

November 2022

Executive Summary

ES1. Introduction

This Amended Environmental Assessment Report (EA Report) documents the investigations and evaluations carried out to identify a preferred approach and design to address the future solid waste disposal needs of the Town of St. Marys (herein referred to as the Town). This is an Individual Environmental Assessment (EA), completed under the *Environmental Assessment Act (EAA), 1990*. This EA has been prepared in accordance with the Terms of Reference (TOR) approved on December 29, 2014.

The Final EA was submitted on August 13, 2021. This document has been amended to address comments by the Government Review Team (GRT), raised during the review period following that submission. For details see Appendix F Comments with Respect to the August 2021 EA Submission.

GRT comments on the Final EA raised several concerns regarding preferred Alternative 3 particularly the proximity to, and the potential impacts of the Cement Kiln Dust (CKD) Pile on the relocated watercourse. To address these concerns, the Town re-engaged with St. Marys Cement (SMC) to discuss the watercourse relocation and how far onto SMC lands it might extend. SMC undertook further review and indicated that encroachment onto their lands would not be possible without affecting their Aggregate Resources Act license. Reflecting on both the comments on the Final EA and the limitations with respect to SMC lands, the study team revisited the preferred Alternative 3. The team was challenged to determine if refinements to the preferred alternative could minimize the need to relocate the watercourse while maintaining the target capacity of the preferred alternative and its attributes. To this end, the team identified a new preferred alternative, Alternative 3A.

The existing St. Marys landfill site (herein referred to as St. Marys Landfill); located at 1221 Water Street South, St. Marys, Ontario, operates under Environmental Compliance Approval (ECA) No. A150203 dated January 10, 2022, issued by the Ministry of the Environment, Conservation and Parks (MECP)¹. It has an approved capacity² of 380,000 m³ and receives post-diversion waste from within the Town. The St. Marys Landfill is located on a 37-ha property that was part of a former clay pit that was used by St. Marys Cement Co. (SMC) in cement manufacturing. Eight hectares (8 ha) of the 37-ha property are approved for landfilling. Site capacity (waste and daily cover) is

¹ The Ministry of the Environment and Climate Change (MOECC) was renamed the Ministry of the Environment, Conservation and Parks (MECP) in 2018. In this document, MOECC is referenced as the author on materials published prior to 2018. MOECC is also referenced as the name of the ministry consulted throughout the TOR and much of the EA process. MOECC and MECP are considered synonymous.

² In accordance with 13.5 of the June 24, 2010 ECA approval. Non-inclusive of ECA approvals since.

November 2022

currently consumed at a rate of approximately 13,500 m³/year³. The site reached its approved capacity of 380,000 m³ in January 2016. To maintain operations during preparation of this EA, the Town applied for and received ECA Notices (Amended ECA's are now issued in place of Notices) allowing continued use. The current Amended ECA allows operation through September 30, 2022. As required by the ECA, the Town will apply to the MECP for further operation by July 31, 2022.

The problem which will be addressed through this EA is as follows:

The Town of St. Marys must identify a solution that addresses the Town's post-diversion municipal solid waste disposal needs over a 40-year planning period in a technically and economically feasible manner while minimizing impacts to the environment.

It was calculated that the 40-year planning period would require 708,000 m³ of waste and operational cover disposal capacity.

ES2. Environmental Assessment Process

In Ontario, waste management projects are governed by O. Reg. 101/07, known as the Waste Management Projects Regulation. According to Part II of the regulation, any new landfill site with a capacity over 100,000 m³ or any changes to an existing landfill site that result in additional volume over 100,000 m³ is subject to Part II of the EAA, and, as such, is required to undergo an Individual EA.

The Terms of Reference (TOR) for the EA was approved on December 29, 2014 and outlines how the EA will be conducted.

The EA is being conducted in accordance with Section 6.1(3) of the EAA which allows for an EA with a narrow scope, commonly referred to as a "focused EA". The TOR outlined why this was deemed appropriate. In summary, the Town of St. Marys undertook some initial planning work prior to commencement of the EA. Work included a pre-screening of the Alternatives to the Undertaking.

