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Town Of Saugeen Shores

Technical Memorandum: Applicability of Alternative Waste Management Technologies

GEI Project No.: 2401298

March 2025 (V3)

Saugeen Shores

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Document Revision Tracking

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V1	March 2024	Technical Memorandum: Applicability of Alternative Waste Management Technologies
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V3	March 2025	Minor updates for consistency across Proposed ToR project documentation

TECHNICAL MEMORANDUM: APPLICABILITY OF ALTERNATIVE WASTE MANAGEMENT TECHNOLOGIES

TOWN OF SAUGEEN SHORES

MARCH 2025 (V3)

GEI PROJECT NO.: 2401298

1. INTRODUCTION

1.1 Background

The Town of Saugeen Shores completed a Long-Term Waste Management Plan in 2020 (the Plan). One of the goals of the Plan was to identify and evaluate long-term waste management strategies (or alternatives). Based on the preliminary review, landfill optimization was identified as a viable long-term alternative for the management of the Town's residual waste. This alternative was carried forward as a *Preliminary Preferred 'Alternative To'* and supports the initiation of the Environmental Assessment for the waste management project pursuant to the Environmental Assessment Act.

The purpose of the Environmental Assessment is to address the problem of diminishing capacity at the Town of Saugeen Shores' existing Southampton Landfill Site through further assessment and determination of a long-term waste management strategy for the Town. The first step of the process involves the preparation of a Terms of Reference to provide the framework for the preparation and completion of the Comprehensive Environmental Assessment. Within the Terms of Reference, a set of 'Alternatives To' the undertaking are identified including the following:

Alternative 1: Do Nothing: Serves as a baseline against which the alternatives can be compared
Alternative 2: Optimization of Landfill Capacity at the Town's Existing Southampton Landfill Site
Alternative 3: Establish a New Landfill Site within the Town of Saugeen Shores
Alternative 4: Alternative Waste Management Technologies
Alternative 5: Third Party - Export of Waste

Building upon the recommendations of the Plan (2020), a detailed review and assessment of various alternatives has been completed as part of an overall screening process. Background studies were initiated in 2021 to confirm the feasibility of the Southampton Landfill Site to accommodate additional landfill capacity. The background studies were undertaken to support Alternative 2, the optimization of landfill capacity at the Town's existing Southampton Landfill Site. Based on the findings of the investigations, landfill optimization has been confirmed to be a viable waste management strategy.

Upon confirmation of the feasibility of the existing Southampton Landfill Site to support additional waste capacity, initial planning for the project was further advanced. This involved detailed screening assessments and/or reviews of two (2) other alternatives including *'The Applicability of Alternative Waste Management Technologies'*, provided herein, and the *'Screening Report: Citing of Potential Alternative Landfill Locations & Assessment of Landfill Alternatives'* which is provided under separate cover. The purpose of the screening process, subject of this report, is ultimately to identify whether alternative waste management technologies (i.e., incineration) warrant additional consideration in the Environmental Assessment. In other words, to determine if this alternative can be eliminated and not advanced into the Environmental Assessment. Carrying a refined range of alternatives from the Terms of Reference into the subsequent Environmental Assessment (EA) is often referred to as a '*Focused EA'*.

1.2 Relevant Terminology and Project Process

Within this Technical Memorandum, specific terminology is used to describe various aspects of the analysis and references to the Environmental Assessment process are made. Provided below is clarification of some of the terminology used and a brief overview of the process.

1.2.1 Alternatives To

Functionally different ways (or options) of meeting the Town's long-term waste management needs.

1.2.2 Environmental Assessment (EA)

An environmental assessment is a planning and decision-making process that evaluates the potential 'environmental' impacts of a proposed project or undertaking (i.e., social, technical, natural, economic, and cultural). A Comprehensive Environmental Assessment is required for the Town's Waste Management Project. This type of assessment is intended for large-scale, complex projects where impacts may be less predictable resulting in the potential for significant environmental effects. These are the most thorough type of assessment in terms of planning and consultation requirements. Comprehensive EA projects are completed in two steps including a Terms of Reference and an Environmental Assessment. Submission to the Ministry of the Environment, Conservation and Parks (MECP) for review and approval is required. This subject Technical Memorandum forms part of the supporting documentation for the Terms of Reference.

