Socio-Economic Impact Assessment

St. Marys Future Solid Waste Disposal Needs Environmental Assessment

Town of St. Marys

R.J. Burnside & Associates Limited
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June 2016
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Glossary of Terms

AMR	Annual Monitoring Report
EA	Environmental Assessment
EA Act	Environmental Assessment Act
ECA	Environmental Compliance Approval
EPA	Environmental Protection Act
MNRF	Ministry of Natural Resources and Forestry (Formerly Ministry of Natural Resources, MNR)
MOECC	Ministry of the Environment and Climate Change (Formerly Ministry of the Environment, MOE)
MTCS	Ministry of Tourism, Culture and Sport
TIS	Traffic Impact Study
TOR	Terms of Reference

Executive Summary

The Town of St. Marys is conducting an Individual Environmental Assessment (EA) under the *Environmental Assessment Act* to review alternative means of managing solid waste disposal in the Town over a 40 year planning period. The existing St. Marys Landfill site (herein referred to as St. Marys Landfill), Environmental Compliance Approval (ECA) Number A150203, is located at 1221 Water Sreet South, St. Marys, Ontario. The 37 ha St. Marys Landfill was part of a former clay borrow pit that was used by St. Marys Cement in cement manufacturing and contains an approved waste footprint of 8 ha. The landfill has reached its approved fill capacity and a new means to manage post-diversion solid waste is required.

As part of the EA, the expansion of the St. Marys Landfill was identified as the preferred *Alternative to the Undertaking*. A Socio-Economic Assessment was conducted as part of the EA to evaluate the socio-economic impacts of a variety of *Alternative Methods* to fulfill the Town's post-diversion solid waste disposal needs for the next 40 years by expanding the St. Marys Landfill.

It is anticipated that continued operation of the Town's landfill, using any one of the five *Alternative Methods* for expansion, should have an overall positive impact on the socio-economic environment. While there is the potential for the development to have impacts to the visual environment, these impacts can be mitigated by the implementation of measures and procedures identified in this document and discussed in the EA report.

In essence, landfill expansion will provide the benefit of:

- maintaining the current standard of waste disposal services to residents and businesses
- continued employment for local residents
- the continued stability and reliability needed to service larger facilities (e.g.: industrial and agricultural operations)

It is recommended that, with the expansion of the landfill, using one of the Alternative Methods, design details should be flexible to allow adjustments that address changes in future waste management needs. The progressive nature site development would allow the Town to change site design(s) in response to changes in waste management systems. All of these outcomes will in turn provide overarching socio-economic benefits to the Town of St. Marys.

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1.0 Introduction

The Town of St. Marys is conducting an Individual Environmental Assessment under the *Environmental Assessment Act* (*EA Act*) to review alternative means of managing solid waste disposal in the Town over a 40 year planning period. The existing St. Marys Landfill site (herein referred to as St. Marys Landfill), Environmental Compliance Approval (ECA) Number A150203, is located at 1221 Water Street South, St. Marys, Ontario. The 37 ha St. Marys Landfill was part of a former clay borrow pit that was used by St. Marys Cement in cement manufacturing and contains an approved waste footprint of 8 ha. The landfill has reached its approved fill capacity and a new means to manage post-diversion solid waste is required.

Terms of Reference (TOR) were approved by the Minister of the Environment and Climate Change on December 29, 2014. The TOR laid out a strategy for completing the EA. The TOR also included a summary of pre-planning work completed to eliminate a number of *Alternatives to the Undertaking*. Those *Alternatives* which were eliminated due to a variety of technical, financial and environmental criteria included:

- Do Nothing;
- Energy From Waste;
- Enhanced waste diversion, and,
- Constructing a new landfill site at a new location in the Town.

The *Alternatives to the Undertaking* carried forward for evaluation as a part of the EA were:

- Do Nothing[1]
- Exporting Waste to Another Jurisdiction
- Expansion of the St. Marys Landfill

Based on a detailed evaluation process, the expansion of the St. Marys Landfill was selected as the preferred *Alternative to the Undertaking*.

This report assesses the socio-economic impacts associated with landfill expansion. The potential impacts of the various *Alternative Methods* of expanding the landfill on the socio-economic environment are considered herein. The *Alternative Methods* proposed for the landfill expansion are expected to be consistent with the current practices and procedures used to construct and operate the existing facility. As a result, expansion of the landfill is not anticipated to significantly alter the current socio-economic environment. This report therefore discusses the relative changes to socio-economic environment that result from differences between the *Alternative Methods*.

[1] While "Do Nothing" was eliminated as an Alternative to the Undertaking during the TOR, it has been carried forward during the EA to allow comparisons of the remaining Alternatives.

1.1 Landfill Site Location

The St. Marys Landfill has been in use since December 1984 and is located on a 37 ha site, at 1221 Water Street South, St. Marys, in the southwestern corner of the Town. Surrounding land uses within the Town include aggregate extraction uses to the north, north east and west that encompass the operations of St. Marys Cement. One residence is situated on the east side Water Street South and surrounded on its north, east and west property limits by the landfill property. A small area of floodplain lands lies on either side of the Thames River, located to the west of the landfill.

North of the St. Marys Cement operations is a recreational area including baseball diamonds, Baseball Hall of Fame, tennis courts and swimming area.

Lands to the immediate south and east fall within the Township of Perth South. Lands are primarily agricultural but also include a small number of residences located on the east side of Perth Road 123 and Water Street South., immediately adjacent to the landfill.

Through this EA the Town of St. Marys is proposing to expand the current landfill, remaining within the property boundary. This will accommodate solid waste disposal over the next 40 years.

1.2 Study Purpose

If it is decided to expand the existing landfill, the Undertaking will be defined as:

> *The expansion of the St. Marys landfill in order to provide the necessary capacity to fulfill the Town's post-diversion solid waste disposal needs for the next 40 years.*

The purpose of this study is, therefore:

> *To evaluate a variety of Alternative Methods for expanding the St. Marys landfill in order to fulfill the Town's post-diversion solid waste disposal needs for the next 40 years.*

Further, Section 1(1) of the *EA Act* broadly defines the environment as:

a) air, land or water,
b) plant and animal life, including human life,
c) the social, economic and cultural conditions that influence the life of humans or a community
d) any building, structure, machine or other device or thing made by humans
e) any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities or
f) *any part of combination of the foregoing and the interrelationships between any two or more of them*

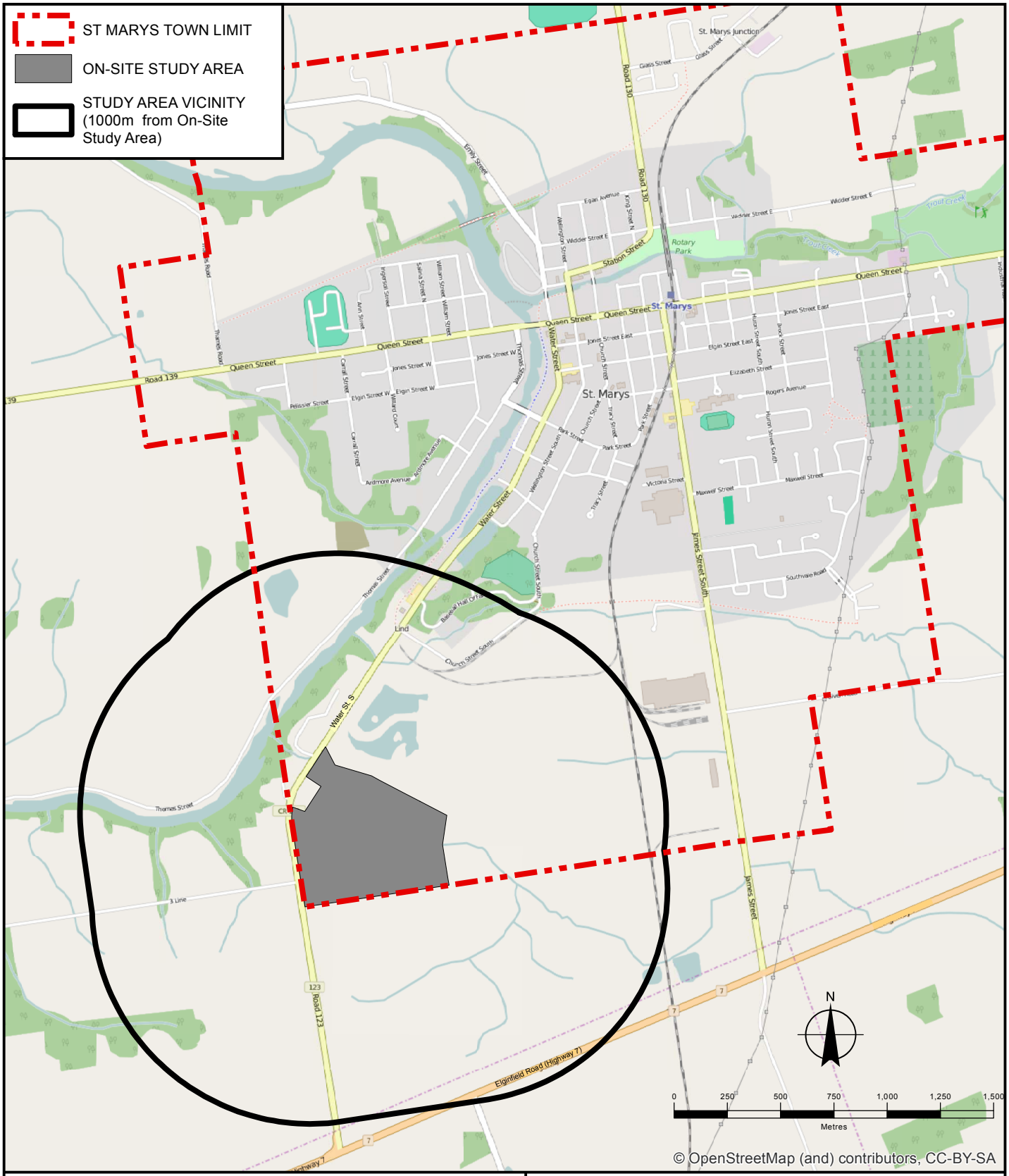
The purpose of this Socio-Economic Impact Assessment (the Study) is to address the impacts of the Undertaking on the social and economic environment, noted as item (c), above. The impacts of the Undertaking on the cultural component of the environment, including archaeological and cultural heritage resources are also addressed in support of this EA; however, these are provided in separate reports in accordance with Ontario Ministry of Tourism, Culture and Sport (MTCS) guidelines.

