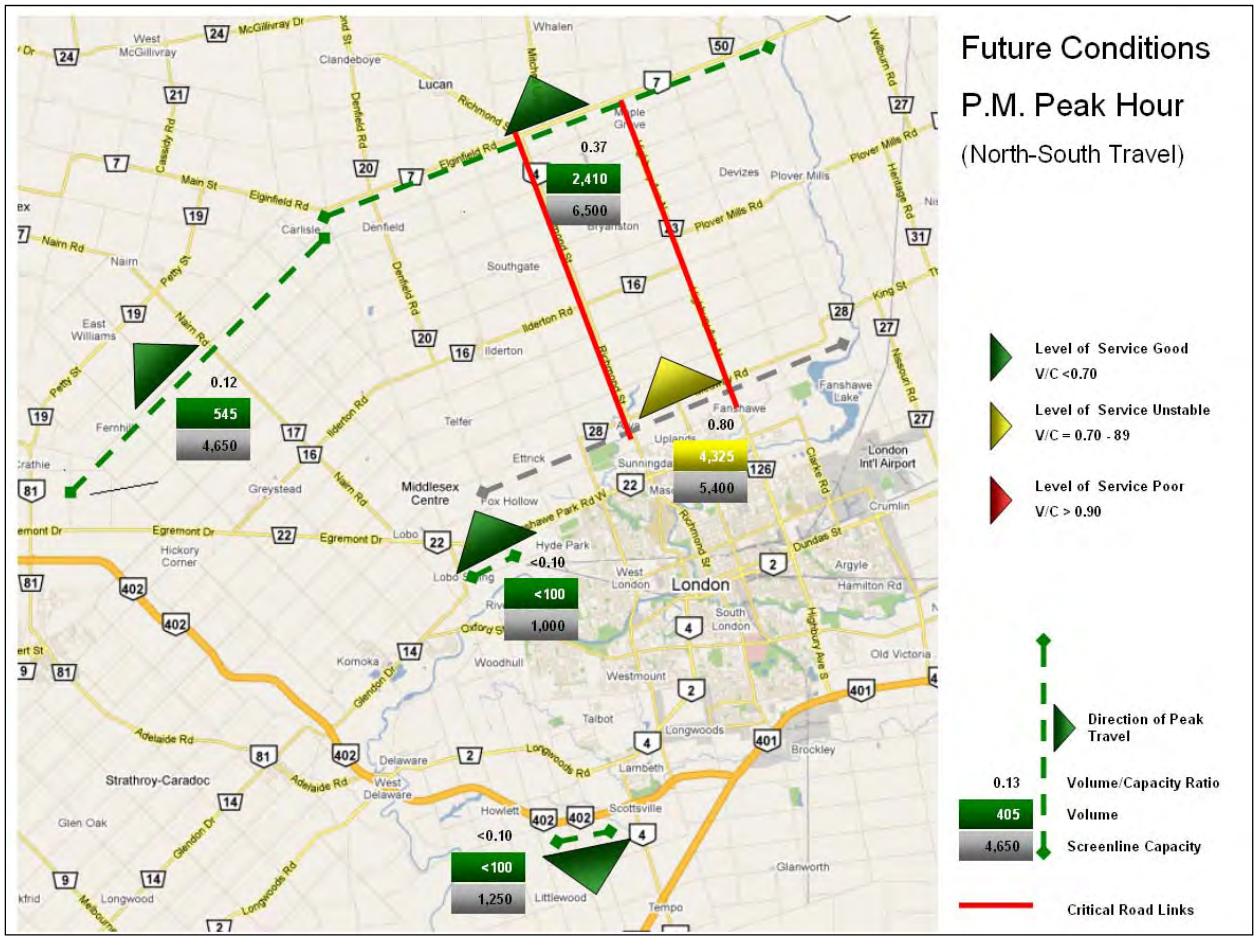


Figure 4: Future Conditions Screenline Analysis, P.M. Peak Hour, North-South Travel