1.2.3 Focused Environmental Assessment

Focused EA's may be appropriate in cases where a significant amount of information is known. In other words, where substantial work has been undertaken to analyze and assess an 'Alternative To' and the alternative can be ruled out. For this undertaking, it is proposed that the screening of the 'Alternatives To' completed as part of the development of the Terms of Reference (ToR) be used to provide recommendations to refine the range of alternatives carried forward into in the Environmental Assessment (i.e., eliminate alternates from being advanced into the EA).

Within the documentation for this Waste Management project, it is stated that *'a focused EA may become justified as the alternatives become further refined through the ToR process'*. This means that, while this Technical Memorandum may seemingly justify the elimination of *Alternative Waste Management Technologies* from being advanced into the Environmental Assessment based on the findings of the detailed review and assessment, all supporting documentation provided in the Terms of Reference is subject to consultation with the public, the government review team, and Indigenous communities. Therefore, the assessment was subject to review through the process of developing the Terms of Reference.

Further, the screening of alternatives can be used as justification to recommend that a refined range of alternatives be carried forward into the Environmental Assessment. However, recommendations made in the Proposed Terms of Reference submitted to the MECP may be considered by the Minister in the decision whether to authorize a more limited scope of alternatives in the subsequent EA. The Minister may either approve the ToR, approve the ToR with amendments, or reject the ToR.

1.3 Purpose and Objectives of the Technical Memorandum

This screening of *Alternative Waste Management Technologies* is intended to confirm if the alternative is applicable to the future management of the Town's residual waste. Ultimately, the findings of this assessment will be used to justify whether:

1. *Alternative Waste Management Technologies* are recommended for further review in the Environmental Assessment, **or**
2. There is sufficient information available to justify the recommendation to refine the alternatives in the Terms of Reference and through the elimination of *Alternative Waste Management Technologies*. This is referred to as a Focused Environmental Assessment.

This supporting document provides a review of the available alternative waste treatment technologies, with a focus on assessing the applicability and suitability of this alternative to address the Town's long term waste management needs. As part of the review and assessment of this alternative, this memorandum will:

i. Provide a general description of the community demographics and the Town's waste management needs.
ii. Present the alternative waste management technologies available and their different functions and applications.
iii. Discuss the advantages and disadvantages of alternative waste management technologies specific to the management of municipal solid waste.
iv. Review the applicability of alternative waste management technologies to addressing the Town's future waste management needs.

2. BACKGROUND INFORMATION

2.1 Town Demographics and Population Projections

The Town of Saugeen Shores is characterized by an estimated 18 kilometers of shoreline along Lake Huron to the west along which the communities of Southampton and Port Elgin have been developed. Based on the 2021 census data, the Town has a reported population of 15,908 persons, not including the relatively high number of seasonal residents and the influx of tourists during the summer months. Consistent with the Town's tourism industry, the dwelling counts reported by Statistics Canada indicate that a significant proportion of the dwellings within the Town of Saugeen Shores are seasonal. According to the 2021 Census data, of the 8,548 private dwelling units, approximately 20% (or 1,643 units) are occupied by seasonal residents.

Population projections for the Town were recently updated to the year 2042 as part of a 'Development Charges Background Study to Amend By-Law' (April 2023, Final Report) prepared by DFA Infrastructure International Inc. As part of the Study, the population and employment growth was projected based on Statistics Canada census data, a Development Charges Background Study completed in 2021, the Town's subdivision plan applications, and a memo on growth prepared by Hemson Consulting Limited in 2018. Overall, it is anticipated that the Town of Saugeen Shores will experience a continually increasing population.

Based on the population projections presented in the Development Charges Background Study, the following is noted:

- It is estimated that the population of Saugeen Shores will grow by approximately 44% during the period between 2024 and 2042. This is equivalent to an annual growth rate of 2.46%.
- Based on the reported 2021 census population and the population forecast of 25,384 persons (including the undercount) for the year 2042, the compound growth rate is estimated to be 2.1%.

- Using the compound growth rate of 2.1%, the population for the Town forecast to the year 2070 is estimated to be approximately 45,500 persons.

2.2 Residual Waste Management

It is proposed that the Environmental Assessment for the Saugeen Shores Waste Management Project be undertaken to address the Town's future waste management needs for residual waste for a 40-year planning period. A report entitled *'Residual Waste Projection Analysis: 40-year Planning Horizon'*, has been prepared as a supporting document to the Terms of Reference. The report is intended to provide a general understanding of the types and quantity of waste to be managed.