1.3 Study Area

Two specific Study Areas have been identified, which will be used as the basis for defining and characterizing the socio-economic environment, which may be potentially affected by the expansion.

The Study Areas are as follows:

- On-site Study Area - includes all lands associated with the St. Marys Landfill, the 37 ha site located as 1221 Water Street South, St. Marys.
- Study Area Vicinity - all lands within a 1,000 m radius of the on-site Study Area. Both Study Areas are shown on Figure 1.



BURNSIDE

Map Title

STUDY AREAS

Client / Report

THE TOWN OF ST. MARYS

SOCIO-ECONOMIC IMPACT ASSESSMENT

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2.0 Study Methodology

This Study was completed in accordance with the approved TOR. The evaluation of the socio-economic impact of expanding the St. Marys Landfill was completed using a qualitative assessment, primarily using existing secondary source information. This was supplemented with first-hand accounts obtained during the various consultation processes undertaken as part of the EA.

Specifically, this Study assesses potential impacts by:

- Describing the existing socio-economic environment, or baseline conditions.
- Identifying key indicators of social and economic health.
- Qualitatively assessing whether the *Alternative Methods* of landfill expansion will affect any of the key indicators.
- Identification of socio-economic evaluation criteria for *Alternative Methods* and qualitative evaluation of socio-economic impacts.
- Identifying mitigation measures to minimize any potential impacts.

2.1 Background Review

The following reports were reviewed to obtain background information. These documents provided information on the economy, demographics, strategic planning, and land use zoning for the Town of St. Marys and the Study Area Vicinity in order to understand baseline social and economic conditions:

- County of Perth, Town of St. Marys and City of Stratford Economic Development Strategy and Action Plan: 2010-2014.
- Final Economic Prosperity CIP, March 9, 2015 - The Town of St Marys Community Improvement Plan (Draft 2015).
- Final Report, Town of St. Marys, Community Based Strategic Plan, February 2010.
- Official Plan of The Town of St. Marys October 1987 (Consolidated October 1, 2007).
- County of Perth Official Plan (Consolidated February, 2016).
- Perth County Official Plan.
- The Corporation of The Municipality of St. Marys By-Law Number 69 of 2011, Solid Waste Management By-Law.
- 2014 Annual Operations and Monitoring Report, St. Marys Landfill, The Town of St. Marys. (R.J. Burnside & Associates Limited, March 2015).
- 2015 Annual Operations and Monitoring Report, St. Marys Landfill, The Town of St. Marys. (R.J. Burnside & Associates Limited, March 2016).

2.2 Agency, Public and Aboriginal Community Input

Consultation with agencies, stakeholders and Aboriginal communities occurred throughout the TOR and EA stages. Consultation generally included:

- Notification through newspaper advertisements
- Letters to nearby residents
- Public Information Centres
- Contact with potentially affected Aboriginal communities

Information about social and economic conditions as well as Aboriginal connections to the land were obtained through consultation to supplement the background review (Section 2.1).

3.0 Existing Socio-Economic Environment

Existing socio-economic conditions, including current land use compatibility, economy, resources, community character and Aboriginal connections to the land are described in the following sections.

3.1 Population

The Town of St. Marys has a population of a 6,655 according to the 2011 Census. Population growth is an important indicator of the health of a community. Census data indicates that from 2001 to 2006, the Town grew from 6,293 to 6,617 residents (Statistics Canada, 2006). Between 2006 and 2011, the Town population changed from 6617 to 6655 (Statistics Canada, 2011).

The St. Marys population growth rate used for the EA has been based on recent reports and literature. These indicate an annual growth rate of 1.15%. We have proceeded on this basis as it is a conservative growth rate estimate for sizing future infrastructure requirements.

3.2 Land Use

The Town of St. Marys, located on the banks of the Thames River in southwestern Ontario, has a thriving tourism sector and places significant importance on its natural and cultural heritage sites. St. Marys recognizes the importance of maintaining its historical and cultural heritage sites and has allocated funding for owners of heritage designated properties to aid in the conservation and preservation of these resources. This is seen by the implementation of the St. Marys Designated Heritage Property Grant Program and the designation of a heritage conservation district within the downtown area.

The landfill property is located along the southwestern edge of the Town, bordering the Township of Perth South in the County of Perth. Adjacent lands, therefore, span multiple jurisdictions, as described in the following sections.

3.2.1 Official Plans

St. Marys

The landfill property is identified as an Environmental Constraint area, in accordance with the Town's Official Plan. Surrounding land uses within the Town include Extractive Industrial uses to the north, northeast and west that encompass the operations of St. Marys Cement. One residence is situated on the east side of Water Street South. This residence is surrounded on its north, east and west property limits by the landfill property. This property is identified for Extractive Industrial purposes, according to Schedule A, Land Use Plan of the Official Plan. A small area of floodplain lands lies on

either side of the Thames River. A copy of Schedule A from the St. Marys Official Land Use Plan is provided in Appendix A.

Section 3.6.2.7 of the Town's Official Plan, indicates the following with respect to expansion of the existing landfill facility:

> *The establishment of a new land fill site or the expansion of an existing landfill site by Council will not require an amendment to this Official Plan. However, prior to the establishment of a new land fill site or the expansion of an existing land fill site Council shall obtain a Certificate of Approval for the Ministry of the Environment pursuant to Section 27 of the Environmental Protection Act. Where a proposal for the establishment of a new land fill site or the expansion of an existing land fill site is not initiated by Council, an amendment to this Official Plan shall be required.*

The proposed landfill expansion was initiated by Council and will obtain the necessary Ministry of the Environment and Climate Change (MOECC) approval upon completion of the EA (under this EA study), and subsequent studies and design work required by the Environmental Protection Act. As envisioned in this EA, the expansion will occur entirely within the lands currently identified as Environmental Constraint. As such, the proposed expansion is consistent with the Official Plan and an Official Plan Amendment is not required.

Perth County

The Township of Perth South lies adjacent to the western and southern boundaries of the landfill. The Township does not have its own Official Plan and, instead, defers to the County of Perth Official Plan.

According to Schedule A of the Perth County Official Plan, lands to the immediate south and east fall outside of the Town's limits but are designated as Licensed Quarry Pit/Limestone Resource and Agricultural Lands with a small amount of Natural Resources/Environment adjacent to the Thames River. A small number of residences are located on the east side of Perth Road 123 and Water Street South, immediately adjacent to the landfill. A copy of Schedule A from the Perth County Official Land Use Plan is provided in Appendix A.

3.2.2 Zoning Bylaws

Town of St. Marys

The Town of St. Marys Zoning Bylaw identifies the southwestern portion of the landfill property as Extractive Industrial. An excerpt from the Town's Zoning Bylaw illustrating the zoning of the Study Area is provided in Appendix A. This Extractive Industrial zoning corresponds with the active aggregate extraction licence that is still in effect for this portion of the property, further described in Sections 3.6 and 5.3.4 of this report. A

narrow strip of a Flood Plain zone runs through the centre of the property, corresponding with the watercourse through the site.

Lands surrounding the landfill to the north and east are all identified as Extractive Industrial. The small residential property immediately to the west of the landfill is zoned as Development. This indicates that its existing residential use is permitted. New development within this zone would require additional study to ensure compatibility with the landfill. Extractive Industrial and the current uses by St. Marys Cement are not expected to conflict with the St. Marys Landfill. Currently, no properties have been assigned this zone as no future developments are proposed in close proximity to the landfill.

Township of Perth South

The Township of Perth South Zoning Bylaw does not include any special provisions for development on lands adjacent to the landfill. The Town of St. Marys should seek to have a provision added to Perth South's Zoning Bylaw similar to the development restrictions contained in the Town's own Bylaw.

Township lands adjacent to the St. Marys Landfill are currently zoned Mineral Aggregate Resource to the south and Agricultural to the west. There is also a small Institutional designation to the west associated with the Union Gas pipeline pumping station located on the northwest corner of Water Street and 3rd Line. A Natural Resources/Environmental Zone Two designation is present for a small area along the Thames River. An excerpt from the Township's Zoning Bylaw illustrating the zoning within the Study Area is provided in Appendix A.

3.2.3 Conservation Authority

There is an unnamed watercourse that flows through the landfill Site. The watercourse flows across the Site from the southeast corner to the northwest corner. The man-made watercourse provides drainage of the St. Marys Cement (SMC) lands located up-gradient of the landfill, as well as industrial land and agricultural land further upstream. This small watershed joins the North Thames River just west of the landfill.

The watercourse is a natural resource of importance to the physical and biological environment. The Upper Thames River Conservation Authority (UTRCA) has indicated that any alterations to the watercourse will require their approval. The watercourse is discussed further in the Natural Heritage Assessment and the Hydrogeology Study reports.

3.3 Transportation Routes & Traffic Patterns

The St. Marys Landfill access is a gravel driveway, located on the east side of Perth Road 123. The landfill site access is stop-sign controlled and forms a T-intersection with Perth Road 123. All traffic into and out of the site uses this entrance.

A Traffic Impact Study (TIS) was conducted for the EA and provides detailed analysis on the traffic patterns in the areas outside of the landfill facility. The TIS assessed traffic patterns, accounting for the transportation links to the landfill and adjacent arterial roads.

Current traffic patterns show that the landfill access operates under stop control at its intersection with Perth Road 123. Perth Road 123 is a two lane arterial road under the jurisdiction of the County of Perth. It has a posted speed of 80 km/h in the area of the landfill access. Perth Road 123 becomes Water Street South, a road under the jurisdiction of the Town of St. Marys, at a location about 470 m to the north of the landfill access. Water Street South has a posted speed of 50 km/h.

