



## **Town of Erin**

# **Urban Centre Wastewater Servicing Class Environmental Assessment**

## **Technical Memorandum Septic System Overview *Draft for Comments***

October 2016



# Urban Centre Wastewater Servicing Class Environmental Assessment

## Technical Memorandum Septic System Overview

Project No. 115157

Prepared for:  
The Town of Erin

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## **1.0 Introduction**

This Report has been prepared in support of the Town of Erin Urban Centre Wastewater Servicing Environmental Assessment (UCWWS EA). The majority of properties within the Village of Erin and Hillsburgh are currently serviced by individual private septic systems. The Servicing and Settlement Master Plan (SSMP), completed by B.M. Ross in 2014, selected a communal wastewater collection system for both communities as the preferred alternative solution to deal with issues related to the private systems. The SSMP undertook part of Phase 1 and part of Phase 2 of the Class Environmental Assessment process and the Town is now engaged in completing these two phases and moving on to complete Phase 3 and Phase 4 of the Class EA process.

In order to complete the Class EA process, the Town is seeking to develop a more complete understanding of the existing septic systems in order to clearly define the extent of the planned communal sewage service area. The results of this Technical Memorandum will also assist with the selection of the most appropriate collection system by identifying accurate cost estimates for property owners.

This Technical Memorandum provides an overview of the septic system information collected from all available existing sources and defines the communal sewage service areas and provides rationale for connecting or not connecting each area to a communal collection and treatment system based upon analysis of the available data.

### **1.1 Objectives**

The objective of this memorandum is to review available Septic Tank data, conduct any necessary field work and conduct data analysis and present recommendations for servicing existing properties in the study area.

### **1.2 Existing Information**

Several studies/documents were used to prepare this memorandum. Each of these documents was reviewed for pertinent information related to this project. These documents include (a) Servicing and Settlement Master Plan, (b) Town of Erin Mandatory Septic Re-inspection Program, (c) Building Department Records, (d) GIS data. Relevant codes and standards governing wastewater for private systems including the Ontario Building Code and the Ministry of Environment and Climate Change (MOECC) guidelines were also relied on to develop this report. Information used from these studies/documents is summarised in the following subsections.

#### **1.2.1 Servicing and Settlement Master Plan (SSMP)**

In August 2014, BM Ross published the Town of Erin Servicing and Settlement Master Plan (SSMP) Final Report. The SSMP provides a brief overview of the current state of septic systems within the study area and summarises three previously completed reports relevant to the study. In summary, the SSMP found that there are no municipally owned communal sewage systems in Erin. They are generally serviced with Class 4 individual private septic systems, with a smaller portion of Class 6 systems and the commercial

areas being serviced by holding tanks. Since 1999, the Town of Erin Building Department has required a permit for any work installing or repairing septic systems, resulting in 484 permits issued for new septic systems and 209 for replacement or alteration from 1999-2014. There are a few shared proprietary septic systems; Centre 2000 in Erin that services the Erin High School and Erin Community Centre. Also The Stanley Park mobile home development and the St. John Brebeuf Catholic School each have their own respective proprietary systems.

There had been past studies done on the septic systems in Erin before BM Ross completed the SSMP. In 1995 the Wellington-Dufferin-Guelph Health Unit performed the Village of Erin Private Sewage System Survey. This helped define the problem for the Class EA because the results indicated that several sewage disposal systems in downtown and on the south end of Main Street are in close proximity to West Credit River, increasing potential for pollution. It also found that many lots in the Village have inadequate space for septic tank replacement that would meet today's design standards under the Ontario Building Code.

The MOECC & West Central Region Technical Support Section Water Unit determined in their 2005 Town of Erin Septic Investigation that septic systems within the Town are a contributor of nutrients to the west branch of the Credit River; however, the impact to receiver was low in 2005. They recommended that older areas of Erin be investigated, as the risk of septic nutrient impact might be higher due to the deterioration of the septic systems.

Lastly, in 2011, there was an Existing Conditions Report for the Erin SSMP Environmental Component to investigate the impact that septic systems had on the West Credit River. It found that the existing municipal water supply wells showed no apparent impact from septic systems and that there was only a slight increase in nitrate concentration over time in the river, downstream of Erin. It also revealed that chloride and mass loading in the West Credit River have increased considerably over the last 20-30 years. Phosphorous levels also have increased over time; however these increases appear to reflect changes in surface runoff rather than impacts from septic systems. In general the report found that there are relatively higher urban impacts (including septic systems) on the reaches of two tributaries, immediately adjacent to Erin when compared to the main branch of the West Credit River. The report further explains that to properly determine the overall sensitivity of the environmental features, functions and linkages within Erin, the results from this report must be combined with other component studies.

The SSMP Final Report also outlines the issues and constraints that the current septic system will face in the future. The report determined that many septic systems in Erin are over 30 years old, while the general lifespan of a septic system is 20-25 years old. This indicates that most systems are in need of being replaced in the immediate future and data shows that only 6 out of approximately 1500 systems within the urban settlements of Erin and Hillsburgh have been replaced since 2004. The need for septic replacement is imminent and the SSMP reports that 54% of properties in Erin and 55% of in Hillsburgh are presently not large enough for a replacement septic and tile bed under the Ontario Building Code.

## 1.2.2 Septic Re-Inspection Program – WSP Canada 2015 Annual Report

In 2015 WSP conducted a septic re-inspection evaluation on 113 properties in the Town of Erin. This program aims to protect water resources by inspecting septic systems within highly vulnerable municipal well head protection areas every 5 years to ensure that they are operating safely and being maintained. This program was based on the *Draft Source Protection Plan for the Grand River* (March 12th, 2015), which was introduced so that highly vulnerable systems cease to be or never become a significant threat to the water quality in municipal wells.

Following the inspection, 17 of the 113 septic systems were issued remedial action letters based on varying risk factors that were observed. The seven risk factors include: tank size, tank compartments, tank condition, effluent level, leaching bed condition, drinking water source distance, and distance to surface water. Of the 17 remedial action notices, 8 were due to the volume of solids (effluent level) being above the limit or unknown, which requires the tank to be pumped out and 9 were issued to address structural issues such as: missing/cracked/inaccessible lids, inlet or outlet pipe obstruction, and not being watertight. No other remedial action letters were issued, however, the majority (99%) of the inspected septic systems had two or less of the seven risk factors named above. The following is a breakdown of the results for each risk factor:

- Septic Systems with a Tank Size risk: 17%
- Septic Systems with a Tank Compartment risk: 10%
- Septic Systems with a Tank Condition risk: 12%
- Septic Systems with an Effluent Level risk: 17%
- Septic Systems with a Leaching Bed Condition risk: 9%
- Septic Systems with a Drinking Water Source Distance risk: 1%
- Septic Systems with a Distance to Surface Water risk: 1%

## 1.2.1 Building Department Records (Town of Erin)

As part of this Class EA, in order to further analyse the condition and compliance aspects of the existing septic systems in Erin and Hillsburgh, historical data was obtained from the Town of Erin's Building Department. These records included specific addresses, legal descriptions, owner information, well type and available septic information including: type, tank size, and filter bed size.

The Building Department also provided copies of individual septic related records that included lot property location surveys, septic installation/alteration permits, inspection records, for approximately 1,200 properties in Erin and Hillsburgh. Although the actual data provided by these records was incomplete for each individual property, it was useful in analysing the systems and identifying the approximate age of septic systems throughout each area of Hillsburgh and Erin.

## 1.2.2 Site Inspections

Also as part of this Class EA, a general site survey was undertaken throughout the Village of Erin and Hillsburgh to verify a sample of septic system records and to identify servicing issues for the main areas

of the communities. The results of this survey will be used to identify the cost to connect existing systems to the planned communal collection system.

### **1.2.3 GIS Data (Town of Erin)**

The Town of Erin GIS database provided a property fabric for all lots within the urban boundary. Included in the database was a listing of Parcel ID numbers, Roll Numbers, and lot areas which were attached to spatial reference points. The property area was used as a measure to determine if sufficient space is available for a replacement septic system. The Roll Numbers were used to link existing building department records to the location of the property.

### **1.2.4 Ontario Building Code**

The construction and installation of small individual septic systems (<10,000 L/d) up to a daily design sewage flow of 10,000 litres per day is regulated under the Ontario Building Code (OBC). The OBC regulates the design, construction, operation and maintenance of on-site septic systems for most single family homes, through Part 8 of Division B of the Building Code (O. Reg.350/06) made under the Building Code Act, 1992.

Per Ontario Building Code (Clause 8.2.2.3), the minimum working capacity of a septic tank shall be the greater of 3,600 L and (a) in residential occupancies, twice the daily design sanitary sewage flow or (b) in non-residential occupancies, three times the daily design sanitary sewage flows.

### **1.2.5 Ministry of Environment and Climate Change (MOECC)**

All sewage works with a design capacity in excess of 10,000 L/d, including subsurface disposal systems, are subject to the requirements of Section 53 of the Ontario Water Resources Act (OWRA) administered by the MOECC. Subsurface disposal systems with a design capacity in excess of 10,000L/d are referred to as large subsurface sewage disposal systems (LSSDS). The LSSDS is mainly comprised of two components, a pre-treatment process (i.e., a septic tank or other treatment processes facilities) followed by a soil component (e.g. drain field).