Within the waste projection analysis, three waste diversion scenarios were considered, ranging from conservative, with no increase in the existing diversion rates beyond additional diversion gains from the implementation of an SSO program, to meeting the interim waste diversion goals established in the Strategy for a Waste-Free Ontario of 30% by 2020, 50% by 2030 and 80% by 2050. Based on the Town's estimated per capita residual waste generation rate developed using the 'intermediate' progressive scenario that considered progressive gains in diversion, it is estimated that the Town may generate approximately 330,000 tonnes of residual waste over the 40-year period between 2030 and 2070. This would be equivalent to the generation of between 7,000 tonnes and 10,000 tonnes of residual waste annually, or in the range of about 25 tonnes to 40 tonnes per day.

2.3 Long-Term Waste Management Plan (2020)

The Town completed a Long-Term Waste Management Plan in 2020. The purpose of the Waste Management Plan was to provide a "holistic" approach to the Town's waste management program for both short-term and long-term waste management planning purposes. A primary focus of the Long-Term Waste Management Plan was to identify and evaluate long-term waste management strategies (or alternatives) for the Town.

The Long-Term Waste Management Plan provided a conceptual level of review for several alternatives identified to meet the Town's long-term solid waste management needs, including a variety of landfill alternatives, export of waste, and other alternative disposal technologies. Based on the review of waste management alternatives for the Town, landfill optimization was identified as a viable long-term alternative. Further, it was concluded that alternative waste management technologies are not a viable option for the Town. With the evolving waste management landscape, this Technical Memorandum further explores the available waste management technologies and updates the review of the potential for *Alternative Waste Management Technologies* to support the Town's future waste management needs.