The existing traffic controls and lane configurations at the Perth Road 123 and St. Marys Landfill access intersection are provided in further detail in the TIS Report. Aside from the expansion of the existing landfill, there are no new developments or planned road improvements in the study area that may impact traffic on Perth Road 123 or Water Street South near the landfill.

3.4 Economy

The Town of St. Marys Community Based Strategic Plan (2010) highlights the importance of developing and maintaining a community that is sustainable and vibrant. The Strategic Plan focuses on providing business opportunities and encouraging economic growth. The Town also notes the importance of managing its human, financial and environmental resources and the significance of these relative to economic stability.

There are four key sectors that support the economy of St. Marys. These are:

- Manufacturing/ Industrial
- Health Care and Social Assistance
- Agriculture and related activities
- Wholesale Trade

The stability and growth of these sectors must be taken into consideration when proposing any development. The proposed expansion of the Town's landfill is an example of development that must be carefully considered.

St. Marys is home to a significant industrial sector, which represents a substantial employment and economic driver at the local and regional level. St. Marys is strategically located, being approximately 40 kilometres from London (2011 Census population 366,150) and 20 kilometres from Stratford (2011 Census population 30,886). This means there is a large commuter base in the area. As a result, the Town is an important contributor to the economic and social stability of the surrounding municipalities and southwestern Ontario.

Economic drivers in the Study Area primarily include the St. Marys Cement operation and agricultural uses to the south and west of the landfill site. St. Marys Cement is a key industry for the town. The company was founded in 1912 and is now part of a global consortium. As stated in The Town of St Marys Economic Prosperity Community Improvement Plan (2015), St. Marys Cement is an anchor business within the Town and the Region, attracting clients throughout the Great Lakes Region. The Town's economic stability is strengthened by the presence of this industry as well as a strong agricultural sector. As noted in the Town's Community Improvement Plan (CIP), the Town believes that these are two key areas that can be built upon to retain and attract firms from other diverse sectors. These industries are therefore crucial sectors and all potential impacts to these must be considered when determining future developments.

3.5 Income and Employment

Surveys conducted by Statistics Canada for the National Household Survey in 2011 reveal that for St. Marys, 3,525 people were employed and 195 were unemployed for a total labour force of 3,720. In 2011, the employment rate for St. Marys was at 64.3% and the unemployment rate was at 5.2% this is slightly better than Ontario as a whole, where the comparable employment rate was at 60%[2] and the unemployment rate was at 8.3% (Statistics Canada, 2011).

The top occupations are in Service support and other service occupations; Labourers in processing, agriculture, manufacturing, arts, entertainment and recreation, wholesale trade, construction and utilities and; Professional occupations in education services (County of Perth, 2010). This varies from Ontario as a whole, where the top occupations are in Administrative and financial supervisors and administrative occupations; Service support and other service occupations; Sales representatives and salespersons - Wholesale and retail trade.

In 2010, the combined total income for the Town was 206.6 million dollars (Statistics Canada, 2011). Data collected for the Statistics Canada National Household Survey in 2011 reveal that in the Town of St. Marys, 86.4% of total income is from market income and 13.6% is from government transfers and that the main component of market income is employment income. The median employment income was $45,263 for the working population (age 15 and over) compared to $50,116 for Ontario as a whole. Census data indicates that from 2006 to 2011 there was an increase of approximately 10% in the employed labour force.

[2] The **employment rate** refers to the number of persons employed, as a percentage of the total population. The unemployed and the employed **constitute the "total labour force"**. Persons who were unwilling or unable to offer or supply labour services (including full-time students and retired persons, among others) are significant percentage of the total population, and reduce the employment rate accordingly.

At present, 25.6% of St. Marys labour force is employed in management occupations, educational and social services, business and finance, and health care practitioners. These types of workers represent higher income opportunities for the community as well as a better skilled workforce, higher rates of education and greater economic stability.

Statistics obtained from the Town's Community Based Strategic plan (2010), suggests that the Town has a higher percentage of income earners between $30,000 and $99,999 when compared to other regions (Perth, Stratford and the GTA) but lags in the percentage of households earning $100,000 or over. Indeed, with the exception of households earning $80,000-$89,999, St. Marys has seen incredible growth in households earning over $70,000. Data projections for 2009 indicate the number of households in these higher income categories has remained relatively stable with continued increase of 10.1% in households earning over $100,000.).

3.5.1 Direct Landfill Related Employment

There are currently eight persons employed at the existing landfill:

- Site Attendant – a full time position
- Compactor Operator – a part-time position
- (four) Equipment Operators – as occasionally needed
- Supervisor of Environmental Services – as occasionally needed
- Supervisor of Operations – as occasionally needed

The Town of St. Marys 2016 budget attributed total staff salary for these employees as approximately $106,000. For clarity, the Supervisor of Operations spends only a portion of their time dealing with the existing landfill operations. This is also true for others noted "as occasionally needed". As a result, only a portion of their salaries are attributed to the landfill operations in the budget. The full amount of the site attendant's salary is included.

Continued employment of these individuals provides stability for local employment and the economy.

3.6 Resource Use

3.6.1 Aggregate Extraction

An *Aggregate Resources Act* Class 'A' License is currently active for areas to the northeast and northwest of the Thames River, including portion of the landfill property. St. Marys Cement (SMC), which previously owned the landfill (up until 2009), retains aggregate resource extractions rights for the St. Marys Landfill property. The entire landfill property was previously used to extract materials required for the production of cement. The extraction of aggregate is no longer conducted within the 37 ha landfill property area.

During 2015 and 2016, the Town and Burnside have reached out to SMC and the Ministry of Natural Resources and Forestry to see if removal of the Aggregate Resources Act License is appropriate for the St. Marys Landfill property. SMC sold the property to the Town in 2009 on the assumption, presumably confirmed at the time by SMC staff, that economically viable mineral resources (clay) at the site had been exhausted. The recent efforts discussing removal of the License have lead SMC to review their assumptions. As a result, SMC have identified an area of the property that they would like to examine for its resource potential. This area is on the east side of the watercourse, to the north-east of the existing Stormwater Control Basin A (refer to Figure 2).

SMC and the Town are currently discussing SMC's implementation of an exploratory investigation of the area. As EA reporting becomes available, environmental constraints and opportunities identified through this EA are being shared with SMC[3]. SMC's exploratory investigations have not yet begun. Without having the results of the investigations, it is not possible to know if the extraction will take place, nor know the size and scope of such an operation. It is therefore impossible to determine or quantify the impacts of extraction on the socio-economic environment at this time. At the time of undertaking this EA, the SMC exploratory investigation is not expected to result in any social or economic impacts.

Pending the results of SMC's exploratory investigations, no social or economic impacts are expected regarding aggregate extraction at the landfill property. Similarly, aggregate extraction within the Study Area Vicinity is not anticipated to be affected by the landfill expansion, meaning no social or economic impacts are expected.

[3] Current concerns relate to the protection of Terrestrial Crayfish and the Eastern Meadowlark.

EXISTING EXTENT OF WATERCOURSE

ST MARYS CEMENT POTENTIAL CLAY RESOURCE AREA (SEE SECTION 3.6.1)

PROPERTY LINE

CEMENT KILN DUST PILE

30 m OFFSET FROM PROPERTY LINE

100 m OFFSET FROM PROPERTY LINE

WATERCOURSE ALIGNMENT

EXISTING ROAD ALIGNMENT

EXISTING LIMIT OF WASTE

N

0 50 100 150 200

Metres

METHOD 1

METHOD 2

METHOD 3

METHOD 4

METHOD 5

POTENTIAL CLAY RESOURCE AREA

BURNSIDE

Client

TOWN OF ST. MARYS

Figure Title

SOLID WASTE CAPACITY DEVELOPMENT

POTENTIAL AGGREGATE RESOURCE AREA

Drawn	Checked	Date	Figure No.
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3.6.2 Agriculture

Agriculture is important is the local economy. Perth County has a large agricultural industry with over 2,200 farms operating within the County (Perth County Agriculture and Food, 2012). In 2006, primary agricultural industries accounted for 18% of the County's labour force and since 2001, the total land on farms increased 0.7% to 506,291 acres, with an average farm size of 225 acres. Perth County has a high concentration of labour in agriculture and food compared to the rest of southwestern Ontario (County of Perth, 2010).

The Agriculture, Value Added Agriculture and Agri-Food Sector provide 5,535 jobs and employ 5,340 residents in the region. The region is a net importer of 195 agriculture-related jobs (Town of St. Marys, 2015). According to 2006 Census data, many of the jobs are on farms (3,775) and in food manufacturing (1,610). It was estimated that the specialty food sector has been growing by 9% annually (prior to 2010) and is expected to rise by a further 12% annually through 2015 (County of Perth, 2010). Indeed, the County of Perth, Town of St. Marys and City of Stratford combined (also referred to as "the region") have a significant agricultural heritage since much of the land base and climatic conditions are suited for agricultural and farming activities (County of Perth, 2010).

Several assessments conducted during the development of the County of Perth, Town of St. Marys and City of Stratford Economic Development Strategy and Action Plan (2010) determined that overall, the region's growth has been driven by a strong agricultural and manufacturing economy and that the region's agriculture industry is a dominant employment industry. It was concluded that, despite the declining employment growth in this industry, any further economic development efforts need to include agriculture and farming.

Agricultural production is present in rural areas throughout the Township of Perth South, including lands adjacent to the landfill. The agricultural industry relies on high quality agricultural soils and a clean water source for irrigation, where required. The existing landfill has not affected surrounding agricultural soils or water sources and agricultural production has successfully coexisted adjacent to the landfill to date. This is not expected to change under any of the *Methods* proposed for the landfill expansion.

It is noted however, that during the preparation of the TOR, correspondence was received indicating that a neighbouring farm was affected by odour from the landfill. The letter stated that strong odour had deterred customers from purchasing their produce, hence negatively impacting farmgate sales.