For LSSDS, the working capacity of the septic tank(s) should provide a minimum of 24-hours retention at design peak daily flow. If the LSSDS is proposed to service dry industry, commercial facilities, institutional development, restaurants, office buildings or a larger residential development, it will be necessary to assess both the sewage quality and flow characteristics.

There are some types of wastewater that may not be suitable to be treated with a LSSDS. These may include wastewater from automatic car washes, garage facilities, or some agricultural uses such as egg washing. LSSDS for these types of sewage may require complicated pre-treatment or this type of wastewater may not be suitable for subsurface disposal.

Secondary aerobic biological treatment processes (other than primary septic tanks) for lowering concentrations of BOD and TSS in the effluent are recommended for LSSDS. For flows not substantially larger than 10,000 L/d, the designer should consider the use of pre-engineered (package) aerobic biological treatment units.



The size of LSSDS drain field interface surface may also preclude the use of gravity flow to the drain fields. Part 8 of Division B of the Building Code mandates effluent distribution through dosing for any sewage system having more than 150 m (490 feet) length of distribution pipe. Typically, all LSSDS's fall within this category and should be dosed appropriately.

Evaluation of existing systems was conducted for compliance with MOECC.

## **2.0 Data Analysis**

### **2.1 Septic System Database**

A database was created using the available septic information in order to analyze and to help make decisions on whether certain areas of Erin and Hillsburgh required connection to a communal collection system or whether they should be left to continue using their current septic system. This database combined the data made available through the Town of Erin Building Department Records and the GIS data. This database was used in conjunction with the information and recommendations provided by the SSMP, WSP Canada 2015 Annual Report, Ontario Building Code, and the MOECC to decide whether connection to a communal system for each area of Erin and Hillsburgh was necessary.

### **2.2 Defining Collection Decision Areas**

In deciding whether existing private septic systems can remain as private systems or should be incorporated into a proposed communal system, it is desirable to define “servicing areas” and to decide on an area by area basis as outlined in the SSMP. Constructing a communal wastewater system to service only those systems with proven non-compliance or poor performance issues, while allowing individual lots on the same street or within the same area to remain on private systems, is not a valid approach for the following reasons:

- MOECC will require that wastewater collection systems be designed to service all lots within a specific service area consistent with the planning designation for the area. If an area is to be designated for servicing by a communal wastewater system, then the system must be designed to meet the capacity of all of the properties within this area
- Typically, where a communal wastewater system is to be designed to service an area, Municipalities require all properties to be connected and to contribute their share of the capital and operating costs

For the above reasons, it is necessary to designate specific areas to be serviced by private wastewater systems or by a communal wastewater system. For the purposes of this study, therefore, Erin and Hillsburgh, was split into logical serviceable sections, defined as “decision areas”. Decision areas were derived from a combination of factors including location, local topography, drainage areas, proximity to sensitive receivers, and development consistency (lot sizes etc). The decision areas of each of the two communities each have their own unique challenges to be taken into account when planning wastewater collection options.

Having defined the “decision areas”, the analysis of existing private systems provides the rationale for whether each area is to be serviced by a communal wastewater system or to continue to be serviced by private wastewater systems.

The decision areas identified are outlined in Table 1.

**Table 1 - Collection System Decision Areas in Erin and Hillsburgh**

Decision Area Name	Location	Rationale
Erin Industrial Area	North of the Elora Cataract Trailway South of Sideroad 17 Pioneer Drive is included	Primarily industrial and commercial area Natural drainage to the south Contains communal septic system for recreation centre
Erin Town Core 1	South of the Elora Cataract Trailway North of Water St West of Creditview River Road East of Erin Heights Drive	Primarily residential area Consistent lot sizing and building age Several drainage challenges along the river Contains areas of institutional/commercial development
Erin Town Core 2	North of the West Credit River South of Water St A small portion of Highway 124 is included	Primarily residential area Natural drainage area terminating at the West Credit River Consistent lot sizing and building age Contains areas of commercial development
South Erin	Properties along Wellington 124 and Along 8 <sup>th</sup> Line.	Primarily residential area Consistently large lot sizing and newer building age

Erin Heights	Properties along Erin Heights Drive and Sideroad 15	Uniform development  Consistent lot sizing and building age  Drainage towards river (NE)  Separated from Town Core areas by the West Credit River
South East Erin	Bounded by Wellington 124 Road and the south east study area boundary.	Primarily new development with large lot size  Natural drainage towards the northwest
North East Erin	Properties along 10 <sup>th</sup> Line including Pine Ridge Road and Credit River Road.	Primarily residential area Consistently large lot sizing and newer building age
Hillsburgh Town Core 1	North of Mill Street  East of Trafalgar Road  Bounded by north study areas boundary	Primarily Residential  Natural drainage towards south end of the decision area  Primarily medium sized lots with consistent building age, with larger lots in the North end  Contains areas of commercial development
Hillsburgh Town Core 2	North of Station Street  South of Mill Street  East of Trafalgar Road	Primarily Residential  Natural drainage towards west end of the decision area  Primarily medium sized lots with consistent building age  Contains areas of commercial development
Upper Canada Drive	Properties along Upper Canada Drive and Leader Court	Residential area  Single development with

		consistent age and large lot sizes
		Drainage splits NE and SW creating two drainage areas
George Street	Properties along George Street	Consistent development age and lot sizes
		Drainage to the west
South Trafalgar Road	Properties along Trafalgar Road south of Station Street	Mixed residential and commercial development
		Consistent building age
		Drainage to the south

The drawings in Appendix A provide a visual representation of the collection decision areas in Erin and Hillsburgh.

## 2.3 GIS Data

The Town of Erin GIS database provided a property fabric for all lots within the urban boundary. Included in the database was a listing of Parcel ID numbers, Roll Numbers, and lot areas which were attached to spatial reference points. The property area was used as a measure to determine if sufficient space is available for a replacement septic system. The GIS data was also used to link existing building department records to the location of the property.

The Ontario Building Code states that a lot must be at least 1,400 m<sup>2</sup> to accommodate a septic system replacement. In an analysis of the property lot sizes, it was found that 49% of Erin properties and 58% of Hillsburgh properties are below 1,400m<sup>2</sup>, which excludes them from replacing their septic systems in the future, as shown in Table 2.

Table 2 - Town of Erin Properties <1,400m<sup>2</sup>

	Total Properties	Properties <1,400m <sup>2</sup>	% Properties < 1,400m <sup>2</sup>
Erin	1339	650	<b>49%</b>
Hillsburgh	512	295	<b>58%</b>
Total	1851	945	<b>51%</b>

Properties less than 1,400m<sup>2</sup> in Town of Erin and Hillsburgh are shown in Appendix B.

## 2.4 Building Department Data

The data received from the Town of Erin’s Building Department provided information on existing systems. The Ontario Building code states that a septic system must have a minimum working capacity of 3,600L. The building department provided tank sizes for 548 properties in Erin and 266 in Hillsburgh, representing 44% of properties, as can be seen in Table 3.

Table 3 - Town of Erin Septic Tank Sizes

	Total Property Information Available	Tanks < 3,600L	% Tanks < 3,600L
Erin	548	75	<b>14%</b>
Hillsburgh	266	49	<b>18%</b>
Total	814	124	<b>15%</b>

Within that data, 14% and 18% of septic tanks are below the OBC specified 3,600L limit in Erin and Hillsburgh respectively.

A cross section of the septic records was analyzed from each street in Erin and Hillsburgh to determine the septic system age specific to each individual decision area. To be conservative, the highest septic age found on each street was used to represent the age of each respective street. Table 4 shows the average maximum age of the streets within each decision area.

Table 4 - Average Septic System Ages

Decision Area	Average Max Age (yrs)
<b>Erin</b>	
South East Erin	26
Erin Industrial Area	31
North East Erin	no septic records
South Erin	23
Erin Town Core 1	39
Erin Town Core 2	40
Erin Heights	32
<b>Hillsburgh</b>	
Hillsburgh Town Core 1	33
Hillsburgh Town Core 2	37
Upper Canada Drive	11
George Street	29
South Trafalgar Road	35

## 2.5 Well Head Protection Program

In December of 2015, the Source Protection Plan (SPP) for the Credit Valley/Toronto and Region/Central Lake (CTC) Source Protection Region in Ontario came into effect to protect current and future sources of municipal drinking water from significant threats. As part of the SPP, the Well Head Protection Program has come into effect and has defined well protection areas within Ontario. There are varying sizes of land that are considered protected for each well and their size depends on the length of time necessary for a contaminant to reach the wellhead by means of ground water. The *Clean Water Act* (2006) required that a circle of 100 metres in diameter be provided around each municipal well. The wellhead protection program uses this as their first protection area for each well (WHPA-A), the second is a representation of 2 years of contaminant travel time (WHPA-B), the third is 5 years of travel time (WHPA-C), the fourth is 25 years (WHPA-D), and the last refers to wells in direct influence of surface water (WHPA-E).