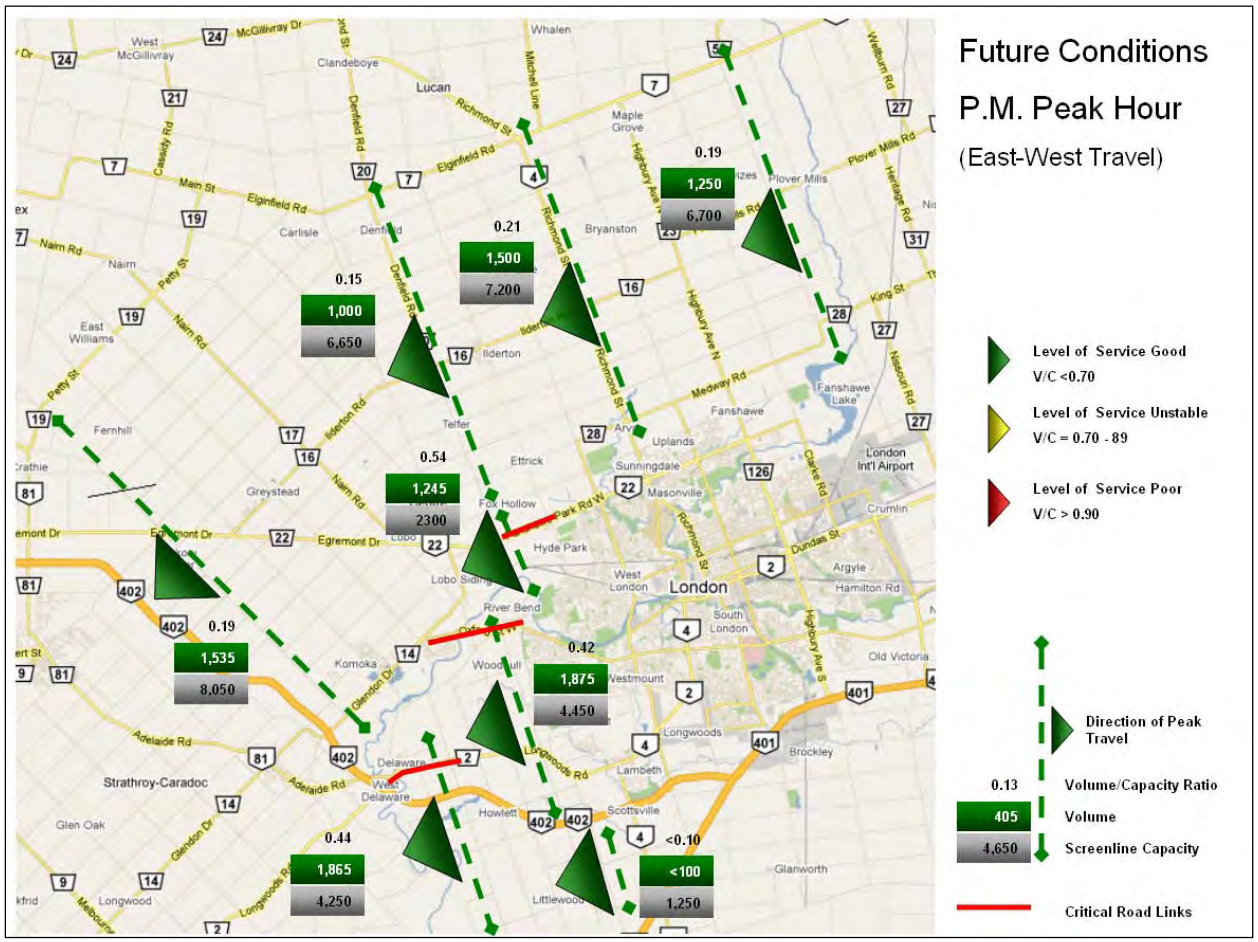


Figure 5: Future Conditions Screenline Analysis, P.M. Peak Hour, East-West Travel

3.4 DESCRIPTION OF FUTURE TRANSPORTATION SYSTEM DEFICIENCIES

Based on the preceding analysis the following conclusions are reached with respect to the operation of the transportation network for the future forecast condition:

- Municipal screenlines operating well within accepted levels of service with the exception of the north of Middlesex Centre/City of London Boundary (between Hyde Park Road and Clarke Road);
- Highbury Avenue and Richmond Street (Highway 4) operating above the threshold of capacity north of Middlesex Centre/City of London Boundary;
- Fanshawe Park Road, Oxford Street and Longwoods Road approaching capacity threshold west of City of London limits;

- Highbury Avenue at north limits of Middlesex Centre approaching capacity threshold; and
- Richmond Street operating under unstable conditions.