4.0 Aboriginal Rights, Treaty Rights and Connections to the Land

Aboriginal and Treaty Rights are protected under Section 35 of the *Constitution Act*, 1982. Aboriginal Rights are associated with practices, customs or traditions that are integral to the distinctive culture of the Aboriginal community claiming the right. Treaty Rights are those specified in historic treaties signed between Aboriginal people and the Crown. There are several Aboriginal communities that may have constitutionally protected Aboriginal or Treaty Rights associated with the Study Area, or a portion of it, including (alphabetically):

- Aamjiwnaang First Nation (formerly Chippewas of Sarnia First Nation)
- Caldwell First Nation
- Chippewas of Kettle & Stoney Point
- Chippewas of the Thames First Nation
- Haudenosaunee Development Institute (representing the Haudenosaunee Confederacy)
- Six Nations of the Grand River Territory
- Walpole Island First Nation

Aboriginal peoples made use of the lands in the Study Area for thousands of years before European contact. The Thames River was of particular importance as a travel and trade route and source of fish. These could be considered *Connections to the Land*.

The landfill property has not been used directly by Aboriginal communities in recent times; however, its location in close proximity to the Thames River gives it historical significance.

One of the earliest treaties in the area was known as the Nanfan Treaty[4], which deeded a large swath of land in southern Ontario and the United States to the King of England in exchange for hunting rights to the area in perpetuity for the Five Nations (known today as the Six Nations).

Between 1764 and 1862, numerous additional treaties covering most of southwestern Ontario were negotiated between the British and various First Nation communities in the area. These treaties gave hunting, fishing and other rights to several Aboriginal communities. Like the Nanfan Treaty, these rights had no time limitation and were intended to remain valid for future generations.

Therefore, the Aboriginal communities listed above are believed to have Aboriginal Rights, Treaty Rights or both, affecting the subject property.

[4] Also known as the “1701 Treaty of Albany”

5.0 Assessment of Potential Impacts to the Socio-Economic Environment

The assessment of potential impacts to the socio-economic environment was completed by:

- Identifying key indicators of social and economic health.
- Qualitatively assessing whether the *Alternative Methods* of landfill expansion will affect any of the key indicators.
- Identification of socio-economic evaluation criteria for *Alternative Methods* and qualitative evaluation of socio-economic impacts.
- Identifying mitigation measures to minimize any potential impacts.

5.1 Alternative Methods

Several alternative design options, or *Alternative Methods*, were considered with respect to how the landfill could be expanded. *Alternative Methods* can be described as technically, economically and environmentally feasible ways of implementing a plan or method that will address and possibly execute the study purpose. For this Study, *Alternative Methods* included various design options associated with the expansion, as summarized in Table 1. An outline of the footprints (areas) involved with these Methods is provided on Figure 2 (page 14).

Table 1: *Alternative Methods* for Carrying Out the Undertaking

Alternative Methods		Description
1	Vertical expansion of the existing landfill	This *Method* involves an expansion in the vertical direction within the existing footprint of the landfill.
2	Horizontal expansion of the existing landfill	This involves an expansion outside of the existing landfill footprint.
3	A combination of vertical and horizontal expansion	This *Method* would involve partial vertical expansion along with some horizontal expansion of the landfill footprint, basically a mixture of *Methods* 1 and 2.
4	Development of a new landfill footprint	This *Method* involves closure of the existing 8 ha footprint and development of a new landfill footprint elsewhere on the 37 ha Site.
5	Vertical expansion plus a new footprint	This *Method* is a combination of Methods 1 and 4.

5.2 Key Indicators of Social and Economic Health

Indicators of social and economic health were identified based on concerns raised by agencies, stakeholders and Aboriginal communities during the EA consultation process

and during preparation of the TOR[5]. Other potential impacts were identified by the study team during preparation of the Socio-Economic Work Plan and overall EA. Table 2 lists concerns relating to the socio-economic environment that were identified, and provides the corresponding Environmental Component to which it applies.

Table 2: Identified Concerns

Concern	Environmental Component (see corresponding indicators/measures in Table 3)
Increased truck traffic could result in effects on human health (MOECC, Dec. 14, 2012)	Residential and Agricultural Properties
Land use planning policies need to be in place to ensure that sensitive land uses do not encroach into adjacent areas. (MOECC, Dec. 24, 2012)	Land Use Planning Controls
There is an active aggregate resources licence in effect on part of the landfill property. Completion of license requirements or license surrender will be necessary. Significant mineral aggregate resources must be protected from development. (MNRF, Nov. 29, 2013)	Aggregate Resources
Land use compatibility with the Provincial Policy Statement and MOECC's Land Use Planning Guideline D-4 must be considered. (MOE, April 6, 2010)	Land Use Planning Controls
Odour, particularly effect on farm gate sales as they deter customers. (site neighbour, Dec., 5, 2013)	Agricultural Properties
Presence of Aboriginal Treaty lands, Traditional Territories and interests in the land. (Various First Nations, 2013)	Aboriginal Treaties, Rights and Interests

Table 3 lists the Environmental Components assessed for this Study along with indicators which were used to identify potential impacts of the landfill expansion on the socio-economic environment. Many concerns relate to other components of the environment which were studied under separate reports. Table 3 also identifies where information from other reports was used to assist in determining impacts and where more detailed information can be obtained regarding the assessment of each component.

[5] Terms of Reference, Table 5.4.

Table 3: Environmental Components, Indicators and Data Sources

Socio-Economic Component	Indicator/Measure	Data Source/ Corresponding Report
Employment rates at the landfill and/or within the Public Works Department	Changes in employment levels at the landfill site, including short term (construction) jobs and long term (operational) jobs	Town of St. Marys
Residential Property	Potential for changes in the use and enjoyment due to increased noise, odour and dust.	Emission Summary and Dispersion Modelling Report and Noise Impact Assessment Report.
	Potential for changes in the use and enjoyment due to aesthetics / visual concerns.	Natural Heritage Assessment Report
	Potential for changes in the use and enjoyment due to increased presence of disease vectors and vermin and gulls.	Natural Heritage Assessment Report
Agricultural Properties	Potential for disruption of agricultural activities due to soil/groundwater quality concerns.	Hydrogeological Report
	Potential for disruption of agricultural activities due to traffic-related conflicts.	Traffic Impact Study Report
	Potential for disruption of farming activities farm-gate sales etc. due to odour.	Emission Summary and Dispersion Modelling Report and Noise Impact Assessment Report
Aggregate Resources	Quantity and quality of the aggregate resource to be lost due to surrender of licence.	License details to be supplied from St. Marys Cement.
	Potential for disruption of aggregate extraction activities due to traffic-related conflicts.	Traffic Impact Study Report
Land Use Planning Controls	Compatibility of the landfill site with the Town's Official Plan and MOE's Land Use Planning Guideline D-4.	Official Plan MOE's Land Use Planning Guideline D-4
Aboriginal Treaties, Rights and Interests	Compatibility with any existing treaty rights.	Affected/interested Aboriginal communities
	Compatibility of the project with Aboriginal Interests	

5.3 Discussion of Potential Impacts to Key Indicators

The following section provides a discussion of how the key indicators of social and economic health would be impacted by each of the *Alternative Methods*. In some cases,

there are no significant impacts anticipated to some of the indicators, however, the results of all evaluations are presented herein.

5.3.1 Employment rates at the landfill and/or within the Public Works Department

It is not expected that any of the *Alternative Methods* will substantially change existing employment levels at the landfill or within the Public Works Department. There is a possibility that, following expansion, new hires may be required to address environmental or operational matters. Changes to regulations, or even approval conditions not foreseen during development of this EA could require additional Town or contracted manpower.

During construction, additional workers will be hired, through contract/tender, to design and build the new facility components. There will be some variations in the level of design and construction efforts required for each of the *Alternative Methods*, however, these variations are, on the whole, not anticipated to be significant from the perspective of man hours of employment created by each *Method*. From a socio-economic impact perspective, all of the *Alternative Methods* are likely to result in a similar number of temporary design and construction jobs.

Combined, operations and construction employment from the landfill expansion, under any of the Alternative Methods, will result in positive employment effects for the Town.

Overall, the *Alternative Methods* of landfill expansion are not anticipated to result in any reduction in employment levels. As noted above, there is a possibility of a small increase in landfill operational staffing requirements (additional employment). Any such small employment increase is not anticipated to be a significant economic cost for the Town. Therefore, no mitigation is required.

5.3.2 Residential Property

A small number of residential properties are located in close proximity to the landfill. Concerns for these properties relate to the potential for changes in their use and enjoyment due to:

- Increased noise, vibration, odour, liter and dust
- Aesthetics / visual concerns
- Increased presence of disease vectors and vermin

The following discussion outlines how these factors are likely to be influenced by the proposed expansion.

Complaints from Existing Landfill

Annual Monitoring Reports (AMRs) have been prepared since landfill operations began in 1984 and R.J. Burnside & Associates Limited have been completing AMRs for the Town since 2013. Monitoring events are completed twice a year; in the Spring and in the Fall, in compliance with the site's Environmental Compliance Approval (ECA). A review of AMRs reveals that there were no complaints received in the reporting periods 2010, 2011 and 2012. From 2013 through 2015 a total of nine complaints have been received from residents related to odours from the landfill (refer to Table 4). Town complaint summaries indicate that odour issues are influenced by wind direction (from the east or north-east) following wet site conditions. We also note that existing operations have moved closer to the complainants during this time period. Expansion of the site under any of the *Alternative Methods* contemplated here would move operations further away.

No monitoring results in the last five years have indicated that operations at the facility have impacted on recreation, enjoyment of private property or neighboring businesses, including agricultural and quarrying industries. However, as previously stated correspondence received during the development of the TOR revealed that odours from current landfill operations were deterring customers and negatively impacting sales at a neighbouring farm.

In general, continuing operations at the current landfill site (including the closure of one area and expansion of another) will have minimal to no impacts on aesthetics and enjoyment of life on adjacent lands. The impact of odour on farmgate sales was considered. Farmgate sales are discussed further in Section 5.3.3.