Severity of risk is highest within the first protection area delineation of 100m diameter surrounding the well and tends to decrease as the radius gets larger from WHPA-B to WHPA-D. The SPP also assigns vulnerability scores (1-10) to land within the wellhead protection areas based on the vulnerability of the source water area and the hazard rating of the potential threat. The SPP indicates that establishment, operation, or maintenance of septic systems within the WHPA-A will require a maintenance program to be created and an annual report to be submitted to the MOECC equivalent to Section 65 of O.Reg. 287/07. The report must outline the actions taken in the previous year to achieve outcomes of the source protection policy. According to the SSMP, the maintenance program should be a 5 year mandatory septic system inspection. Septic systems within WHPA-B will have their Environmental Compliance Approvals established or under review to ensure it they do not become a significant threat (vulnerability score = 10) in the near future. However, if the vulnerability score within WHPA-B is currently 10, then the same rules that apply to septic systems within WHPA-A, also apply to WHPA-B.

Hillsburgh has 2 wells within its boundary and Erin has 3, all of which have a risk of contamination from septic systems. Appendices C-1 and C-2 show that in Erin, 13 properties are within a WHPA-A and Appendix C-3 show that there are 25 properties within a WHPA-A in Hillsburgh. In addition, in Appendix C-1 it can be seen that Erin has 102 properties within a WHPA-B that has a vulnerability score of 10, which means that operation, or maintenance of those septic systems requires an inspection program. In total there are 140 properties within the wellhead protection plan that have septic systems that require a 5-year maintenance program to be created and an annual report to be submitted to the MOECC equivalent to Section 65 of O.Reg. 287/07.

Although a vulnerability score of 10 is considered significant threat, a score of 8 indicates that that land's risk is close to being a significant threat to municipal water quality. Since the age of the systems within the areas with a vulnerability score of 8 are past the typical septic system life span of 20-25 years, the integrity of the systems will begin to break down in the immediate future and the risk of contamination will increase, which causes the vulnerability score to rise. In Erin, there are two areas in which there is vulnerability score of 8; a WHPA-C in the south end of Erin and a WHPA-B on the west side of Erin, shown in Appendices C-1 and C-2, respectively. In Hillsburgh, both WHPA-B have a

vulnerability score of 8 and they contain 84 properties, as can be seen in Appendix C-3. Table 5 provides a breakdown of the wellhead protection areas and how they affect both Erin and Hillsburgh.

**Table 5 - Well Head Protection Data**

Well Head Protection Area Type	Erin		Hillsburgh		Total	
	Lots with VS=10	Lots with VS=8	Lots with VS=10	Lots with VS=8	Lots with VS=10	Lots with VS=8
WHPA-A	13	0	25	0	38	0
WHPA-B	101	1	0	84	101	85
WHPA-C	0	23	0	0	0	23
<b>TOTAL</b>	<b>114</b>	<b>24</b>	<b>25</b>	<b>84</b>	<b>139</b>	<b>108</b>

\*VS: Vulnerability Score

## 2.6 Gap Analysis

A gap analysis was performed to identify properties with missing septic system information.

### 2.6.1 Unaccounted Information

Septic system information for 1,590 lots within Erin and Hillsburgh was available which accounts for 86% of the 1,851 lots in the urban area of Hillsburgh and Erin. A gap analysis of the available data is shown on Table 6.

**Table 6 - Gap Analysis of Available Information**

Data	Total		Erin		Hillsburgh	
	# of Lots	% of Properties	# of Lots	% of Properties	# of Lots	% of Properties
Total Lots	1851	100%	1339	100%	512	100%
GIS Data	1851	100%	1339	100%	512	100%
Data from Building Dept.	1590	86%	1088	81%	502	98%
Tank Size	814	44%	548	41%	266	52%
Septic Age	1236	67%	740	55%	496	97%
Type of Septic System	861	47%	575	43%	286	56%

### **2.6.2 Potential Methods of Unaccounted Information Procurement**

To obtain data on Septic Type, Septic Age and Septic Size, a full investigation into each individual septic permit that the Building Department is necessary. There are approximately 1200 entries that have varying historical and incomplete permit information.

A physical survey of each individual property would be necessary to obtain 100% of the septic data. Since it is unlikely that property owners would have detailed information on the extent of their disposal beds or tanks, the collection of this data would involve extensive field work. While it was originally envisaged that most data would need to be collected in the field, the actual data collected from the building department has likely more accurate and useful than information that could be collected from property owners.

For this reason, it is suggested that the information available from the sources outlined in this study be considered sufficient to decide whether each area becomes part of the communal wastewater system or remains as privately serviced.

## **3.0 Overview of Collection Decision Areas**

Using the information presented in this report, rationale was made for the properties of each decision area to either be connected to the future wastewater collection system or to continue with private servicing.

### **3.1 Wastewater Collection System Rationale**

#### **3.1.1 Erin**

Erin has been divided into 7 decision areas for wastewater. This section of the report will focus on each area individually and provide rationale as to whether it should be connected to a communal system based on the information provided in Section 2.



*Erin Industrial*

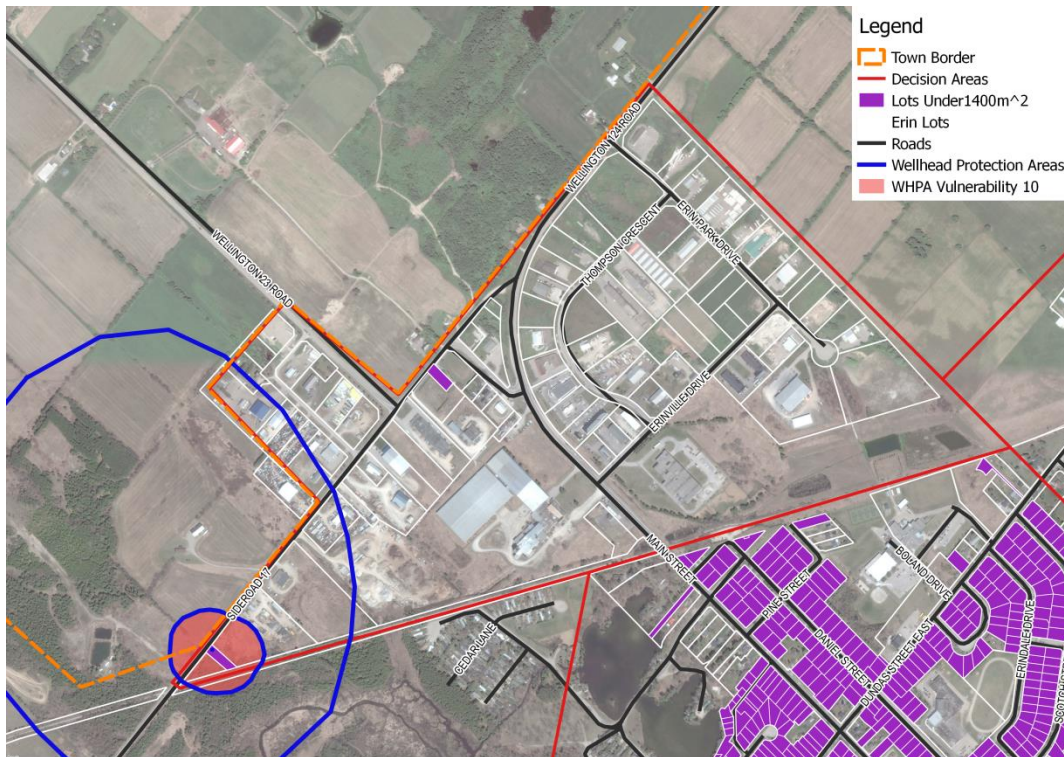


Figure 1 - Erin Industrial

The Erin Industrial area is made up of characteristically large commercial buildings and following a visual inspection, almost no signs of existing septic systems were found. This means that the vast majority of these lots may be using a holding tank or another type of wastewater system that may not comply with the Ontario Building Code.

Based on the information provided by the Building Department and on flow calculations, the majority of the lots in this decision area could potentially exceed 10,000L/d. Therefore, the septic systems will likely have to comply with MOECC and not OBC as mentioned in section 1.2.5.

In reviewing the business profile of the area it is apparent that certain properties may have replaced or altered their septic systems due to a change in business operation. It is also apparent that lot sizes presently may not support expansion of some businesses to their full potential. From the available septic records, Table 7 presents the average age of systems within this decision area. The majority of the systems in Erin Industrial are also likely past their typical useful lifespan.

Table 7 - Septic Age within Erin Industrial Area

Street	Approximate Septic Age (yrs)
Erin Park Drive/Erinville Drive	27
Side Road 17	25
Shamrock Road	44
Thompson Crescent	29
<b>Average Age</b>	<b>31</b>

Since the majority of the septic systems in this area may not conform to the MOECC guidelines and, the average age of the septic systems may be close to end of their useful lifespan, it is recommended that the Erin Industrial area be connected to the proposed communal wastewater collection and treatment system.