The EA is scoped to focus on the Alternatives to the Undertaking which were remaining after the pre-screening exercise. These Alternatives include:

- Do Nothing (required by EA Act);
- Expansion of the Existing Landfill Site in St. Marys; and
- Exporting Waste to Another Jurisdiction.

³ This is the average rate of fill based on detailed site survey data from 2012 to 2018.

November 2022

ES3. Alternatives to the Undertaking

The Alternatives to the Undertaking were:

- **Do Nothing:** As a requirement of the *EA Act*, the ‘Do Nothing’ must be considered. Doing Nothing represents the result of no action being taken to address the Problem Statement and serves as a baseline against which other Alternatives can be compared. The Do Nothing Alternative assumes that waste collection and disposal will continue using current practices as specified under the current ECA and then will cease in September 2022 when the ECA expires.
- **Alternative 1:** This Alternative involves the continued operation of the St. Marys Landfill by the Town following the design, approval and construction of expanded waste disposal areas within the existing 37 ha property.
- **Alternative 2:** This Alternative involves the closure of the St. Marys Landfill for waste disposal. The Bluewater Recycling Association (BRA) would continue to collect municipal waste through their current curbside waste collection program; however, the waste would be transported to another waste disposal site outside the jurisdiction of the Town of St. Marys. For the purposes of this assessment, it was assumed that waste would be taken directly, without using a transfer station, to the Twin Creeks Landfill in Watford, Ontario using existing BRA curbside collection vehicles.

ES4. Evaluation of the Alternatives to the Undertaking

The evaluation of Alternatives to the Undertaking was carried out as a high-level, qualitative screening, based on information from existing data sources. The evaluation considered impacts under baseline conditions and the net effects of the “Do Nothing” Alternative. Alternatives 1 and 2 were then compared to the Do Nothing Alternative based on a qualitative assessment of net effects. These net effects are then ranked using the following descriptors:

- **Preferred** – preferred over the Do Nothing Alternative.
- **Somewhat preferred** – somewhat preferred over the Do Nothing Alternative.
- **Equally preferred** – equally preferred to the Do Nothing Alternative.
- **Somewhat less preferred** – somewhat less preferred than the Do Nothing Alternative.
- **Less preferred** – less preferred than the Do Nothing Alternative.

The evaluation of net effects relative to Doing Nothing is summarized in Table ES 1. The advantages and disadvantages of the proposed Undertaking and Alternative to the Undertaking are summarized in Table ES 2.

November 2022

Table ES 1: Evaluation of Alternatives to the Undertaking

Criteria	Comparison to the Do Nothing Alternative	
	Alternative 1: Expand the St. Marys Landfill	Alternative 2: Export Waste to the Twin Creeks Landfill
Natural Environment		
Potential Impacts to Atmosphere	Equally Preferred	Preferred
Potential Impacts to Geology and Hydrogeology	Equally Preferred	Equally Preferred
Potential Impacts to Surface Water	Equally Preferred	Equally Preferred
Potential Impacts to Biology	Somewhat Less Preferred	Preferred
Cultural Environment		
Potential Impacts to Archaeological Resources	Equally Preferred	Equally Preferred
Potential Impacts to Built Heritage	Equally Preferred	Equally Preferred
Potential Impacts to Cultural Heritage	Equally Preferred	Equally Preferred
Socio-economic Environment		
Potential Impacts to Transportation Routes	Equally Preferred	Less Preferred
Land Use	Preferred	Less Preferred
Employment Effects	Somewhat Preferred	Less Preferred
Economic Conditions	Equally Preferred	Less Preferred
Aesthetics/Enjoyment of Life	Equally Preferred	Preferred
Indigenous Connections to the Land		
Traditional and Historic Uses/Land Claims/ Indigenous and Treaty Rights	Equally Preferred	Equally Preferred
Financial Factors		
Capital and Operational Costs	Somewhat Less Preferred	Less Preferred
Technical Factors		
Technical Ability to Carry Out Each Alternative	Preferred	Somewhat Preferred
Overall Preference	Preferred	Less Preferred