Table 4: Complaints Recorded in Annual Monitoring Reports

AMR Covering Year (Jan. 1 to Dec. 31)	Number of Complaints	Nature of Complaints
2010	None Reported	
2011	None Reported	
2012	None Reported	
2013	One (resident on Line 3)	Odours
2014	Two (two residents on Perth Road 123)	Odours
2015	Six (two residents on Perth Road 123)	Odours

As noted in Table 4, the complaints received relate to odours emitted from the landfill. Operation of the landfill in 2013 to present has been at the western limit of the approved waste footprint, which is closest to the residents.

Future operations, under the *Alternative Methods* proposed for expansion, will move filling to the east. Based on the air emission modelling contained in Burnside's Emission

Summary and Dispersion Modelling Report, complaints should remain low and are likely to return to pre-2013 operating levels.

Details associated with nuisances such as noise, vibration, dust, litter, odour, vermin and aesthetic/visual concerns are provided in the following sections.

Noise and Vibration

A Noise Impact Assessment was conducted as part of the EA process. This is documented in Burnside's Noise and Vibration Report. The assessment concluded that:

- Vibrations from landfill operations under any of the proposed Method would not be detectable beyond the landfill property. Therefore, there are no vibration related socio-economic effects to be considered in this report.
- Sound levels for all the *Alternative Methods* of landfill expansion will be below Ministry criteria. Noise levels, regardless of the *Method* selected for expansion, are expected to be consistent with current operating experience. Further, the modelled differences between sound levels for each Method would generally be imperceptible.

On the basis of the assessment, it is anticipated that the project will have minimal impacts on residential properties. Vibration is not anticipated and noise levels will be consistent with conditions currently being experienced under the existing landfill operations.

As part of the noise assessment, predicted noise impacts for the existing landfill and as well as all five *Alternative Methods* of landfill expansion were conducted. Based on these analysis it was concluded that the noise produced during current and future operations are and will be within MOECC guidelines. As such, noise mitigation measures will not be required.

Dust, Litter and Odour

Dust, litter and odour are common concerns for landfill sites.

- Dust from landfills is often the result of:
  - Vehicles driving across gravel or dirt surfaces, often at excessive speed, resulting in dust plumes.
  - Improper handling and placement of operational cover, creating dust plumes.
  - Periodic operational efforts, such as placement of interim cover, stockpiling of (cover) soils, construction of tipping face access roads, or when repairing areas of erosion.
- Litter from a site may be the result of a number of factors. Examples include:
  - Wind that picks-up a plastic bag (garbage) at the tipping face, carrying it off site.
  - A waste vehicle delivering to the site may not have secured/covered all of the waste being transported, and it falls or is blown off the load.

  - Vehicles driving across waste may lift it so that it is no longer contained at the tipping face.
  - Waste compaction followed by operational cover (sometimes called “daily cover”) is not completed properly.
- Odours are generally created by a combination of waste odours during delivery and the biological actions occurring within the landfill or composting pile(s).

In all of these examples, mitigation measures implemented during design and operation can eliminate or significantly reduce these nuisances. Modern sites such as the St. Marys Landfill include design measures and housekeeping practices to limit the nuisance impacts associated with windblown litter, landfill/waste odours and dust emissions.

For the landfill expansion, these nuisances may be more significant as waste filling progresses to higher elevations, exposing the landfill surface to winds, developing and providing for an increased distance of travel. Many factors affect the dispersion of dust, litter and odour. These include wind speed, wind direction, temperature, ceiling height and atmospheric stability. These factors are further addressed in the Emission Summary and Dispersion Modelling Report.

Emissions from garbage, compost and the closed portions of the landfill all contribute to the odour produced as a result of landfill operations. The impacts of odour production are most significant when they affect the surrounding community, particularly those in close proximity to the landfill. Individuals located along Perth Road 123 are among those most likely to be affected by odours emanating from the landfill as indicated by the complaints recorded in recent AMRs.

Based on this, *Alternative Methods* 1, 3 and 5, which have a more significant vertical component, are more likely to result in dust and litter nuisances. The report concludes that, based on emission modelling[6], all *Alternative Methods* appear to have the same, or slightly better impacts compared to the current situation.

No mitigation measures have been provided for dust, litter and odour impacts since conditions are anticipated to be the same, or slightly better, than current operations, and within Ministry guidelines. It is expected however, that the Town will continue to operate the site similar to current operations, following Best Practices to minimize dust, litter and odour from the site.

[6] Dust and odours are “emissions” in the language of the Emissions Summary and Dispersion Modelling Report.

Vectors and Vermin

As is the case with any landfill site, the presence of waste generated by humans attracts vermin and mammals that seek to obtain food or shelter. Current operating procedures require staff employed at the landfill to look for vectors and vermin, such as mice and other rodents, on a monthly basis and to take the necessary actions to stop population growth of these species at the site.

Field visits conducted for the production of AMRs note several incidental observations of mammals, birds and reptiles at the landfill. The Natural Heritage Assessment Report included specific efforts to observe the presence or indicators for mammals, birds and reptiles at the site. Animals observed include scavenger birds such as Gulls and Turkey Vulture; Muskrat; White-tailed deer; Coyote; Striped Skunk; Star-nosed Mole and Ermine. While there have been no observations of mice, rats and raccoons due mainly to the nocturnal nature of these species, it is presumed that these populations are kept in check by operating procedures implemented by landfill staff and that these practices will continue after the landfill has been expanded.

Site operating procedures include regular inspections for signs of vectors and vermin. Should they be noted, a qualified pest control firm is to implement an eradication and control program for the Town. This effort is anticipated to continue under the expansion *Methods* that are proposed. As such, nuisances of this nature are not anticipated to be different from existing conditions nor between expansion *Methods* in the future. No additional mitigation measures are proposed.

Visual Impacts

At the St. Marys Landfill, visual impacts to the area have been significantly reduced through the placement of earthen berms and tree screens near the site boundaries where visual impacts could occur.

When considering landfill expansion, there is the potential to degrade the visual environment for residents and surrounding land users. However, since the proposed site for the expansion of the landfill is located adjacent to the St. Marys Cement operations on two sides (north and east) with industrial developments to the northeast beyond that, the St. Marys Landfill can be considered to be consistent with its surroundings. Any changes to the viewscape would primarily affect the residential properties to the west.

In general, maintaining a maximum landfill height of 345 metres above mean sea level will prevent the new site from being visible from Perth Road 123, Water Street South and residents surrounding the site. Only *Method* 1 requires filling above this height, making it visible for part of its operating life. All other *Methods* can be developed to remain below this height, making them equally acceptable relative to visual impacts.

In order to aid in the reduction of possible visual impacts, all conceptual designs should consider the maximum elevation they will present, as well as the trade-off between elevation and footprint. Also, the continuation of previous practices, such as the placement of earthen berms and tree screens near the site boundaries as well as landfill design will serve to reduce potential negative visual impacts of the development. These practices should be incorporated into the final design for the site.

In summary, *Alternative Method 1* would have more aesthetics impacts, while other *Methods* are generally equal. Mitigation recommended to address aesthetic concerns is summarized in Section 6.

5.3.3 Agricultural Properties

There are several agricultural properties within close proximity to the landfill. Concerns for these properties are the potential for disruption of agricultural activities due to:

- Soil/groundwater quality concerns
- Traffic-related conflicts
- Dust, litter or odours affecting farmgate sales

Soil and Groundwater Quality

The Hydrogeological Report conducted for the EA assessed a number of environmental components including regional geology and hydrogeology; site geology and site hydrology. The report noted that landfill expansion has the potential to impact the hydrology of the site. The potential impacts include:

- Changes to groundwater quantity by reducing infiltration or increasing discharge.
- Change in groundwater flow direction.
- Leachate or stormwater runoff moving downward into a sand/silt seam.
- Leachate moving laterally into sand/silt seam from excavation of new footprint or filling of the existing watercourse channel.
- Reduced separation between the bottom of waste and the top of the bedrock.

Of the potential impacts listed above, it was noted that the change to infiltration on the site would not be considered to be significant and since the amount of groundwater recharge at the site is already low, increase in discharge is unlikely. Potential impacts to agriculture typically vary depending on the type of agriculture being conducted however, since as previously stated, agricultural production has successfully coexisted adjacent to the landfill to date, it is assumed that continued, normal landfill operations will not impact current or future agricultural activities.

Traffic & Transportation Impacts

The Traffic Impact Study (TIS) conducted for the EA concluded that:

- No operational improvements are required at the intersection of the site entrance and Perth Road 123 to accommodate the landfill expansion.
- There are no anticipated socio-economic impacts to traffic and transportation as a result of the expansion of the landfill since transportation routes outside of the landfill site will remain unaffected by expansion of the landfill. Traffic and facility roads within the site will be consistent with practices currently in place at the present facility.

Effects on Farmgate Sales

The potential for dust, litter or odours from the landfill to deter customers and affect farmgate sales was one of the issues identified through correspondence received during the preparation of the TOR. The written communication regarding odour complaints from customers of a neighbouring farm has been included in the TOR and considered in the preparation of this review. It is our conclusion, based on the results presented in the Emission Summary and Dispersion Modelling Report, it is anticipated that dust and odours produced by expansion using any of the *Alternative Methods* will be the same or slightly better than current conditions. Therefore farmgate sales are not expected to be negatively impacted by the expansion of the landfill.

It should also be noted that variations in dust and odour generation among the *Alternative Methods* are negligible. As a result, no single *Alternative Method* is considered significantly better or worse than the others as similar impacts are anticipated for all *Alternative Methods*.

5.3.4 Aggregate Resources

As noted previously, the aggregate industry is important to the economy of St. Marys. Concerns include:

- Quantity and quality of the aggregate resource to be lost due to surrender of the *Aggregate Resources Act* Class 'A' License for the St. Marys Landfill property.
- Potential for disruption of aggregate extraction activities due to traffic-related conflicts.

The Town of St. Marys is currently discussing future testing by SMC to determine if viable materials remain in the landfill property. The Town of St. Marys intends to facilitate the extraction of these materials if they are determined to be economically viable by SMC. Therefore no negative impacts are anticipated due to surrender of the license for the St. Marys Landfill.