### Erin Town Core 1

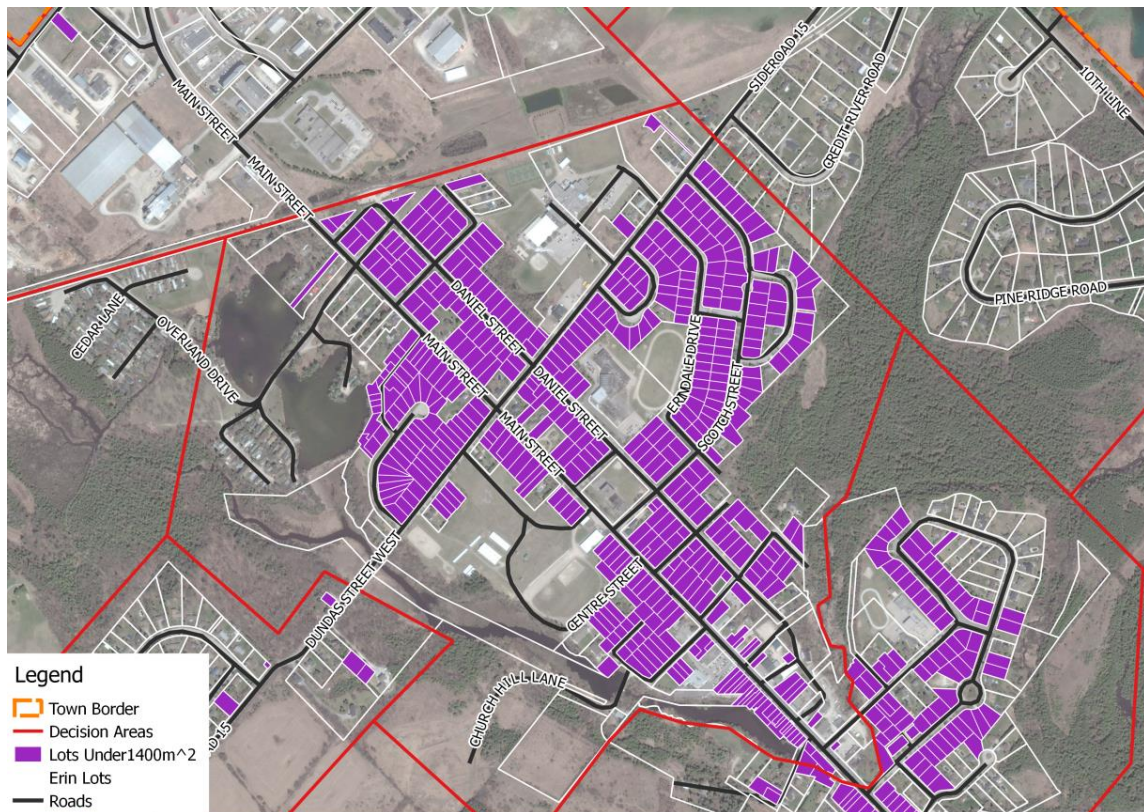


Figure 2 - Erin Town Core 1

The Erin Town Core 1 area contains 521 of the 1,339 lots that are located in Erin, which is the largest decision area in Erin. Of the 521 properties, 449 (86%) are below the minimum 1,400m<sup>2</sup> lot area for septic replacement.

The septic tank size data is available for 228 lots. Of those lots, 22% have septic systems with a tank that is below 3,600L in working capacity, which violates section 8.2.2.3 of the OBC. Within the available septic tank size data, the following streets in Erin Town Core 1 have the highest number of non-compliance sized tanks: Tomwell Cres. (58%), Scotch St. (60%), Erindale Dr. (40%). A portion of properties on the Main St of Erin are using holding tanks as their current septic system. This type of septic system is also in violation of section 8.2.2.3 of the OBC.

Table 8 shows that the average age of the septic systems in this decision area is 39 years old, with the oldest streets being Dundas St E, Main St and Daniel St, which are 55+ years old. A portion of the properties on those streets may have since been replaced or altered their septic systems due to disrepair.

**Table 8 - Septic Age within Erin Town Core 1**

Street	Approximate Septic Age (yrs)
Daniel Street	56
Ross/Lorne Street	29
Spring Street	39
Pine Street	33
May Street	34
Dundas Street East	62
Tomwell Crescent	44
Centre Street	31
Scotch Street	48
English Street	12
Erindale Drive	44
Erinlea Crescent	27
Church Street/Wheelock St.	44
Church Boulevard	32
Carberry Road	33
Sunnyside Drive	29
Dundas Street West	44
Main Street	64
<b>Average Age</b>	<b>39</b>

There are no lots within Erin Town Core 1 that fall within the wellhead protection areas, however, the east and west boundaries of this decision area are in close proximity to the West Credit River and the topography indicates that the decision area drains towards those boundaries. If septic systems are deficient and leaking, they will potentially drain into the West Credit River. Due to the majority of the lots being undersized, the old age of the existing septic systems and the high number of tanks being



undersized, this area should be connected to the proposed communal wastewater collection and treatment system.

### Erin Town Core 2

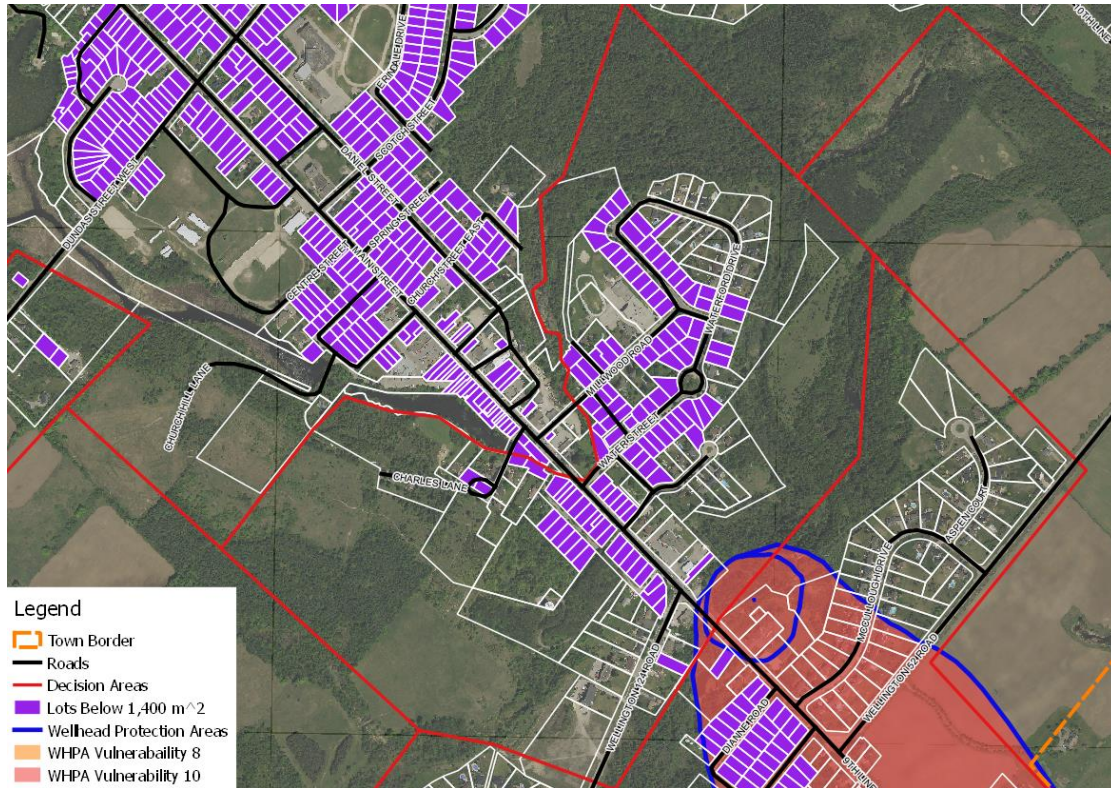


Figure 3 - Erin Town Core 2

The Erin Town Core 2 area contains 174 of the 1,339 lots that are located in Erin. Of these properties, 61% are below the minimum 1,400m<sup>2</sup> lot area for septic replacement.

The septic tank size data is available for 71 lots. Of those lots, 18% have septic systems with a tank that is below 3,600L in working capacity, which violates section 8.2.2.3 of the OBC. Within the available septic tank size data, the following streets in Erin Town Core 2 have the most non-compliance sized tanks: Waterford/Water Dr. (26%) and Scotch St. (43%). A portion of properties on the Main St of Erin are still using holding tanks as their current septic system. This type of septic system is also in violation of section 8.2.2.3 of the OBC.

Table 9 shows that the average age of the septic systems in this decision area is 42 years old, with the oldest streets being Charles St, William St, Waterford/Water Dr, and Millwood Dr, which are 45+ years old. A portion of the properties on those streets may have since replaced or altered their septic systems due to disrepair.

Table 9 - Septic Age within Erin Town Core 2

Street	Approximate Septic Age (yrs)
Waterford/Water Drive	49
Millwood Road	46
Young Street	29
Lions Park Avenue/Hillsview St	34
William Street	51
Charles Street	57
Wellington Road 124	29
Main Street	28
<b>Average Age</b>	<b>40</b>

There are 2 lots on the most southern point of Erin Town Core 2 that is within a WHPA-A with vulnerability score of 10 and 1 lot within a WHPA-B with a VS of 10. These lots require a maintenance program to be created and an annual report to be submitted to the MOECC equivalent to Section 65 of O.Reg. 287/07. The report must outline the actions taken in the previous year to achieve outcomes of the source protection policy. According to the SSMP, the maintenance program should be a 5 year mandatory septic system inspection.

The west boundary of this decision area is in close proximity to the West Credit River and east side is in close proximity to a tributary. The topography indicates that the decision area drains towards those boundaries. If septic systems are deficient and leaking, they will potentially drain into the surrounding river.

Due to the majority of the lots being undersized, the old age of the existing septic systems and the high number of undersized septic tanks, this area should be connected to the proposed communal wastewater collection and treatment system.