November 2022

Table ES 2: Summary of Advantages and Disadvantages

Do Nothing	Alternative 1: Expand the St. Marys Landfill	Alternative 2: Export Waste to the Twin Creeks Landfill
Advantages		
<ul style="list-style-type: none"> Does not have any effect on the natural, cultural, or social environment beyond baseline conditions. Does not have a capital or operational cost. 	<ul style="list-style-type: none"> Minimal transportation impacts. Tipping fees are set and controlled by the Town. Promotes local employment and economy. Town maintains social and economic benefits of having disposal capacity for current and future residents and IC&I sectors. Makes efficient use of land that would otherwise have few alternative uses. Provides a 40-year solution. 	<ul style="list-style-type: none"> Fewer greenhouse gas emissions over Alternative 1 as Twin Creeks has a landfill gas collection system but St. Marys does not. Improves noise, dust, and odour concerns for residents adjacent to the St. Marys Landfill.
Disadvantages		
<ul style="list-style-type: none"> Does not provide a solution to the Problem Statement. 	<ul style="list-style-type: none"> Results in a higher emissions potential as a result of the lack of LFG collection when compared to Twin Creeks. Causes temporary impacts to natural features, including potential habitat for species at risk and aquatic habitat that will require restoration and compensation. May effect Cultural Heritage Resources. Requires more permits and approvals and engineering design. 	<ul style="list-style-type: none"> Does not provide a solution for the full 40-year planning period. Costs may fluctuate over the planning period and Town does not control cost increases. May result in the loss of a small number of jobs in St. Marys. May negatively affect businesses in St. Marys that rely on lower cost waste transportation and disposal at the St. Marys Landfill. Results in increased trucking emissions and traffic impacts on truck route.

November 2022

ES5. Preferred Alternative to the Undertaking

Based on the scoring and the advantages and disadvantages of each Alternative, it was determined that:

- Doing Nothing does not address the Town's waste management needs and obligations and is not a feasible solution to the Problem Statement.
- Exporting waste to the Twin Creeks Landfill has some advantages in that impacts to the Natural Environment at the St. Marys Landfill site are minimized.
- Expanding the St. Marys Landfill has greater advantages with respect to Socio-economic criteria, Financial Factors, and Technical criteria.
- Both options were equally preferred based on Cultural Heritage criteria.

As such, based on cumulative scoring, the alternative to expand the St. Marys Landfill was found to be preferred.

ES6. Alternative Methods for Expanding the Landfill

This Section has been modified from the final EA document submitted in August 2021. Government Review Team (GRT) comments on the August 2021 EA raised several concerns regarding Alternative 3 particularly the proximity to, and the potential effects of, the Cement Kiln Dust (CKD) Pile on the relocated watercourse. In an effort to address these concerns the Town re-engaged with St Mary's Cement (SMC) to discuss the watercourse realignment and how far onto SMC lands it might extend. As a result of those discussions, SMC undertook further review and indicated that encroachment onto their lands would not be possible without affecting their *Aggregate Resources Act* license. Therefore, the Town sought another solution.

Reflecting on both the comments on the August 2021 EA and the limitations with respect to SMC lands, the study team revisited Alternative 3. The team was challenged to determine if refinements to the preferred alternative could minimize the need to realign the watercourse while maintaining the target capacity of the preferred alternative and its attributes. To this end, the team identified a refinement to the preferred alternative, Alternative 3A which has been added to the evaluation of alternatives.

Six conceptual Alternative Methods for expanding the landfill plus the Do Nothing Alternative were evaluated and all are described in Table ES 3.