County Roads through local communities will continue to be an issue as traffic volumes increase as a result of area growth (auto and commercial vehicles).

Issues identified within the Middlesex Centre transportation network (jurisdiction of others):

- Capacity / Level of Service
    - Short term capacity issue on Richmond Street at south boundary with City of London;
    - Long term corridor condition at south boundary with City of London; and
    - Majority of individual links within Middlesex Centre will continue to operate at good levels of service.
- Safety
    - Traffic speeds in local communities;
    - Inadequate sight lines due to skewed intersections, horizontal and vertical curves;
    - Potential need for additional turn lanes;
    - Poor pavement and shoulder condition;
    - Potential illumination needs;
    - Inconsistent pavement markings, delineation and signage;
    - Lack of clarity at some stop-controlled intersections;
    - Discontinuous sidewalks; and
    - At-grade rail crossings.
- Network
    - Identification of truck routes; and
    - Increased focus on transit connections to London.

- Other Issues
    - Truck traffic volume and speeds through communities;
    - Pedestrians – provision of consistent network of sidewalks;
    - Cyclists – provision of paved shoulders and/or pathways for high use roads;
    - Agricultural / farm vehicle use of road network;
    - Parking for carpool and transit pick-up at City of London boundary;
    - Emergency response times;
    - Ensuring adequate funding to maintain the existing road system and additional needs/priorities; and
    - Opportunity to plan for growth ahead of development pressures.

4.0 Transportation Strategies

4.1 TRANSPORTATION SYSTEM MANAGEMENT (TSM)

4.1.1 Access Management

Access Management is a key process by which an agency can effectively maintain control, operational function, and hierarchy of roads under their jurisdiction.

Establishing and maintaining a transportation network capable of providing safe, efficient and convenient traffic/transportation access to/from existing and proposed future developments and properties within the Municipality is one of the most important objectives of an access management policy. Additionally, access management can influence and contribute to the successful sharing of a right-of-way between autos, trucks, pedestrians, cyclists, transit and other alternative modes of travel.

Managing and controlling impacts from roadside development in order to maintain the efficient movement of traffic can be achieved, in part through the control of the number of accesses, desirable traffic signal location and spacing, minimizing conflict points, adequate access location and spacing, and sufficient auxiliary turn lane provision. With this in mind, the type, classification and function of a roadway must be understood and maintained in order to effectively assess proposed and existing accesses/intersections. Prescribing a road network hierarchy minimizes potential conflicts between local and non-local traffic by defining the roads within the Municipality based on their intended role and function.

Factors influencing roadway classification include the density of access, service function, traffic volume, flow characteristics and design speed. The number of access points and their spacing is a major influence on the running speed and flow characteristics of a roadway. While at the other extreme there are local roads and laneways which function as 100% land access right-of-ways, and are typically not divided with the exception of isolated intersection medians, and which operate under interrupted conditions.

Access management policies can be grouped into different criteria or indicators:

- Roadways
    - Sight distance;
    - Parking;
    - Right-of-ways; and
    - Functional classification.

- Intersections
    - Residential intersections;
    - Commercial intersections; and
    - Industrial intersections.
- Driveways
    - Rural / Urban;
    - Number/Density; and
    - Design elements.

4.1.2 Operational Improvements

The transportation system performance assessment suggests that at a strategic level the network will generally be working within capacity. This does not mean that isolated operational issues do not, and will not, exist within the more heavily used areas of the network. Heavily used intersections where conflicting demands result in increased delays need to be identified on an ongoing basis. Geometric improvements and traffic control requirements (stops signs, signals) can be identified very quickly if recent information related to volume conditions and collision history is readily available.

Monitoring the need for these improvements is critical to the management of the system. A municipal traffic count program is integral to this process, to monitor traffic volumes at regular intervals. Currently, the Municipality undertakes an annual traffic count program. A monitoring program provides the information required to determine required operational improvement needs at such time when level of service thresholds are reached (i.e. when a facility or intersection is approaching capacity).