*South Erin*

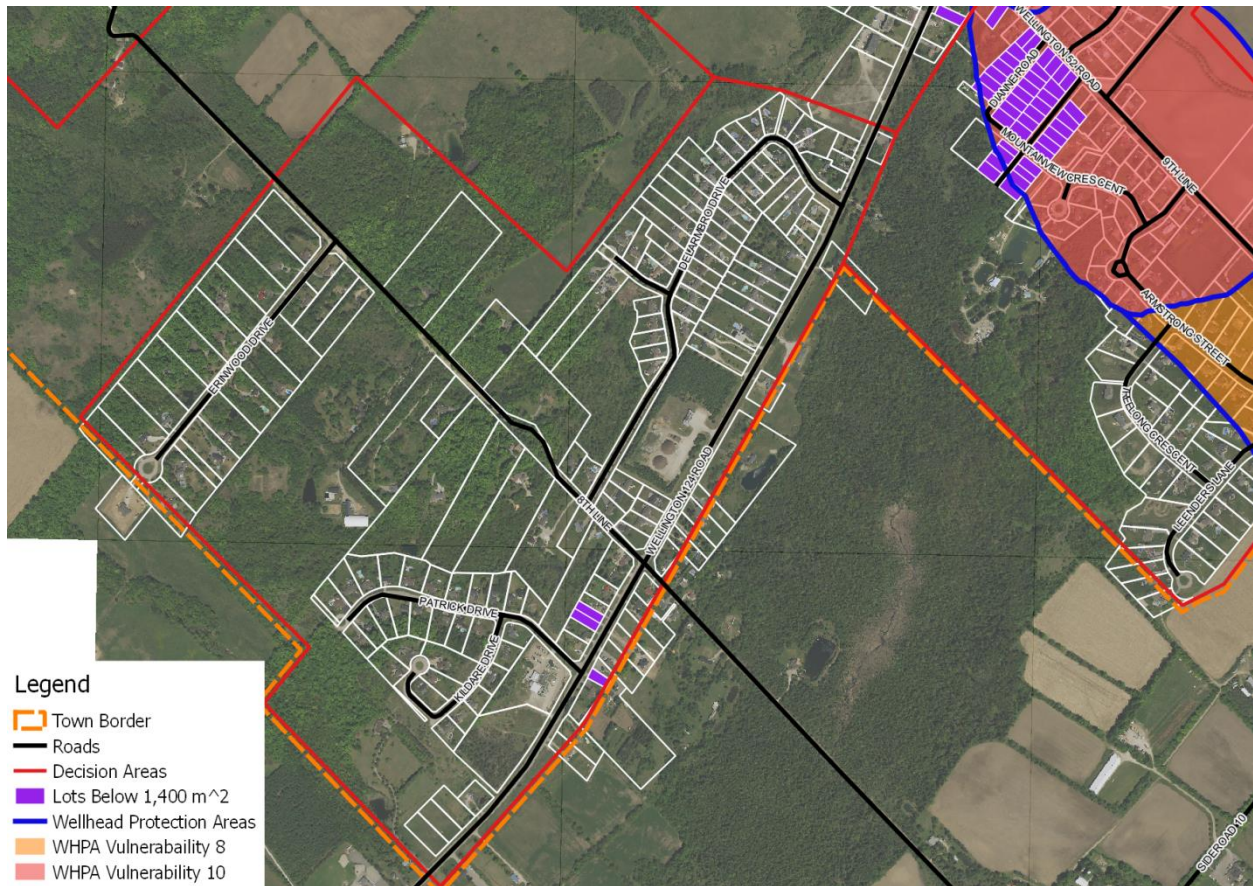


Figure 4 - South Erin

The South Erin decision area contains 163 of the 1,339 lots that are located in Erin. Of these lots, only 2% are below the minimum of 1,400m<sup>2</sup> lot area for septic replacement.

The building department data accounts for only 37 lots (20%) within this decision area.

The septic tank size data is available for only 20 lots. Of those lots, 15% (3 tanks) have septic systems with a tank that are below 3,600L in working capacity, which violates section 8.2.2.3 of the OBC. These non-compliant septic tanks are all on Wellington Road 24.

Table 10 indicates that South Erin is a comparatively new area with an average septic system age of 19 years. Within the Building Department septic records, 8<sup>th</sup> Line, Erinwood Drive, and Patrick Drive were unavailable.

Table 10 - Septic Age within South Erin

Street	Approximate Septic Age (yrs)
Wellington Road 124	29
Delarmbro Drive	16
8th Line	no permit info
Forest Ridge Road	12
Erinwood Drive	no permit info
Patrick Drive	no permit info
<b>Average Age</b>	<b>19</b>

Due to the low number of lots below 1,400m<sup>2</sup> and the relatively young age of the majority of the lots, the recommendation is not to connect this area to the communal wastewater collection and treatment system.

### Erin Heights

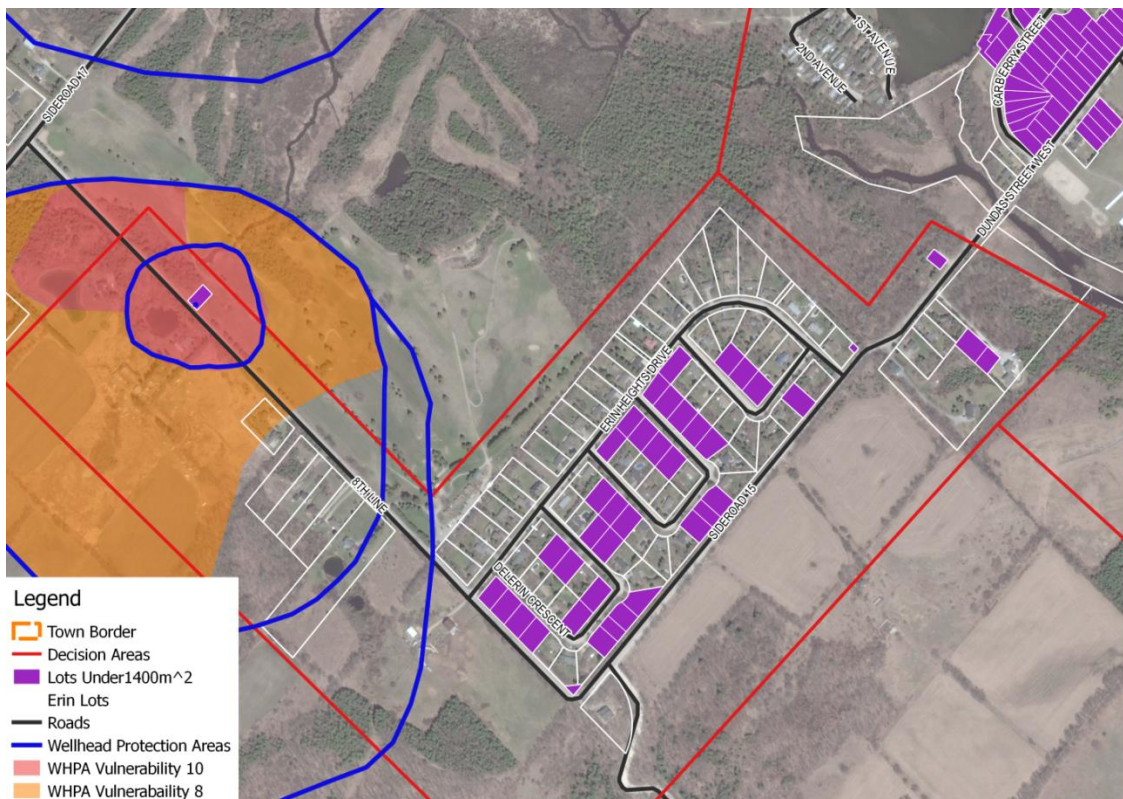


Figure 5 - Erin Heights

The Erin Heights decision area contains 115 of the 1,339 lots that are located in Erin. Of these lots, 38% are below the minimum 1,400m<sup>2</sup> lot area for septic replacement.

The septic tank size data is available for 45 lots. Of those lots, only 2% have septic systems with a tank that are below 3,600L in working capacity, which violates section 8.2.2.3 of the OBC.

There is 1 lot on 8<sup>th</sup> Line within the Erin Heights that is within a WHPA-A with vulnerability score of 10 which requires an inspection program to support its operation and maintenance under the SPP. In addition there is 1 lot within a WHPA-B with a vulnerability score of 8, increasing the probability that operation and maintenance will require an inspection program under the SPP.

Table 11 shows that the average age of the septic systems in the decision area is 29 years old, with the oldest streets being 40+ years old: Erin Heights Dr, William Rex Cres, and Delerin Cres.

**Table 11 - Septic Age within Erin Heights**

<b>Street</b>	<b>Approximate Septic Age (yrs)</b>
Erin Heights Drive	40
William Rex Crescent	41
Wesley Crescent	38
Delerin Crescent	41
Dundas Street West	30
8th Line	3
<b>Average Age</b>	<b>29</b>

The northeast boundary of this decision area is in close proximity to the West Credit River. The topography indicates that the decision area drains towards that boundary and if septic systems are deficient and leaking, they will potentially drain into the surrounding river.

Due to the high number of undersized lots and the septic ages likely approaching the end of their useful life, it is recommended that this area should be connected to the proposed communal wastewater collection and treatment system.