November 2022

Table ES 3: Summary of Alternative Methods

Alternative Methods		Description
	Do Nothing	As a requirement of the EA Act, the 'Do Nothing' Alternative must be considered. Do Nothing represents the result of no action being taken to address the Problem Statement and serves as a baseline against which other Alternatives can be compared.
1	Vertical expansion of the existing landfill	This Alternative involves an expansion in the vertical direction within the existing footprint of the landfill.
2	Horizontal expansion of the existing landfill	This Alternative involves an expansion outside of the existing landfill footprint. The watercourse running through the property would be relocated to the northern boundary of the property.
3	A combination of vertical and horizontal expansion	This Alternative would involve partial vertical expansion along with some horizontal expansion of the landfill footprint. The watercourse running through the property would be relocated to the northern boundary of the property.
3A	A combination of vertical and horizontal expansion (with watercourse realignment)	In response to concerns raised with respect to the proximity of the relocated watercourse to the CKD pile for Alternatives 2 and 3, a refinement to Alternative 3, Alternative 3A, was identified. Alternative 3A is similar to Alternative 3, including both vertical and horizontal expansion. However, rather than relocating the watercourse entirely, a short section (approximately 230m in length) will be realigned slightly to the northeast of its current position.
4	Development of a new landfill footprint	This Alternative 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 Alternative Method would involve partial vertical expansion along with development of a new landfill footprint elsewhere on the landfill property.

Although each Alternative is technically feasible, Alternatives 1 and 4 do not provide sufficient volume to address the Town's landfill capacity needs. To meet the Town's waste disposal needs for the next 40 years, 708,000 m³ of landfill capacity is required. Alternatives 1 and 4 provide only 500,000 m³ and 397,000 m³, respectively. Therefore, Alternatives 1 and 4 were discarded as feasible Alternatives as they do not fully address the Problem Statement.

November 2022

ES7. Evaluation of Alternative Methods for Expanding the Landfill

The evaluation of Alternatives was carried out in several steps, as follows:

- The effects for each alternative were identified based on a set of indicators. It was assumed that standard landfill mitigation, design and operational measures would be implemented. Only effects remaining after standard mitigation is applied were identified.
- Any additional mitigation measures specific to each Alternative were identified.
- Finally, any net effects remaining after the additional mitigation is applied were identified. The magnitude, duration, frequency, and reversibility of any net effects was also identified to better characterize the net effects.

The net effects of each alternative were then ranked as follows for each environmental component:

- Most Preferred
- 2nd Most Preferred
- 3rd Most Preferred
- 4th Most Preferred
- Least Preferred

The Preferred Alternative overall is the Alternative that is most preferred for most criteria and is identified based on reasoned trade-offs between the alternatives. A summary of the evaluation is provided in Table ES 4

November 2022

Table ES 4: Evaluation of Alternative Methods

Environmental Component	Do Nothing	Alternative 2: Horizontal Expansion of the Existing Landfill	Alternative 3: A Combination of Vertical and Horizontal Expansion with Watercourse Re-Location	Alternative 3A: A Combination of Vertical and Horizontal Expansion with Watercourse Re-Alignment	Alternative 5: Vertical Expansion plus a New Footprint
Natural Environment					
Air Quality	Most Preferred	2 nd Most Preferred	2 nd Most Preferred	2 nd Most Preferred	2 nd Most Preferred
Odour	Most Preferred	4 th Most Preferred	2 nd Most Preferred	2 nd Most Preferred	3 rd Most Preferred
Noise	Most Preferred	2 nd Most Preferred	2 nd Most Preferred	2 nd Most Preferred	2 nd Most Preferred
Groundwater	Most Preferred	3 rd Most Preferred	3 rd Most Preferred	2 nd Most Preferred	Least Preferred
Surface Water Quality	Most Preferred	Least Preferred	Least Preferred	2 nd Most Preferred	Least Preferred
Surface Water Quantity	Most Preferred	Most Preferred	Most Preferred	Most Preferred	Most Preferred
Terrestrial Ecology	Most Preferred	2 nd Most Preferred	2 nd Most Preferred	Most Preferred	2 nd Most Preferred
Aquatic Ecology	Most Preferred	Least Preferred	Least Preferred	2 nd Most Preferred	Least Preferred
Cultural Environment					
Built Heritage Resources and Cultural Heritage Landscapes	Most Preferred	Most Preferred	Most Preferred	Most Preferred	Most Preferred
Archaeological Resources	Most Preferred	Most Preferred	Most Preferred	Most Preferred	Most Preferred
Impacts to Traffic					
Traffic	Most Preferred	Most Preferred	Most Preferred	Most Preferred	Most Preferred
Impacts to Land Use					
Sensitive Land Uses	Most Preferred	Most Preferred	Most Preferred	Most Preferred	Most Preferred
Aggregate Resources	Most Preferred	2 nd Most Preferred	2 nd Most Preferred	Most Preferred	Most Preferred
Impacts to Socio-economic Conditions					
Financial Factors	Most Preferred	3 rd Most Preferred	3 rd Most Preferred	2 nd Most Preferred	4 th Most Preferred
Social Impacts	Most Preferred	4 th Most Preferred	2 nd Most Preferred	3 rd Most Preferred	3 rd Most Preferred
Impacts to Indigenous Communities					
Cultural and Environmental Features	Most Preferred	Least Preferred	Least Preferred	2 nd Most Preferred	Least Preferred
Overall Preference	Does not address Problem Statement	4th Most Preferred	2nd Most Preferred	Most Preferred	3rd Most Preferred