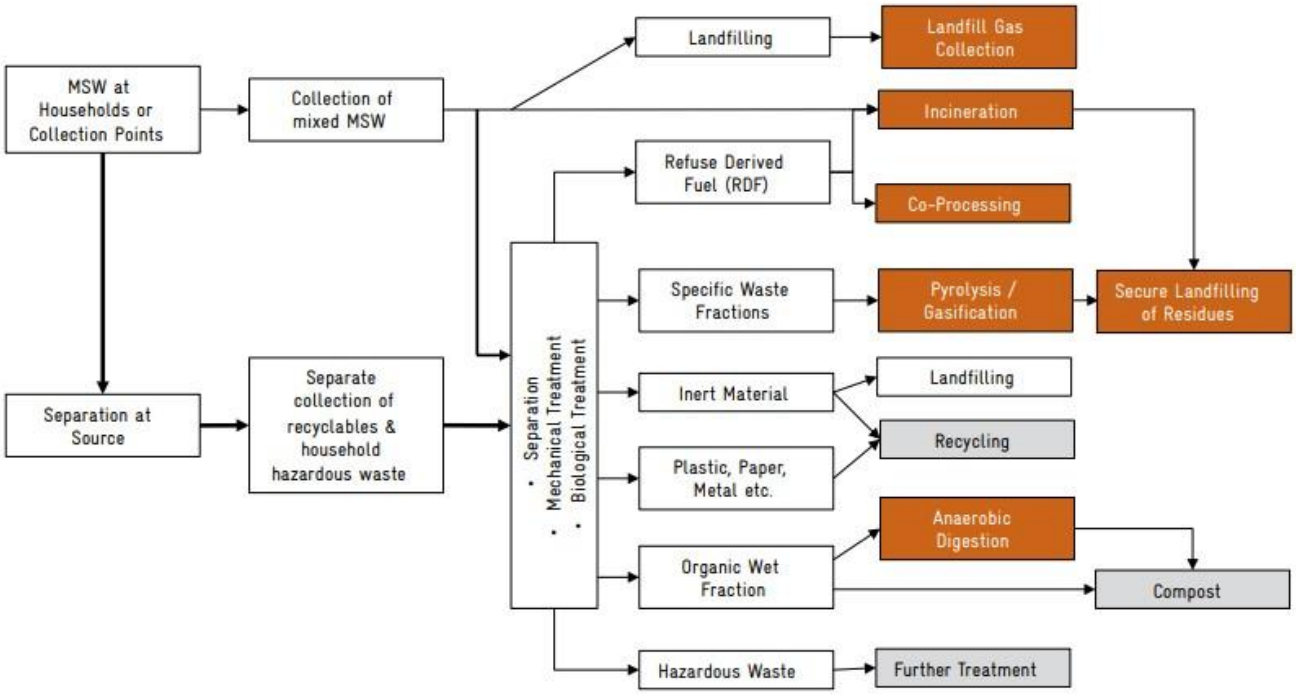
3. ALTERNATIVE WASTE MANAGEMENT TECHNOLOGIES

Alternative Waste Management Technologies are also often referred to as waste-to-energy processes. Waste-to-energy is a term that is used to describe various technologies that convert non-recyclable waste into usable forms of energy including heat, fuels, and electricity. One of the most common forms of waste energy is thermal energy which is heat generated during various activities and processes. Waste-to-energy plants typically consist of a combustion chamber, a boiler to generate high temperature steam, a storage pit, a bottom ash handling system and an air pollution control system to remove the pollutants before the steam is released through the smokestack.

There are several waste-to-energy technologies that are available for the processing of municipal waste including incineration, co-processing, anaerobic digestion, pyrolysis and gasification. Each of these alternative technologies have different functions and applications in the municipal waste management system (GIZ, 2017).

As shown in **Figure 3-1**, the technologies available serve to manage a specific waste type (or waste stream). Therefore, separation of the waste streams is a critical step in the successful operation of any facility. Separation can occur either at the source or through mechanical and/or biological treatment. Mechanical treatment is a process used to physically sort the waste and capture individual components from the waste stream based on the characteristically similar features such as size, weight, or material type (i.e., stones, recyclables, scrap metal, etc.). Biological treatment involves the use of microorganisms to break down the organic components of the waste stream, such as food waste and paper. The pre-treatment process for municipal waste that is mixed (or unsorted) typically involves the combination of the two treatment technologies, referred to as mechanical-biological treatment.

FIGURE 3-1:
Overview of municipal solid waste material flow and its different utilization and treatment options



Reference: GIZ. Waste-to-Energy Options in Municipal Solid Waste Management [Website].
https://www.giz.de/en/downloads/GIZ%20WasteToEnergy%20Guidelines%202017.pdf

A brief overview of the Waste-to-Energy processes and treatment applications is provided below.

Incineration (i.e., Conventional Combustion):

Incineration is the most common type of waste-to-energy technology. Incineration can be used to treat the remainder of the waste stream after source-separated diversion of recyclables and organics. This technology is available to unprocessed municipal solid waste with variable composition (i.e., unsorted waste). This technology generates energy (heat and electricity) through the direct combustion of waste. It generally involves the burning waste, this boils water which turns to steam, spinning turbines to create electricity. The heat from the combustion may also be used to generate energy. It is a controlled process that reduces the waste volume and mass, with the residual by-product still requiring some type of disposal, such as landfilling.

This technology is applicable to the management of solid municipal waste.

Co-Processing:

Co-processing is primarily applied in the cement industry and in thermal power plants. It requires relatively homogenous waste streams with a defined characteristic to ensure controlled combustion. As such, it is primarily used for energy recovery and material recycling from waste derived from industrial and commercial processes. Municipal solid waste used in co-processing is low due to the need to pre-process the waste to transform it into the required homogenous mixture, referred to as refuse derived fuel.

This technology is NOT applicable to the management of solid municipal waste.

Pyrolysis/Gasification:

Pyrolysis and gasification are thermal technologies that process waste at extremely high temperatures without combustion in the absence of oxygen and air (i.e., pyrolysis) or with a limited amount of oxygen and air (i.e., gasification). This technology generates energy through the production of a combustible fuel (i.e., combustible natural gas, syngas). It is a controlled process that reduces the waste volume and mass, with the residual by-product still requiring some type of disposal, such as landfilling. This technology is an option for the treatment of specific waste streams such as contaminated soil, clinical waste, or hazardous waste. However, while it can also be used to process specific streams of municipal solid waste (i.e., paper products, food, yard and wood waste), it is not recommended for large volumes of mixed municipal waste.

This technology is NOT applicable to the management of solid municipal waste.