4.1.3 Improved Safety

Speed management is a significant challenge for rural communities where the main roadways through towns serve a dual role outside the town: high-speed travel over long distances within the built-up area: local access, pedestrians, on-street parking, bicycles, and other features unique to the character of a community.

Enforcement alone is expensive and is not effective over long term. Traffic management measures required to modify driver behaviour in the short term and over the long term. Techniques are required that:

- Are low cost;

- Can accommodate larger vehicles (i.e. farm equipment, trucks); and
- Are compatible with the rural setting and driver expectations.

Techniques that encourage a change in driver behaviour through a change in driving environment are more effective than traffic control devices (i.e. lane widths, side road treatment, markings). Stop signs are not an appropriate traffic management tool (obeyance issues; speeds are not reduced and can increase; increased noise and pollution).

4.1.4 Truck Route Designations/Upgrades

There will always be potential issues relating to moving freight where arterial roadways pass through residential communities. There is a need to support operational and planning policies related to network performance with regulatory policies. One regulatory policy warranted relates specifically to truck route designations.

The Municipality and County currently do not impose restrictions on truck movements. There are two approaches to managing truck flows through communities: passive versus restrictive. Passive involves the designation of specific routes through the community with the intention that freight carriers be made aware of these routes and make use of these routes. Advantages of the passive approach include reduced costs for signage, ease of understanding by trucking industry, reduced enforcement burden and reduced legislative (i.e. bylaw) requirements. Possible disadvantages of establishing designated truck routes include trucks disobeying the signed routes, and a negative stigma for residents in areas that are adjacent to truck routes. One of the emerging challenges with maintaining the truck route network in some municipalities is the removal of individual truck route links in response to public demands. This has the impact of fragmenting the truck route network and undermining its effectiveness. Therefore, an important policy area is to maintain, protect and, if possible, enhance the system of designated truck routes established in a municipality.

A restrictive truck route approach develops regulatory by-laws that address the following:

- Vehicle Restrictions: most commonly based on vehicle weight, with other limitations being height, length and width as well as specific types of vehicles or loads. This approach is often implemented by default because of existing roadway obstructions or geometric limitations;
- Time Restrictions: reduce impacts associated with truck routes on surrounding land use and are usually applied to overnight hours. When time restrictions are used, it is important to ensure that remaining or alternative truck routes are not severely impacted;
- Seasonal Restrictions: usually used in rural settings where seasonal conditions (i.e. frost, snow, thaw, flooding) create structural limitations based on the types of vehicles that can use the road;

- Zonal Truck Restrictions: cover reasonably small areas, such as a small downtown, usually bounded by arterial road truck routes, with the intent to keep through traffic out of the designated area; and

- Local Truck Restrictions: are similar to zonal restrictions, but only apply to one street or part of a street, and may be temporary or permanent to protect the roadway surface, narrow widths or steep slopes from heavy truck intrusion.

4.1.5 Road Rationalization

A road classification system establishes a hierarchical structure of roadway groupings according to their physical and functional characteristics and the type of service they are intended to provide to the public. Currently, a limited description of road classification elements is provided for Municipal and County roads. Benefits of implementing an expanded road classification system include:

- Established geometric design standards for consistent short and long term operational needs of all road classes;

- Established standards for functional characteristics such as land access, traffic flow thresholds, level of service (LOS), speed limits, accommodation of cyclists and pedestrians, and parking provisions;

- Improved coordination and planning of land use and transportation developments; and

- Preservation of intended service function of planned roadways and promotion of a safer environment with operational integrity.

Road classification standards must be defined such that they provide appropriate allowances for the demands of future developments rather than for just short-term requirements. In response to the Municipal growth plans, the proposed road classification aims to accommodate not only the future demands of motorists but also the future movements of pedestrians and cyclists through a connective environment. Although in the short term applying recommended standards may appear excessive for certain land uses (i.e. sidewalks on industrial local roads, dedicated bike lanes on rural arterials), economical and operational benefits will be realized in the long term as the adjacent lands continue to develop and demand for access increases. Maintaining a long-term vision will ensure the road network is prepared to accommodate safe residential neighbourhoods and accessible industrial and commercial developments for all modes of travel.