November 2022

ES8. Preferred Undertaking

Based on the scoring of each Alternative, it was determined that:

- Doing Nothing does not address the Town's waste management needs and obligations and is not a feasible solution to the Problem Statement.
- Alternative 3A is Most Preferred or 2nd Most Preferred for the greatest number of criteria.
- Alternative 3 is 2nd Most Preferred. It is similar to Alternative 3A but has additional effects associated with the watercourse relocation. In particular, the water quality in the watercourse may be affected by its proximity to the CKD pile.
- Alternative 5 is 3rd Most Preferred. Although the watercourse will remain as is, the entirely new footprint is costly and requires a significant amount of new infrastructure. Risks to ground and surface water quality are high due to potential interactions with the CKD pile.
- Alternative 2 is 4th Most Preferred as it has the largest footprint and therefore the greatest quantity of new infrastructure and highest cost. It has effects associated with the watercourse relocation. In particular, the water quality in the watercourse may be affected by its proximity to the CKD pile.

It was determined that Alternative 3A, expanding the St. Marys Landfill both vertically and horizontally with a watercourse realignment, is preferred.

ES9. Potential Impacts, Mitigation Measures and Net Effects

Construction, operation and closure of the landfill expansion are anticipated to affect the natural, cultural, social and built environments. With the standard operating procedures and additional mitigation identified through the evaluation of Alternative Methods, most of the effects of the landfill expansion can be mitigated and minimized such that no net effects are expected. However, the following net effects may occur:

- Minor increase in air emissions and dust, within provincial limits;
- Minor increase in odour, only slightly higher than existing conditions;
- Minor increase in noise experienced at some nearby sensitive receptors and a decrease in noise at others, all within provincial limits;
- Minor increase in the risk of groundwater contamination;
- Minor increase in the risk of surface water contamination;
- Minor risk of disruption to aquatic habitat, associated with watercourse realignment and the increased risk of surface water contamination;

November 2022

- Minor increase in effects to enjoyment of life and private property for residences along Water St. S. This increase is associated with potential air quality, odour and noise effects; and,
- Minor risk of affecting the Thames River which is a feature with cultural or environmental significance to Indigenous communities. Effects are associated with the increased risk of surface water contamination.

The landfill expansion is not expected to cause net effects with respect to surface water quantity, terrestrial ecology, built heritage resources and cultural heritage landscapes, archaeological resources, local transportation, or aggregate resources. These environmental components are not expected to change over baseline conditions.

Cumulative effects were also considered. Environmental effects from specific projects do not occur in isolation: other projects and activities in an area may have effects that can combine to create a larger, more consequential effect, or cumulative effect, on those same environments. The adjacent aggregate extraction, agricultural operations and traffic on Water St. S. result in some effects to local air quality, odour, noise and ground and surface water quality. When combined with the effects of the landfill, a minor increase in the magnitude of the effects can be expected. Standard operating procedures and the additional mitigation identified through the evaluation of Alternative Methods are sufficient to address landfill effects and cumulative effects. No additional mitigation is required.