Anaerobic Digestion:

Anaerobic digestion is limited to the organic components of the municipal waste stream (i.e., kitchen and garden waste). Anaerobic digestion is the decomposition of organic matter through microorganisms in the absence of oxygen. This technology generates energy through the production of a combustible fuel (i.e., methane, biogas, etc.) which can then be used as fuel for boilers or be converted into electricity. This technology requires a large amount of material to be operationally and economically viable. It is noted that while the Town does offer various opportunities to divert organics from the landfill, the Town does not currently have a source separated organics program. It is projected that the Town's population will be approaching 20,000 persons at about the same time as the Southampton landfill will be reaching capacity (i.e., circa 2030-2032). As per the Food and Organic Waste Policy Statement, at that time the Town will be required to collect food and organic waste from single-family dwellings (i.e., residential properties with five or less units) in urban settlement areas with a target of reducing food and organic waste by 50%.

This technology is only applicable to the management of pre-separated organic municipal waste. It is NOT applicable to the management of solid municipal waste.

4. ASSESSMENT OF THERMAL TREATMENT TECHNOLOGIES

Although there are several different types of waste-to-energy technologies available, the only technology proven to manage unprocessed municipal solid waste with variable composition is incineration. Therefore, the review of the applicability and suitability of *Alternative Waste Management Technologies* for the Town's future waste management needs provided in this Section will focus on incineration as the most representative technology that could be utilized as an 'Alternative To'.

4.1 Natural Environment

4.1.1 Environmental Controls

Modern incineration facilities use pollution control equipment to prevent the release of emissions into the environment as they are required to meet very stringent emission standards. Advanced emission control systems, such as scrubbers and filters, are typically used to capture and neutralize pollutants. The main pollutants of concern generally include particulate matter, lead, mercury, polychlorinated dibenzodioxins and dibenzofurans. While these pollutants can have adverse effects on air quality and human health if not properly managed and controlled, in modern day facilities these are typically not considered to contribute to significantly to ambient air concentrations and therefore generally do not represent a significant health risk. As facilities are required to meet stringent emission standards, the thermal treatment of waste is thought to be an environmentally friendly waste management alternative (Traven, 2023).

Incineration can also result in high carbon dioxide (CO_2) emissions, one of the most common and significant greenhouse gases. However, the CO_2 emissions associated with thermal treatment facilities are generally preferred over the release of landfill gas, which is a mixture of CO_2 and methane gas. Similar to CO_2, methane is a greenhouse gas, however, it traps more heat in the atmosphere than CO_2.

4.1.2 Resource Recovery

The main two traditional options for the management of garbage, or un-diverted waste, are landfilling or incineration. One of the main benefits of incineration includes the opportunity for resource recovery via the generation of energy. Incineration can generate energy in the form of heat and/or electricity, making it a potential source of sustainable power which can then be used for domestic, commercial, or industrial applications. It is generally recommended that incinerator facilities be cited where the consistent year-round use of the energy generated can be ensured (i.e., industrial parks). This is also an important factor in maintaining reliable revenues.

4.2 Technical Environment

4.2.1 Fuel Supply

While thermal treatment technologies are generally considered more environmentally sustainable due to the capture of energy from the waste and the potential reduction of impacts to the environment compared to landfilling, they are typically effective only at large-scale operations where sufficient feed-stock material (i.e., waste) is available. As a reference, these technologies typically require a consistent and large amount of waste of greater than 100,000 tonnes/year to be operationally feasible. Comparatively, it is estimated that the residual waste generation rate for the Town for the period between 2030 and 2070 will be in the range of 7,000 tonnes and 10,000 tonnes annually, representing approximately 7% to 10% of the quantity of waste required for this type of facility. Further to this, the seasonality of the community results in even less waste generation during the off-season. Therefore, significant commitments from other municipalities, or partnerships, would be required to make this alternative operationally feasible for the Town.

4.2.2 Reduction in Waste Volume and Management of Residual Waste Generated

When compared to landfilling, one of the main advantages of burning waste at ultra-high temperatures is its ability to reduce the mass and volume of waste. According to the US Energy Information Administration (Biomass Explained, 2023), a waste-to-energy plant can reduce the volume of solid municipal waste by about 87%, with a reduction in mass in the range of 15% to 30%. This reduces the amount of material requiring disposal in a landfill, which is especially critical in areas where land is scarce.

By-products in the form of ash that is collected from the boiler and the air pollution control system are created as a result of the incineration process. While a volume reduction of an estimated 87% is typically achieved, the remaining residual waste still requires disposal. The disposal of the waste by-product can be achieved by either (i) obtaining approval to accept waste (i.e., ash) at the Town's existing landfill site, subject to capacity still being available for the long-term; or (ii) hauling the material to another landfill site where the acceptance of ash is approved under the subject ECA.