### South East Erin

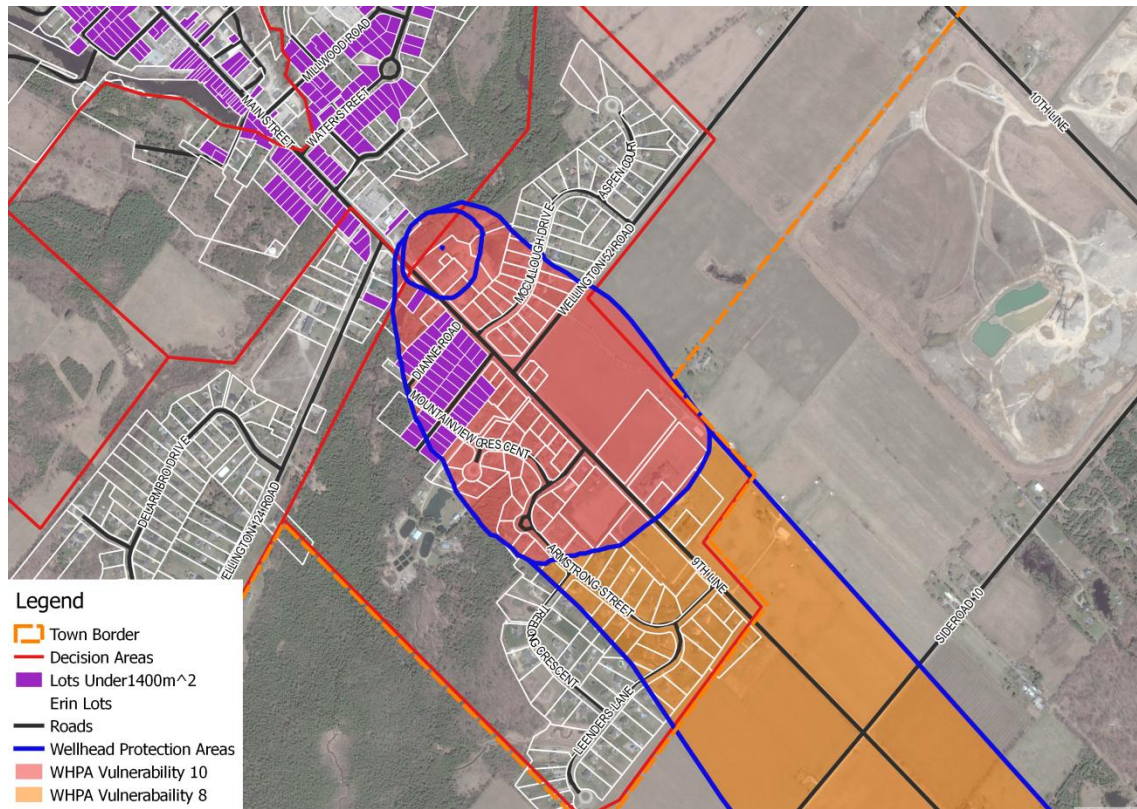


Figure 6 - South East Erin

The South East Erin decision area contains 191 of the 1,339 lots that are located in Erin. Of these lots, 24% are below the minimum 1,400m<sup>2</sup> lot area for septic replacement. The undersized lots are all located primarily on Dianne Rd, Kenneth Ave, and Mountain View Cres.

The septic tank size data is available for 127 lots. Of those lots, only 4% have septic systems with a tank that are below 3,600L in working capacity, which violates section 8.2.2.3 of the OBC.

There are 86 lots within the South East Erin decision area with vulnerability score of 10, five (5) of these lots land within WHPA-A and 81 of these lots land in a WHPA-B. These lots require a maintenance program to be created and an annual report to be submitted to the MOECC equivalent to Section 65 of O.Reg. 287/07. The report must outline the actions taken in the previous year to achieve outcomes of the source protection policy. According the SSMP, the maintenance program should be a 5 year mandatory septic system inspection.

There are also 20 lots that fall within a WHPA-C that has a vulnerability score of 8. The lots with a vulnerability score of 8 are close to a score of 10 and as the age of the septic systems increases, so does their risk of contaminating the groundwater, which increases the vulnerability score of the wellhead

protection area that they fall under. This will result in these lots becoming a vulnerability of 10 and inciting the mandatory maintenance and reporting program mentioned above.

Table 12 shows that the average age of the septic systems in the decision area is 27 years old. There are four streets that still have substantial remaining life for their septic systems: Treelong Cres, Leenders Ln and Armstrong St, and Aspen Ct.

**Table 12 - Septic Age within South East Erin**

<b>Street</b>	<b>Approximate Septic Age (yrs)</b>
Dianne Road	25
9th Line	47
Mountain View Cres.	29
Garden Court	29
Kenneth Avenue	59
Armstrong Street	11
Leenders Lane	11
Aspen Court	18
McCullough Drive	21
Wellington Road 52	32
Treelong Crescent	10
<b>Average Age</b>	<b>27</b>

The lots within a wellhead protection area with a vulnerability score of 8 and 10 should be connected to the proposed communal wastewater collection and treatment system. These lots are located on the following streets: 9<sup>th</sup> Line, Dianne Rd, Kenneth Ave, Mountain View Cres, Armstrong St, Treelong Cres, Leenders Ln, Wellington Road 52. The remaining streets; McCullough Dr and Aspen Ct, have 21 and 11 year old septic systems, however it is anticipated that they would require to be connected to a communal system at some point in the future.

The northwest boundary of this decision area is in close proximity to a tributary of the West Credit River. The topography indicates that the decision area drains towards that boundary. More specifically, if the septic systems on McCullough Dr are deficient and leaking, they will potentially drain into the nearby tributary.

It is recommended to connect this entire area to a communal wastewater system. However this could be re-evaluated following the completion of the ongoing water system Class EA.

## North East Erin

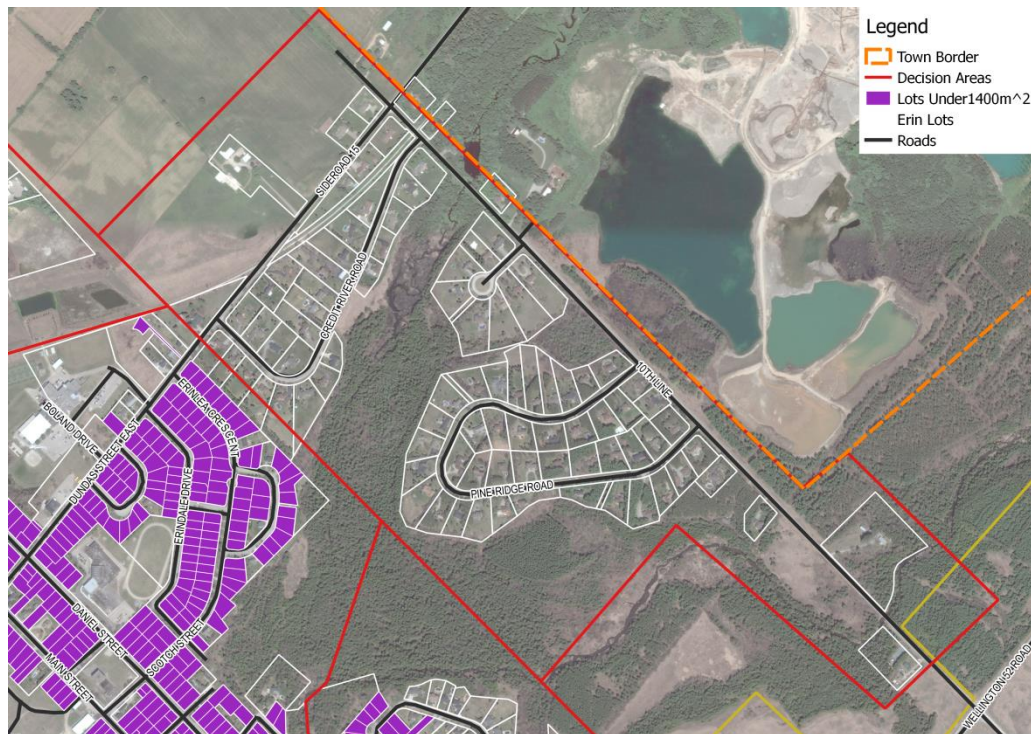


Figure 7 - North East Erin

The North East Erin decision area contains 95 of the 1,339 lots that are located in Erin. The building department data accounts for only 33 lots (20%) within this decision area. None of those lots are below the minimum 1,400m<sup>2</sup> lot area for septic replacement.

The septic tank size data is available for 31 lots. None of those septic systems has a tank that is below 3,600L in working capacity.

There are no lots within this area that fall within well head protection areas.

The Building Department records had no data regarding the age of the septic systems in this area.

The West Credit River runs through the south end of this decision area and the topography indicates that it drains towards the river. If the septic tanks in this decision area were to become deficient and leak, they could potentially contaminate into the West Credit River. However, since these lots were only recently developed, that is unlikely to occur in the near future.

It is recommended that this area not be connected to the proposed communal wastewater collection and treatment system in the immediate future.



### 3.1.2 Hillsburgh

Hillsburgh has been split into 5 decision areas regarding wastewater collection.