All changes to roads and transportation routes will be restricted to areas within the proposed development. No aggregate extraction activities are currently planned for the landfill property. If it is determined that additional extraction is beneficial for SMC, then the Town will endeavour to sequence landfill expansion and operations in a manner that eliminates or minimizes interference with SMC's extraction activities. In any event, traffic related conflicts with potential extraction activities are not currently anticipated.

5.3.5 Land Use Planning Controls

This criterion specifically relates to whether the various *Alternative Methods* are compatible with the Town's Official Plan and the MOECC's Land Use Planning Guideline D-4.

Section 3.6.2.7 of the Town's Official Plan, indicates the following with respect to expansion of the existing landfill facility:

> *The establishment of a new land fill site or the expansion of an existing landfill site by Council will not require an amendment to this Official Plan. However, prior to the establishment of a new land fill site or the expansion of an existing land fill site Council shall obtain a Certificate of Approval for the Ministry of the Environment pursuant to Section 27 of the Environmental Protection Act. Where a proposal for the establishment of a new land fill site or the expansion of an existing land fill site is not initiated by Council, an amendment to this Official Plan shall be required.*

The proposed landfill expansion was initiated by Council and will obtain the necessary MOECC approval upon completion of the EA (under this EA study), and subsequent studies and design work required by the Environmental Protection Act. As envisioned in this EA, the expansion will occur entirely within the lands currently identified as Environmental Constraint. As such, the proposed expansion is consistent with the Official Plan and an Official Plan Amendment is not required.

The Town of St. Marys' Zoning Bylaw permits the landfill expansion within the existing property.

None of the *Alternative Methods* being considered for the expansion of the landfill will conflict with the MOECC's Guideline D-4, Land Use On or Near Landfills and Dumps. Guideline D-4 specifies land use restrictions and controls that the MOECC wishes to see implemented in the vicinity of landfills in order to protect the health, safety, convenience and welfare of residents near such facilities. The Town of St. Marys includes such restrictions as part of their Zoning Bylaw.

Neither the County of Perth Official Plan nor the Township of Perth South Zoning Bylaw have any special provisions associated with land development surrounding landfill sites.

The St. Marys Landfill is but one of many landfills that could affect development on lands within these jurisdictions. The Town of St. Marys should request that Zoning and development planning restrictions be implemented by the County of Perth and/or the Township of Perth South in order to protect against incompatible developments to the west and south of the St. Marys Landfill. The Town should undertake these efforts even if the expansion of their landfill does not proceed.

5.3.6 Conservation Authority Requirements

Of all the *Alternative Methods* proposed for landfill expansion, only the implementation of *Methods 2 or 3* would necessitate changes to the onsite watercourse. In part, Upper Thames River Conservation Authority (UTRCA) requires that the revised watercourse configuration:

- Be determined by a qualified fluvial geomorphologist or water resources engineer along with other appropriately qualified personnel such as aquatic biologists.
- Be equal to or greater in length.
- Ensures downstream velocities are less than or equal to existing velocities.
- Provides equal or greater flood storage.
- Incorporates appropriate in-stream habitat components.
- Includes appropriate design and construction plans for UTRCA approval.

Relocation of the watercourse can be completed in conformance with the requirements set out by the UTRCA. On this basis, *Methods* 2 and 3 are anticipated to equal or improve the existing conditions of the watercourse. As a result, all *Alternative Methods* of expansion are considered equal with respect to the watercourse.

5.3.7 Aboriginal Treaties, Rights and Interests

Consultations were undertaken with Aboriginal communities in the form of letters, emails, telephone communications and meetings. It was through these consultations that the following indicators were identified as key criteria for the assessment of impacts to Aboriginal Treaties, Rights and Interests:

- Compatibility with any existing treaty rights
- Compatibility of the project with Aboriginal Interests

Of the 14 communities that were notified of the EA, eight expressed some interest in it. Details regarding notification can be reviewed in the TOR and the Public Information Centre (PIC) Summary Report. All of the communities that did provide comments and expressed an interest generally concurred that the site is not currently used by their community for traditional purposes.

Ongoing St. Mary Cement operations have heavily disturbed the site and surrounding area. St. Marys Cement operations began in 1912. While no records are known for

when clay extraction and quarrying began on the property that became the St. Marys Landfill, it is assumed that extraction began in in the mid to late 1960's. Agricultural use of the property is indicated in air photos[7] dated 1955 and 1963. An air photo from 1978 shows the entire property had been disturbed by St. Marys Cement operations. It is likely that the land was farmed for many years prior to 1955. This leads us to believe there has been no significant use of the On-site Study Area or the Study Area Vicinity by Aboriginal communities for many decades and perhaps the past century.

The site is, however, within the traditional territory of several communities and would have historically been used for hunting and other aspects of daily life. The Stage 1 Archaeological Assessment and the Cultural Heritage Resource Assessment did not identify any significant past use of the site but the significant disturbance of the site, by farming and then for aggregate extraction, may have destroyed any evidence of Aboriginal use.

The Thames River was, and continues to be, an important feature for several communities. The Walpole Island first Nation, Aamjiwnaang First Nation and Chippewas of the Thames First Nation identified concerns with potential impacts to the Thames River. Other Aboriginal communities may share this concern. As a result, significant work was undertaken to assess the *Alternative Methods* of expansion and address any possible effects on the river, including:

- Impacts to groundwater from leachate which could migrate to the river.
- Impacts from surface water runoff that could allow contaminated water to enter the river.
- Impacts from the relocation of the watercourse through the site which could result in significant amounts of sediment entering the river.

These were assessed in the Hydrogeological Study. It found that there would be no surface or groundwater impacts beyond the landfill property assuming environmental design and operating standards are utilized for the expanded landfill. This is true regardless of the *Alternative Method* selected for expansion. The impacts are not assessed further in this Study.

The Haudenosaunee Development Institute (HDI) identified concerns with the potential impact of the expansion on their rights guaranteed under the Nanfan Treaty. At a meeting held between representatives of HDI, the Town and Burnside it was suggested that the current landfill was constructed without consultation or consideration of HDI's hunting and fishing rights. It was noted that the land was already highly disturbed at the time of the landfill's development and conditions were unlikely to support hunting on the property. The consultation process with HDI and St. Marys is ongoing.

[7] Air photos can be found in the Hydrogeological Study, Appendix A.

5.3.8 Disposal Capacity

As described in the TOR[8], the Undertaking for this Environmental Assessment is defined as:

> *The expansion of the St. Marys landfill in order to provide the necessary capacity to fulfill the Town's post-diversion solid waste disposal needs for the next 40 years.*

However, *Alternative Methods* 1 and 4 are not capable of providing the requisite 40 years of disposal capacity. Only *Methods* 2, 3 and 5 are capable of providing the required disposal capacity. In fact, with revision to waste footprints and height of fill, *Methods* 2, 3 and 5 could provide many additional decades of capacity for St. Marys.

From a socio-economic impact perspective, *Methods* 1 and 4 are not as good as the remaining *Methods*. *Methods* 1 and 4 would require the Town of St. Marys to initiate a new EA process well before the 40 year planning period of this study has expired. Doing so will:

- Incur significant financial costs to initiate and complete a new planning, approval and implementation process.
- Add to uncertainty for long term waste disposal, significantly affecting residential and IC&I sector solid waste management plans, specifically:
  - Business decisions around commercial and industrial development or expansions and potentially new residential developments.
  - Preparation and achievement of Waste Reduction and Implementation Plans.
- Reduce the Town's ability to spread the costs of this EA study across the 40 year planning period, increasing annualized costs for the EA process as well as the costs for EPA and other approval requirements.
- Reduce the ability to spread the landfill expansion's construction and operational costs across the entire 40 year planning period.

There are no mitigation measures that could be implemented to address the projected shortfall in disposal capacity. As a result, we rank the *Alternative Methods* as follows:

- *Method* 4, development of a new landfill footprint, provides the least volume and therefore would provide the shortest period of operation – estimated as approximately 25 years. *Method* 4 is therefore rated as the worst *Alternative Method*.
- *Method* 1, vertical expansion of the existing landfill, is expected to provide approximately 33 years of disposal capacity. This is only a little more than 3/4^{ths} of the required capacity, placing this *Method* below average.

[8] TOR Section 5.3.

- *Methods* 2, horizontal expansion of the existing landfill, and 5, vertical expansion plus a new footprint, will provide at least 40 years of disposal capacity and could be expanded further (additional footprint area, additional height) to accommodate many more years of capacity. This *Method* is therefore above average.
- *Method* 3, a combination of vertical and horizontal expansion, provides the most potential volume and therefore could be designed to provide the longest period of operation. Expansion vertically and horizontally could provide several decades of additional capacity beyond the 40 year planning period envisioned by this EA study. *Method 3* is therefore rated as the best *Alternative Method*.

The above ranking of *Alternative Methods* is summarized in Section 6.

6.0 Impact Assessment and Mitigation Summary

The criteria discussed in Section 5.3 have been evaluated to determine the potential social and economic impacts of the five *Alternative Methods* for expanding the St. Marys Landfill. The *Alternative Methods* are restated below.

Table 1: *Alternative Methods* for Carrying Out the Undertaking

Alternative Methods		Description
1	Vertical expansion of the existing landfill	This *Method* involves an expansion in the vertical direction within the existing footprint of the landfill.
2	Horizontal expansion of the existing landfill	This involves an expansion outside of the existing landfill footprint.
3	A combination of vertical and horizontal expansion	This *Method* would involve partial vertical expansion along with some horizontal expansion of the landfill footprint, basically a mixture of *Methods* 1 and 2.
4	Development of a new landfill footprint	This *Method* involves closure of the existing 8 ha footprint and development of a new landfill footprint elsewhere on the 37 ha Site.
5	Vertical expansion plus a new footprint	This *Method* is a combination of Methods 1 and 4.