4.2 TRAVEL DEMAND MANAGEMENT (TDM)

4.2.1 Plan Land Use

The three major land use categories are residential, commercial and industrial. These land uses are generally not mixed so as to allow residential neighbourhoods to be kept free of unnecessary and/or heavy traffic volume. In this respect, planned communities are better able to control traffic patterns, attract jobs and attract investment.

Residential land use generally attracts autos with occasional school buses and heavy traffic volume. Commercial land use generally attracts autos with little to no school buses and high volumes of heavy traffic, typically delivery trucks and transport trucks. Industrial land use generally attracts heavy truck traffic volumes with minimal auto traffic volumes.

The intersections, accesses, parking and sight distances required by each land use can vary significantly. The road networks found within different land use areas will therefore be required to perform different roles and functions.

4.2.2 Public Transportation (Transit)

A sustainable transportation system can be defined as a system that provides support to growth of a community while providing maximum travel choice to users. While this objective is important it is equally important to understand the environment and constraints within a community. Considering the municipal system does not currently provide transit service and as a rural/urban Municipality with very low development density land use patterns and relatively low travel demands, the long term system condition is not conducive to providing area transit service.

However, it is important to note that the economic centre for the area is the City of London. As noted previously, the City of London does provide transit service within the limits of the city and that future planning work has identified the need and potential for service expansion in order to support growth and provide opportunities for greater transit ridership, thereby reducing future infrastructure cost and environmental impacts associated with car dominant communities.

Opportunities should be explored by the Municipality to make connections at key locations at the city boundary to reduce demands between the communities. While this will not necessarily result in reduced auto use in the Municipality, it may redistribute traffic to major arterial roads and may result in broader scale system and environmental benefits.

The Municipality should continue to support work by others (i.e. the City of London and the County of Middlesex) for increasing use of alternative transportation modes.

4.2.3 Promote Active Modes (Cycling and Walking)

Cycling is generally recognized as a viable mode of transportation that is environmentally sound and supportive of healthy lifestyles. Cycling is used for both utilitarian and recreational purposes. Recreational cycling is typically associated with the personal enjoyment of the cycling experience including health and wellness benefits. As a result, recreational cyclists are often less concerned with the directness of the route as they are with the safety, amenities and enjoyment provided by the route. In contrast, utilitarian cycling has transportation as the primary objective with a focus of traveling from one point to the other for specific purposes. The trip purposes for utilitarian cycling typically include traveling from home to work or to school. Generally these cyclists will take the most direct route to their destination, which may include travel on major (arterial) roadways.

From a travel demand management perspective, the utilitarian cyclist is of greatest interest as these cyclists have the potential to reduce the number of vehicles on the roadway system during peak periods of travel.

A key strategy to promote walking and bicycling in Middlesex Centre within a limited budget is to focus initially on local cycling infrastructure improvements to primary cycling routes identified that could be implemented at low cost and would make the routes safer and more convenient. Local improvement projects could demonstrate the potential of pedestrian and bicycling infrastructure. Typical local improvements would include: shoulder paving, minor pavement widening, bicycle lane striping, signage, changing catch basin grates, curb cuts for trails, etc.

4.3 EXPAND THE EXISTING SYSTEM

The priorities of the recommended roadway network plan to accommodate the projected increased travel demands were presented in Section 3, specifically Highway 4 (Richmond Street) and Highbury Avenue, however, they are under the jurisdiction of others. These roadway network requirements have been identified to address anticipated capacity constraints. Despite the fact these roadways are not under the jurisdiction of the Municipality, the potential constraints on these facilities are considered fundamental to minimize the occurrence of local neighbourhood/community traffic concerns. Additional localized operational improvements including the incorporation of traffic management measures may still be necessary to optimize the operation of the existing roadway network and to assist in promoting pedestrian friendly local neighbourhoods.

In addition, the provincial highway system also provides important linkages to the roadway network within Middlesex Centre. The Highway 4 corridor provides a vital link in the roadway network which services both local and provincial traffic. It is recommended that the Municipality of Middlesex Centre continue to communicate with MTO and the County to ensure that the following issues are acknowledged and continue to be considered in future planning;

- Increasing demands of provincial truck traffic on municipal roadways;

- Limited opportunities to pass slower moving vehicles along the corridor; and
- Routing alternatives to better serve the inter-regional (provincial) traffic.