#### Hillsburgh Town Core 1

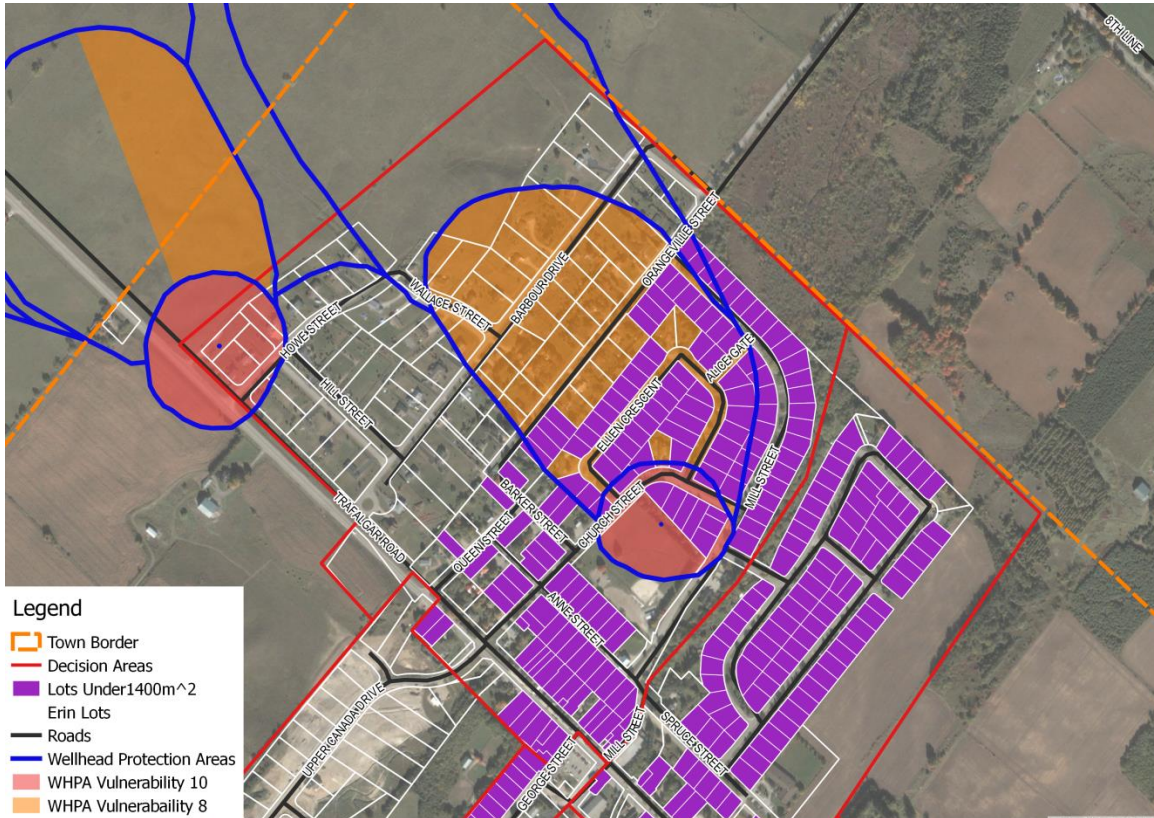


Figure 8 - Hillsburgh Town Core 1

The Hillsburgh Town Core 1 area contains 230 of the 512 lots that are located in Hillsburgh, which is the largest decision area in Hillsburgh. Of the 230 properties, 63% are below the minimum 1,400m<sup>2</sup> lot area for septic replacement. Most of the undersized lots are located south of Orangeville Street, with majority of lots on Mill St., Ellen Cres., Anne St., and Church St. being below 1,400m<sup>2</sup>.

The septic tank size data is available for 227 lots. Of those lots, 36% have septic systems with a tank that are below 3,600L in working capacity, which violates section 8.2.2.3 of the OBC. Within the available septic tank size data, the following streets in Hillsburgh Town Core 1 have the most non-compliance sized tanks: Ellen Cres/Alice Gate (94%) and Mill St. (50%).

There are 25 lots within the Hillsburgh Town Core 1 that land within a WHPA-A with vulnerability score of 10. The majority of lots within the two WHPA-A within Hillsburgh Town Core 1 are on Church St and Howe St. The SPP requires these lots to have a maintenance program be created and an annual report to be submitted to the MOECC equivalent to Section 65 of O.Reg. 287/07. The report must outline the

actions taken in the previous year to achieve outcomes of the source protection policy. According the SSMP, the maintenance program should be a 5 year mandatory septic system inspection.

There are also 83 lots that fall within a WHPA-B that has a vulnerability score of 8. As can be seen in Appendix C-3, the WHPA-B with vulnerability score of 8 encompasses large portions of lots on Barbour Dr., Orangeville St., Ellen Cr., and Wallace St. These lots are close to a score of 10 and as the age of the septic systems increases, so does their risk of contaminating the groundwater, which would increase the vulnerability score of the wellhead protection area. This will cause the vulnerability scores to reach 10, which will incite the mandatory maintenance and reporting program mentioned above.

Table 13 shows that the average age of the septic systems in the decision area is 33 years old, with the oldest streets being Ellen Cres/Alice Gate, Church St and Trafalgar Rd, which are 45+ years old.

**Table 13 - Septic Age within Hillsburgh Town Core 1**

Street	Approximate Septic Age (yrs)
Barbour Drive	22
Hill Street	20
Wallace Street	19
Howe Street	23
Anne Street	31
Mill Street	44
Ellen Crescent/Alice Gate	46
Orangeville Street	40
Queen Street	33
Barker Street	23
Church Street	47
Trafalgar Road	45
<b>Average Age</b>	<b>33</b>

There is a tributary that runs through the south east section of this decision area, along Mill St. The topography indicates that the decision area drains towards that tributary and if septic systems are deficient and leaking, this could potentially increase the risk of contamination to the surface water.

Due to the majority of the lots being undersized, a high number of undersized septic tanks, a large portion of the area being in wellhead protection areas with vulnerability scores of 8 and 10, the close proximity to nearby surface water and the old age of the septic systems, it is recommended that this area be connected to the proposed communal wastewater collection and treatment system.

## Hillsburgh Town Core 2

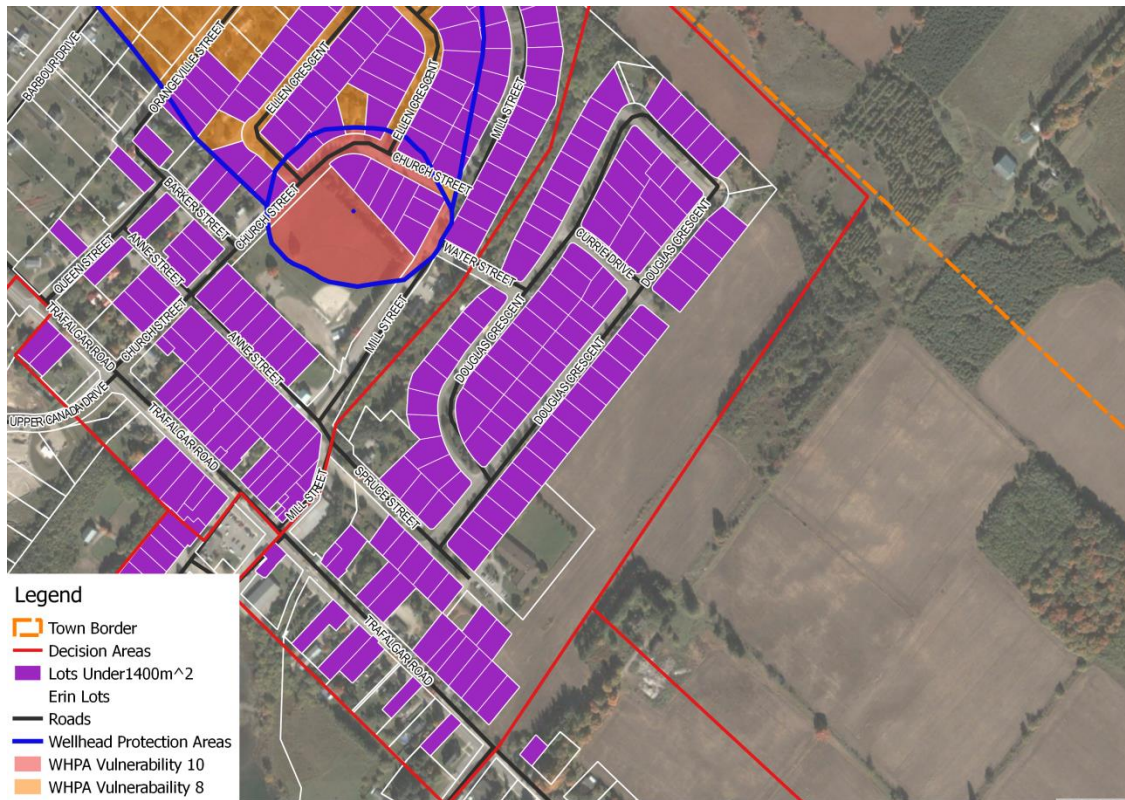


Figure 9 - Hillsburgh Town Core 2

The Hillsburgh Town Core 2 area contains 126 of the 512 lots that are located in Hillsburgh. Of the 126 properties, 85% are below the minimum 1,400m<sup>2</sup> lot area for septic replacement.

The septic tank size data is available for 61 lots. Of those lots, 3% have septic systems with a tank that are below 3,600L in working capacity, which violates section 8.2.2.3 of the OBC.