ES10. Consultation

Consultation with the public, Indigenous communities, review agencies and organizations was ongoing throughout the EA process and included:

- Developing of a project contact list, including:
 - Various agencies with an approval or jurisdictional relevance to the project;
 - Various stakeholder groups and organizations with potential interest in the project;
 - Utilities with infrastructure in the vicinity; and,
 - Fifty-two landowners with property within 1km of the existing landfill site.
 - Fourteen Indigenous communities or organizations, including:
 - Caldwell First Nation;
 - Aamjiwnaang First Nation;
 - Chippewas of Kettle and Stony Point First Nation;
 - Chippewas of the Thames First Nation;
 - Delaware Nation (Moravian of the Thames);
 - Haudenosaunee Development Institute;
 - Mississaugas of the Credit First Nation;
 - Munsee-Delaware First Nation;

November 2022

- Oneida of the Thames First Nation;
 - Six Nations of the Grand River;
 - Walpole Island First Nation (Bkejwanong Territory);
 - Windsor-Essex Métis Council;
 - Métis Nation of Ontario; and,
 - Association of Iroquois and Allied Indians.
- Publishing Project Notices and mailing notices to those on the project contact list at the following project milestones:
 - Notice of Acceptance of the Terms of Reference and Commencement of the EA (February 9, 2015);
 - Notice of Public Information Centre (PIC) #1 (July 27, 2015);
 - Notice of PIC #2 (May 25, 2016);
 - Notice of first Draft EA for Inspection (July 5, 2017);
 - Notice of revised Draft EA for Inspection (February 26, 2021); and
 - Notice of Submission of the EA (August 5, 2021).
 - Meeting with the Chippewas of the Thames First Nation and Haudenosaunee Development Institute.
 - Holding Public Information Center #1 on August 26, 2015 and Public Information Center #2 on June 23, 2016.
 - Circulating draft documents for review and comment. This included draft technical Work Plans and draft versions of the EA. Documents were sent to applicable government agencies and Indigenous communities and were posted on the Town's website for public review.

A summary of comments received is as follows:

- From the public, comments primarily focused on drinking water quality, traffic, odour and dust.
- From Indigenous communities, comments primarily focused on potential effects to water quality and the natural environment, particularly with respect to the Thames River.
- From agencies, comments primarily focused on the EA process, potential effects associated with the CKD pile, consultation with Indigenous communities, mitigation, and monitoring.

Each comment was addressed through the EA process and played a role in the technical studies undertaken, the evaluation process, identification of environmental effects and future commitments made.

November 2022

ES11. Commitments and Monitoring

ES11.1. Commitments

A variety of commitments were made throughout the EA with respect to the detailed design, construction, operation and closure of the St Marys Landfill expansion. Some of the commitments will be carried out by the Town, while others will be the responsibility of various engineering and construction contractors. Any contractor responsibilities will be clearly specified in bid and tender documents to ensure they are carried out. The Town will ultimately be responsible for ensuring that contractors complete all required commitments.

The Town will submit an annual Compliance Monitoring Report to MECP to document how the commitments are being carried out until all of the commitments have been fulfilled.

ES11.2. Environmental Effects Monitoring

Effects monitoring refers to monitoring used to ensure that the magnitude, frequency, and duration of the effects of the construction, operation and closure of the landfill are as expected. Effects monitoring is carried out through the landfill's updated Annual Monitoring Program. This program specifically targets monitoring effects to groundwater and surface water quality due to landfill operations particularly the risk of leachate migration off-site. Monitoring is carried out through water sampling at a number of monitoring wells and stations that have been, or will be, established at the landfill site and surrounding lands.

The updated monitoring program will be carried out for the full operational period of the landfill and will continue into the post-closure period. For the purposes of this EA, the post-closure period is assumed to be 50 years but the actual length will depend on leachate contaminant levels. Effects monitoring will be documented in the landfill's Annual Monitoring Reports, submitted to MECP as a requirement under the landfill's ECA.

ES11.3. Adaptive Management Plan

To ensure the landfill expansion and realignment of the watercourse function as anticipated, an approach to ongoing management is required to identify and assess the need for changes to the project to minimize unanticipated effects. An Adaptive Management Plan will be in place to address unanticipated effects that may arise. The Adaptive Management Plan identifies triggers and responses. Subject to the type of trigger and magnitude of the effect, responses may include additional monitoring, pumping of excess leachate to the Town's wastewater treatment plant, installation measures to separate the cement kiln dust pile from the watercourse and/or initiating a landfill gas monitoring program. Each response will be developed under the guidance of the MECP.