4.4 FUNCTIONALITY

The functionality of roads (boulevard size, lane width, presence of sidewalks, etc.) are often based on classifying it as a rural or urban road and the volume of vehicle traffic. Within Middlesex Centre some roads may be required to collect and convey vehicles, bicycle and pedestrian traffic similar to the roads in larger municipalities which experience larger traffic volumes. In addition to standard road classifications based on traffic volume, Middlesex Centre should review and confirm based on the goals and values of their Strategic Plan the functionality it desires for certain roads. For example, in order to promote safety, to allow for travel to municipal attractions, Middlesex Centre may wish that connecting roads be provided with sidewalks and bicycle paths. Figure 6 illustrates the walking radius to various municipal attractions.

4.5 CULVERTS & BRIDGES

A 2006 study of Middlesex Centre's existing bridges and culverts found:

- Over $1 Million was required to bring the structures up to current standards; and
- Approximately $390,000 of annual capital expenditure is required to maintain existing structures.

It is recommended that when new water, wastewater, stormwater and transportation projects are planned that:

- Consideration is given to proximate structures and the impact of new construction; and
- Refurbishment of existing structures should be considered if they are proximate to new work as economies can be realized in construction costs.

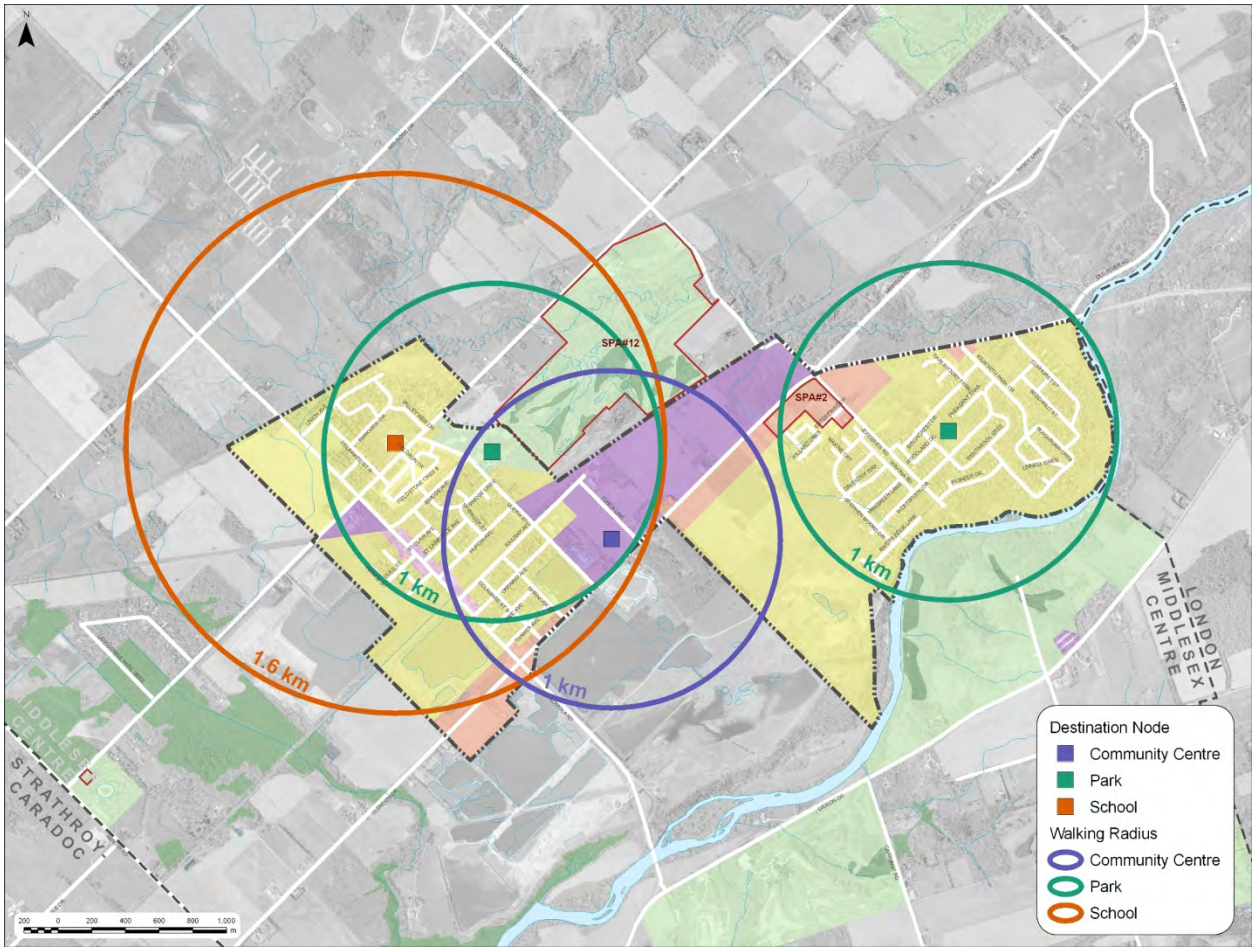


Figure 6: Functionality – Walking Radius to Municipal Attractions

5.0 Recommended Transportation Plan

The successful implementation of a transportation plan to provide a blended transportation system for Middlesex Centre will require the development and implementation of travel demand management (TDM) measures combined with strategic investments to improve the roadway network, public transit and to safely accommodate active transportation. Policies and programs are required to monitor, assess, and guide specific initiatives aimed at providing adequate transportation service to all modes of travel while at the same time protecting the environment and community.

In order to facilitate the Middlesex Centre vision for the future and to address problems and opportunities there several transportation strategies have been identified. These strategies are identified below.

5.1 PLAN FOR TRANSPORTATION SYSTEM MANAGEMENT (TSM)

Table 5 provides a list of the recommendations related to TSM.

Table 5: Transportation Systems Management

Strategy	Recommendation	Timing