There are no lots within Hillsburgh Town Core 2 that fall within the wellhead protection areas.

Table 14 shows that the average age of the decision area is 37 years old.

Table 14 - Septic Age within Hillsburgh Town Core 2

Street	Approximate Septic Age (yrs)
Douglas Crescent/Currie Drive	39
Spruce Street	39
Trafalgar Road	32
<b>Average Age</b>	<b>37</b>



There is a tributary that runs in close proximity to northwest section of this decision area, along Mill St. The topography indicates that the decision area drains towards that tributary and if septic systems are deficient and leaking, they will potentially contaminate it. There is also a small lake located in close proximity to the south west border of this decision area that also has potential for contamination due to deficient septic systems.

Due to the majority of the lots being undersized, the close proximity to surface water and the old age of the septic systems, it is recommended that this area be connected to the proposed communal wastewater collection and treatment system.

### Upper Canada Drive



Figure 10 - Upper Canada Drive

The Upper Canada Drive area contains 46 of the 512 lots that are located in Hillsburgh. Of the 126 properties, none are below the minimum 1,400m<sup>2</sup> lot area for septic replacement.

The septic tank size data is complete for this area and no lot has septic systems with a tank that are below 3,600L in working capacity. There are also no lots within Hillsburgh Town Core 2 that fall within the wellhead protection areas.

Table 15 shows that the average age of the septic systems in the decision area is 11 years.

Table 15 - Septic Age within Upper Canada Drive

Street	Approximate Septic Age (yrs)
Upper Canada Drive/McMurphy Ln	11
Leader Court	10
<b>Average Age</b>	<b>11</b>

There is a creek that runs through the north end of this decision area, along Trafalgar Rd and across Upper Canada Dr. The topography indicates that the decision area drains towards that creek and if septic systems are deficient and leaking, they will potentially contaminate it.

There appears to be no issues with the septic systems within this area of Hillsburgh. It is not recommended to be connected to a communal collection system.

### George Street



Figure 11 - George Street

The George Street area contains 24 of the 512 lots that are located in Hillsburgh. Of the 24 properties, 67% are below the minimum 1,400m<sup>2</sup> lot area for septic replacement.



The septic tank size data is available for 10 lots. None of those lots have septic systems with a tank that are below 3,600L in working capacity.

There are no lots in this area that fall under a wellhead protection area. Table 16 shows that the average age of the decision area is 29 years old.

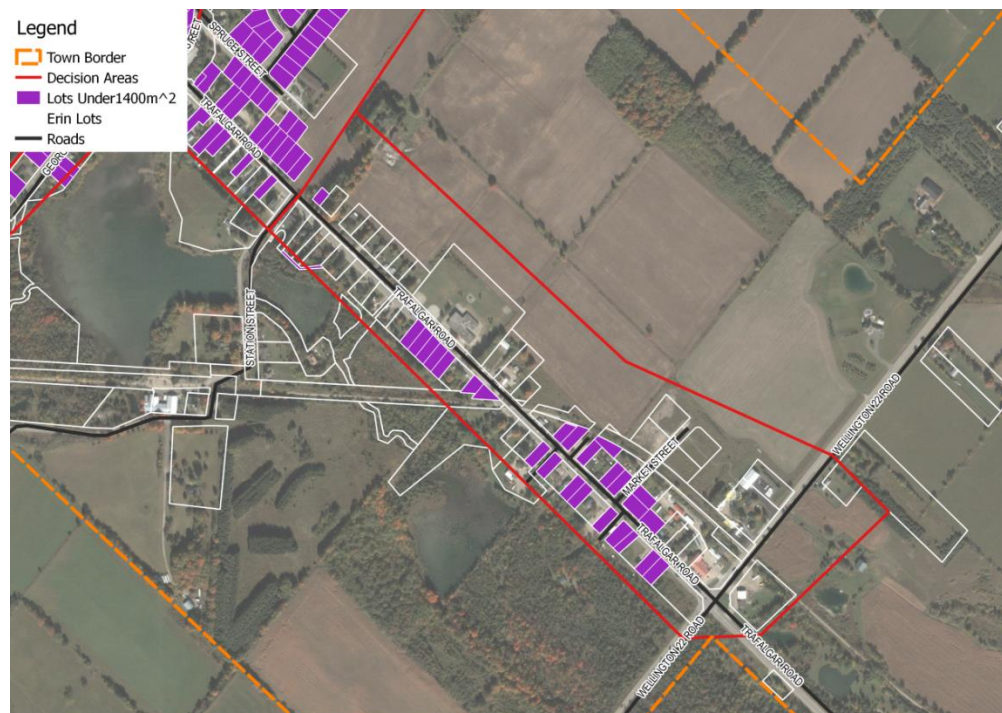
**Table 16 - Septic Age within George Street**

Street	Approximate Septic Age (yrs)
George Street	29
<b>Average</b>	<b>29</b>

There is a creek that runs through the north end of this decision area, behind the Hillsburgh library and across George St. The topography indicates that the decision area drains towards that creek and if septic systems are deficient and leaking, they will potentially contaminate it. There is also a small lake located in close proximity to the east border of this decision area that also has potential for contamination due to deficient septic systems.

Due to the majority of the lots being undersized, the close proximity to surface water and the high average age of the septic systems, it is recommended that this decision area be connected to the proposed wastewater collection and treatment system.

**South Trafalgar Road**



**Figure 12 - South Trafalgar Road**

The South Trafalgar Road area contains 78 of the 512 lots that are located in Hillsburgh. Of the 78 properties, 35% are below the minimum 1,400m<sup>2</sup> lot area for septic replacement. The majority of those lots are on Trafalgar Rd, with 42% being below 1,400m<sup>2</sup>.

The septic tank size data is available for 23 lots. Of those lots, 1 has a septic system with a tank that is below 3,600L in working capacity.

There are no lots in this area that fall under a wellhead protection area.

Table 17 shows that the average age of the septic systems within this decision area is 29 years old.

**Table 17 - Septic Age within South Trafalgar Road**

<b>Street</b>	<b>Approximate Septic Age (yrs)</b>
Trafalgar Road	50
Station Street	28
Market Street	28
<b>Average</b>	<b>35</b>

There is a creek that runs in close proximity to the northwest end of this decision area. The topography indicates that the properties in the northwest end of this decision area drain towards that creek and if septic systems are deficient and leaking, they will potentially contaminate it. There are also a two small lakes located in close proximity to the southwest border of this decision area. These lakes and the creek connecting them also have potential for contamination due to deficient septic systems.

Due to the high number of undersized lots, the close proximity to surface water and the old age of the systems, this area should be connected to the proposed communal wastewater collection and treatment system.

## **4.0 Conclusion**

This report has been prepared in support of the Town of Erin Urban Centre Wastewater Servicing Environmental Assessment (UCWWS EA). The majority of properties within the Village of Erin and Hillsburgh are currently serviced by individual private septic systems and this septic system study was carried out to develop a more complete understanding of the existing septic systems to more clearly define the extent of the communal sewage service area. To accomplish this, Erin and Hillsburgh properties were split into separate decision areas based upon property location, local topography, drainage areas, proximity to sensitive receivers, and development consistency. The decision areas in Erin include: Erin Industrial, North East Erin, Erin Town Core 1, Erin Town Core 2, South East Erin, South Erin, and Erin Heights. Hillsburgh decision areas include: Hillsburgh Town Core 1, Hillsburgh Town Core 2, South Trafalgar Road, George Street and Upper Canada Drive. A visual representation of the decision areas can be found in Appendix A.

To determine which decision areas should be connected to the proposed communal wastewater collection and treatment system several studies/documents were analyzed, including: Servicing and Settlement Master Plan, Town of Erin Mandatory Septic Re-inspection Program, Building Department Records, GIS data, CVC Source Protection Plan(SPP), the Ontario Building Code and MOECC guidelines. These documents were analysed to define a number of determining factors for a decision area to connect to a communal sewage system, which include: lot size, septic tank size, septic system age, proximity to surface water and proximity to wellhead protection areas as defined in the SPP. A property lot size lower than 1,400m<sup>2</sup> is considered unable to accommodate a replacement septic system. The typical septic system life is 20-25 years according to the SSMP. If a septic tank is smaller than 3,600L and the property produces less than 10,000 L of sewage per day, it is not in compliance with the Ontario Building Code. If the property produces greater than 10,000 L of sewage per day then the working capacity of the septic tank(s) should provide minimum 24-hours retention at design peak daily flow according to MOECC guidelines. Lastly, if a property is within a wellhead protection area that has a vulnerability score of 10, the SPP requires a maintenance program be created and an annual report to be submitted to the MOECC equivalent to Section 65 of O.Reg. 287/07. The report must outline the actions taken in the previous year to achieve outcomes of the source protection policy. According to the SSMP, the maintenance program should be a 5 year mandatory septic system inspection.

Based on the analysis of the four determining factors it was found that all decision areas in Erin except for Northeast Erin and part of South Erin should be connected to the proposed communal wastewater collection and treatment system, as shown in Appendix D1. In Hillsburgh, all decision areas should be connected except for Upper Canada Drive as shown in Appendix D2. In addition to the four determining factors that were used to decide which areas are to be connected, it should also be recognized that both communities have a high density of septic systems many of which are in close proximity to surface waters.