With the exceptions of Aesthetic / Visual Impacts, a component of the Residential Property impact assessment (Section 5.3.2), and Disposal Capacity (Section 5.3.8), it was determined that the *Methods* of expansion were equal. The significance of Aesthetic / Visual and Disposal Capacity Impacts between *Methods* is compared in Table 5. In Table 5 each *Alternative Method* was compared to the other *Methods* using the following scale:

- ● **Best / Lowest Impact**
- ◕ **Good**
- ◑ **Average**
- ◔ **Poor**
- ○ **Worst / Largest Impact**

Table 5: Impacts and Mitigation Summary

Criteria	Potential Impact	*Alternative Methods*					Mitigation
		1	2	3	4	5	
Aesthetic / Visual Impacts	Degradation of the visual and aesthetic environment for residents and surrounding land users.	◑	●	●	●	●	The placement of earthen berms and tree screens near the site boundaries, as well as landfill design and operating specifications are expected to reduce potential negative aesthetic / visual impacts.
Disposal Capacity	Ability to provide the 40 year disposal capacity required for this EA	◔	◕	●	○	◕	No mitigation available for Methods that do not provide sufficient disposal capacity.

7.0 Conclusions

The Socio-Economic Impact Assessment is an important tool in assessing the potential impacts a development may have on *the social and economic conditions that influence the life of humans or a community.* As identified in the TOR, components of the Socio-Economic Environment that must be assessed include transportation routes, land use, employment, economic conditions, aesthetics / enjoyment of life and Aboriginal connections to the land.

It is the conclusion of this assessment that expansion of the St. Marys Landfill, using any of the proposed *Alternative Methods* of expansion, has the potential to have:

- Positive impacts on the economy and employment
- No or minimal impacts on
  - transportation routes
  - land use
  - enjoyment of life
  - Aboriginal Treaties, Rights and Interests
- Aesthetic / visual impacts if *Alternative Method 1* is implemented, though this impact can be mitigated using the information provided in this report and in the EA

Overall, with implementation of appropriate design and operations, the *Alternative Methods* for expansion of the St. Marys Landfill are generally equal.

8.0 References

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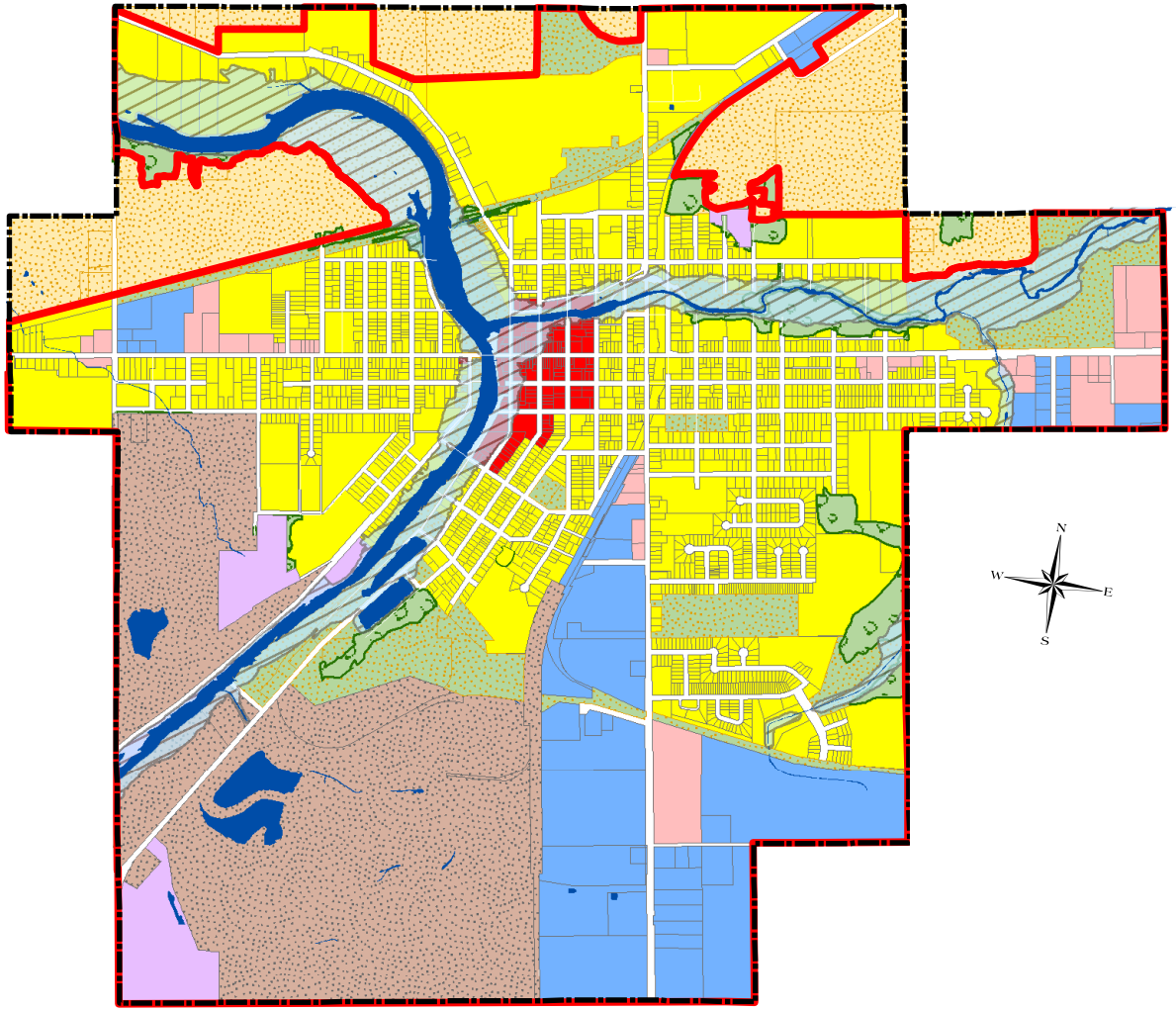
BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Land Use and Zoning Maps

Town of St Marys
Official Plan
Schedule 'A'
Land Use Plan



Designation

- Settlement Area Boundary
- Town Boundary
- Water
- Residential
- Central Commercial
- Highway Commercial
- General Industrial
- Extractive Industrial
- Environmental Constraint
- Recreational
- Flood Plain
- Natural Heritage
- Agriculture

CORPORATION OF THE TOWN OF ST. MARYS

October 2007

G/GIS/ArcViewGIS/GIS Projects/Planning/StMarys OP/2007-10-01 SCHEDULE A_Revised.mxd

County of Perth Official Plan

Schedule 'A'
Land Use Plan

Legend

NOTE: Schedules should be read in conjuction with applicable policies of the Plan

Land Use Designations
- Agriculture
- Earth Science ANSI (overlay)
- Potential Future Dev. Area (overlay)

Settlement Areas
- Serviced Urban Area
- Village
- Hamlet

(A2-7 Refer to Detailed Map)
- Mobile / Modular Home Park
- Urban Fringe
- Infilling Area

Mineral Aggregates
- Lic. Pit or Quarry / Limestone Resource
- Primary or Secondary Aggregate Resource
- Potential Limestone Resource
- Natural Resources / Environment
- Adjacent Land
- Recreation
- Flood Plain

Other Features
- Sewage Lagoon
- Airstrip
- Municipal Airport
- Conservation Authority Boundary
- Municipal Boundary
- Watercourse
- Provincial Highway
- County Road
- Local Road
- Railway Line
- Former Railway Right of Way
- Transmission Line
- Active Landfill Site
- Closed Landfill Site
- Official Plan Amendment

DETAILED MAPS	VILLAGE
Schedule 'A1-1'	Gowanstown
Schedule 'A1-2'	Trowbridge
Schedule 'A1-3'	Atwood
Schedule 'A1-4'	Monkton
Schedule 'A1-5'	Newton
Schedule 'A1-6'	Millbank
Schedule 'A1-7'	Brunner
Schedule 'A1-8'	Rostock
Schedule 'A1-9'	Gads Hill
Schedule 'A1-10'	Wartburg
Schedule 'A1-11'	Sebringville
Schedule 'A1-12'	Shakespeare
Schedule 'A1-13'	Nithburg
Schedule 'A1-14'	Kirkton
Schedule 'A1-15'	Dublin
Schedule 'A1-16'	Staffa

DETAILED MAPS	MOBILE HOME PARK
Schedule 'A3-1'	Crystal Lake

DETAILED MAPS	URBAN FRINGE
Schedule 'A4-1'	North of Listowel
Schedule 'A4-2'	East of Listowel
Schedule 'A4-3'	West of Listowel
Schedule 'A4-4'	West of Palmerston
Schedule 'A4-5'	South of Milverton
Schedule 'A4-6'	West of Stratford
Schedule 'A4-7'	North of Stratford
Schedule 'A4-8'	East of Stratford
Schedule 'A4-9'	East of St. Marys
Schedule 'A4-10'	West of St. Marys
Schedule 'A4-11'	South of St. Marys
Schedule 'A4-12'	North of Mitchell
Schedule 'A4-13'	East of Mitchell
Schedule 'A4-14'	South of Mitchell

DETAILED MAPS	HAMLET
Schedule 'A2-1'	Kurtzville
Schedule 'A2-2'	Milesworth
Schedule 'A2-3'	Britton
Schedule 'A2-4'	Newry
Schedule 'A2-5'	Donegal
Schedule 'A2-6'	Carthage
Schedule 'A2-7'	Hesson
Schedule 'A2-8'	Poole
Schedule 'A2-9'	Kinkora
Schedule 'A2-10'	Amulree
Schedule 'A2-11'	Lisbon
Schedule 'A2-12'	Sebastopol
Schedule 'A2-13'	Avonton
Schedule 'A2-14'	St. Pauls
Schedule 'A2-15'	Rannoch
Schedule 'A2-16'	Woodham
Schedule 'A2-17'	Brodhagen
Schedule 'A2-18'	Bornholm
Schedule 'A2-19'	St. Columban
Schedule 'A2-20'	Cromarty
Schedule 'A2-21'	Russeldale
Schedule 'A2-22'	Fullarton
Schedule 'A2-23'	Carlingford