Access Management	Review access policy to minimize impacts on existing and future high volume roads.	1-5 years
Operational Improvements	Continue with Municipal traffic count program required to monitor traffic volumes at regular intervals. Monitoring program will assist in determining required operational improvements when level of service is approaching capacity.	<1 year
Improved Safety	Conduct Municipal-wide assessment of signage, pavement marking and roadside barriers and implement improvements on a priority basis.	1-5 years
	Assess need for traffic management measures that effectively balance role and function of roadway with user safety.	1-5 years
	Develop evaluation process (guidelines and criteria) for reviewing control measures on a location by location basis.	1-5 years

Truck Routes Designations/ Upgrades	Confirm by-laws that will stipulate the load factors, axle weight, vehicle height, hazardous goods restrictions and other criteria for municipal roadways to be conformed to by users.	1-5 years
Road Rationalization	Confirm road hierarchy (local, collector, arterial) and designate municipal roadways within hierarchy. Identify appropriate cross section and surface standards for road classes.	1-5 years
	Identify appropriate cross section and surface standards for road classes.	1-5 years

5.2 PLAN FOR TRAVEL DEMAND MANAGEMENT (TDM)

Table 6 provides a list of the recommendations related to TDM.

Table 6: Travel Demand Management

Strategy	Recommendation	Timing
Plan Land Use	Ensure managed growth. Review traffic impact study for new development.	1-5 years
Public Transportation	Support work by others for increasing use of alternative transportation modes.	1-5 years
	Promote carpool use and identify spaces in existing public parking areas lots for commuter use potential.	5-10 years
Promote Cycling/ Walking	Construct paved shoulders on major roads.	5-10 years

5.3 PLAN FOR ROAD NETWORK EXPANSION

Table 7 provides a list of the recommendations related to potential road network expansion.

Table 7: Existing System Expansion

Strategy	Recommendation	Timing
Infrastructure Improvements	Maintain current infrastructure	Ongoing
	Support roadwork by others for development	Ongoing
	Widen roads that have reached capacity when other solutions are not sufficient	10+ years

5.4 SUMMARY

The transportation recommendations will require periodic monitoring and updating to suit the changing needs of development. The planning of these recommended improvements and policies must conform to the requirements of the Municipal Class Environmental Assessment process.