DETAILED MAPS	INFILLING AREA
Schedule 'A5-1'	Brotherston
Schedule 'A5-2'	Wallace
Schedule 'A5-3'	Trecastle
Schedule 'A5-4'	West of Listowel
Schedule 'A5-5'	East of Listowel (Lot 48, Con.1, Elma)
Schedule 'A5-6'	East of Listowel (Lot 56, Con.1, Elma)
Schedule 'A5-7'	North of North of Atwood
Schedule 'A5-8'	North of Atwood
Schedule 'A5-9'	Lot 9, Con.4 Elma
Schedule 'A5-10'	Dorking
Schedule 'A5-11'	North of Millbank
Schedule 'A5-12'	East of Millbank
Schedule 'A5-13'	East of Milverton
Schedule 'A5-14'	Topping
Schedule 'A5-15'	Harmony
Schedule 'A5-16'	Conroy
Schedule 'A5-17'	Dunn's Bridge
Schedule 'A5-18'	Science Hill
Schedule 'A5-19'	Prospect Hill
Schedule 'A5-20'	Kennicott
Schedule 'A5-21'	North of Dublin

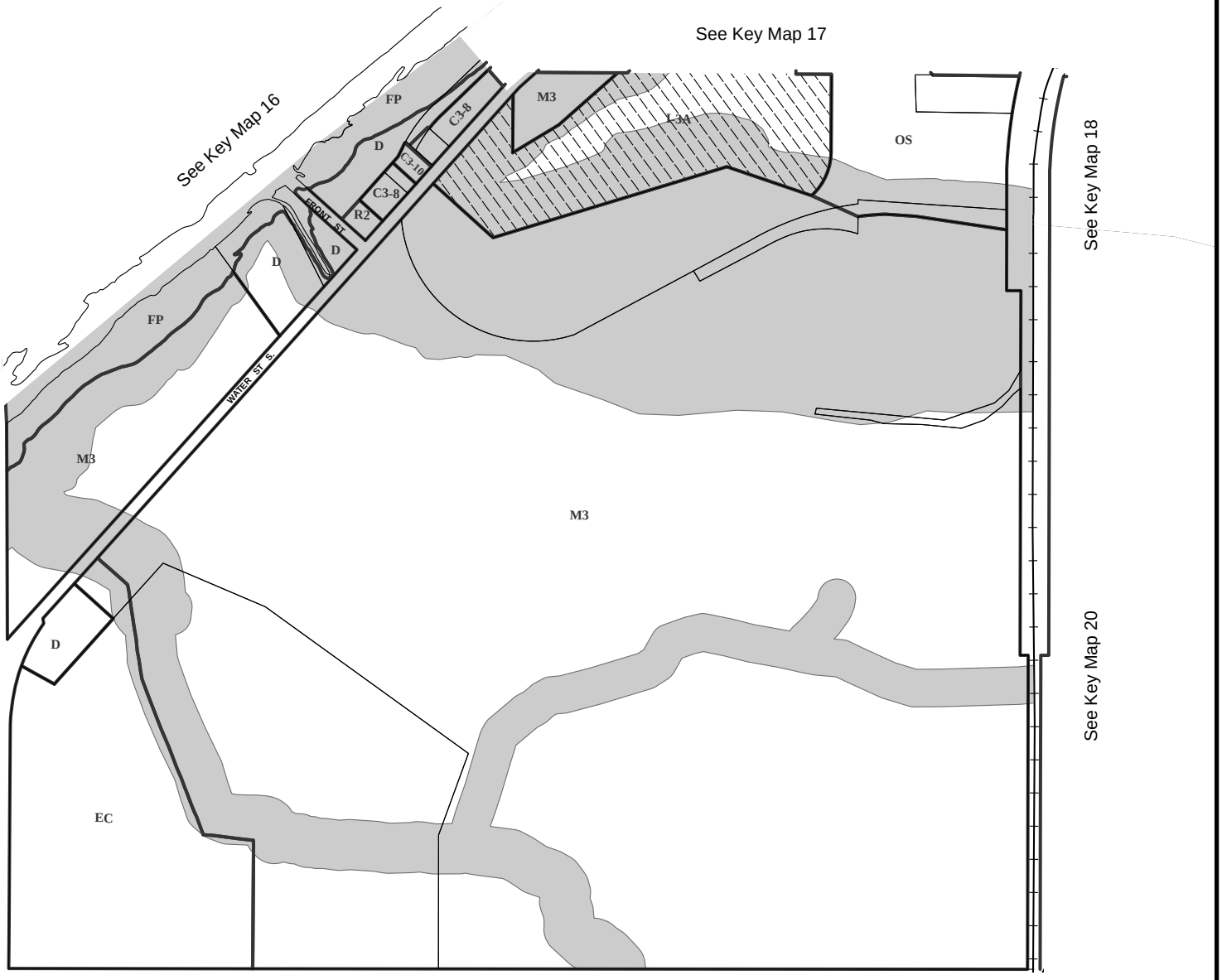
0 2.5 5 10 Km

The ink used to generate this map are light sensative. Do not expose to direct sunlight. Prolonged exposure to artificial light may cause some fading.

APRIL 2008

THIS IS **KEY MAP 19** OF SCHEDULE "A" TO BY-LAW NO. OF THE TOWN OF ST. MARYS

AMENDED BY BY-LAW NO.



Railway

Parcels

Zoning By-law Boundaries

Heritage Classified

UTRCA Regulation Limit

Last Amended:

Absolute Scale 1:10 000

Metres

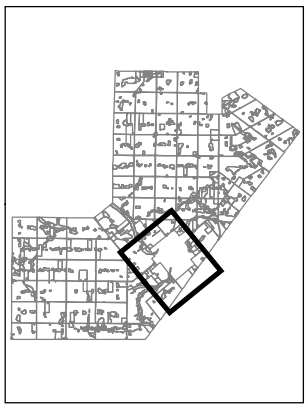
0 150 300

0 500 1,000

Feet

Document Path: S:\Department Shared Folders\GIS\GIS\Projects\ZoningByLawMaps\KeyMap19.mxd

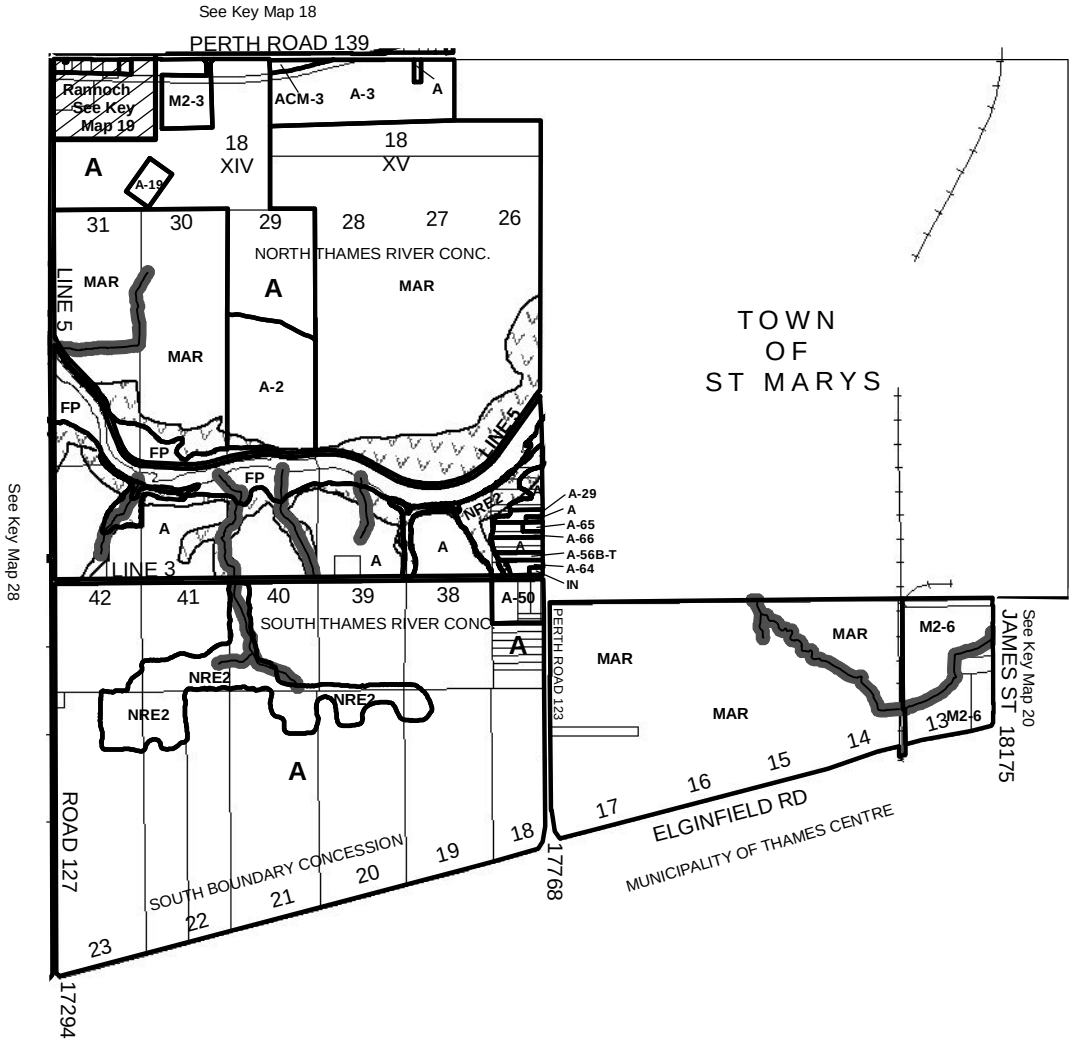
THIS IS *KEY MAP 21*
OF SCHEDULE "A" TO BY-LAW NO. 4-1999
OF THE TOWNSHIP OF PERTH SOUTH
PASSED THE 19th DAY OF OCTOBER, 1999



Key Map of Perth South
BLANSHARD WARD

Metres
0 250 500 1,000
0 625 1,250 2,500
Feet

AMENDED BY
BY-LAW NO.: 53-2000
58-2006
59-2006
49-2009
17-2012
51-2012



Date: December 2012
Projection: NAD 1983 UTM Zone 17N
Absolute Scale: 1:35,000