The potential requirement for a landfill site to handle the ash by-product could be significant and is an important consideration. As discussed herein, the construction of an operationally and economically feasible incineration facility would require a commitment (or partnership) from other municipalities to achieve the recommended minimum capacity of 100,000 tonnes per year. In comparison, it is estimated that the Town will generate approximately 7,000 tonnes of residual waste in 2030 and that by 2070 the quantity of waste generated may reach up to approximately 10,000 tonnes annually. Therefore, in addition to the Town's solid municipal waste, the facility would be required to accept and additional 90% to 93% of waste from other areas to make this alternative feasible.

With a volume reduction in the range of 87% (or approximately 13,000 tonnes/year), the total volume of ash requiring disposal following incineration would likely be greater than the landfill capacity required to service the Town should the Town opt to continue to use landfilling for the future management of its municipal solid waste. Therefore, the construction of an incinerator within the Town would not necessarily negate the need for a landfill and, although a reduction in waste volume would be achieved, the landfill capacity required to manage the waste byproduct would remain similar due to the significant differential between the Town's current waste generation rate and the minimum capacity needs for plant operations.

4.2.3 Operational Complexity

The operation of a municipal solid waste incineration facility is highly complex and requires a greater level of operational expertise and maintenance when compared to landfilling. Therefore, operators require highly developed technical and management skills. According to the Waste-to-Energy Guide (GIZ, 2017), requirements for an incinerator include, but are not limited to, *'a continuous supply chain of garbage, a homogenized waste mix fed continuously to the combustion chamber, process parameter and emission parameters adjusted and controlled, scheduled maintenance, the purchase of auxiliary materials and spare parts, guaranteed energy supply to direct customers, and managed disposal or further use of process residues'*. The operational complexity associated with this type of facility requires involvement from numerous staff, adding to the long-term operational costs for the management of the facility. For example, the City of Edmonton is planning a waste-to-energy facility, scheduled to open in 2027. The facility is expected to process approximately 150,000 tonnes of residential waste and to create 25 permanent jobs to support its operations.

4.2.4 Transport of Waste into the Community

Incineration is generally considered more environmentally sustainable because of the capture of energy from waste and the potential reduction of impacts to the environment compared to landfilling. However, when the waste volumes required to support the successful operation of an incineration facility of greater than 100,000 tonnes per year are considered, the implementation of this alternative in the Town may have a greater impact on the environment than facilities built in urbanized areas. Given the rural nature of the Town and the surrounding areas, a significant amount of waste would likely need to be hauled a long distance to reach the facility. This

would increase CO_2 emissions to the environment. It is further noted that the increased truck traffic associated with the transport of waste into the Town could also have a negative impact of the community.

4.2.5 Overall Planning Period

The planning period for a thermal/incineration facility is estimated to be greater than 5 to 10 years. In addition, with the required commitments, or partnerships, from other municipalities to make this operationally feasible, the planning period would be expected to be greater. Therefore, the completion of the planning process, negotiations with other municipalities (i.e., contracts or partnerships), background studies, approvals and project implementation would not likely be completed prior to site capacity being reached at the existing Southampton Landfill site.

4.3 Economic Environment

Waste-to-Energy projects are complicated and expensive to build. Therefore, they represent a substantial financial risk for a municipality, especially smaller municipalities with limited financial resources. These projects require major capital investment and should be supported with a long-term financial plan and sufficient resources to ensure continuous operation and maintenance of the facility. As identified in **Section 4.2.1**, thermal treatment facilities generally require a consistent and large amount of waste (>100,000 tonnes/year) to be operationally successful and economically feasible. Therefore, a significant commitment (i.e., contract or partnership) from other parties would be required. The development and negotiation of agreements needed to guarantee support of operations for the long-term (i.e., 40-years) would be difficult. This magnitude of reliance on other parties would introduce significant risk and economic feasibility would still be questionable.

The costs and potential revenues associated with the construction and operation of a thermal treatment facility are presented below. The estimates are based on examples of facilities that have been constructed or are being planned and are intended to demonstrate that the financial implications associated with the planning and construction of such a facility likely make this alternative inherently prohibitive for the Town.

Capital Costs: $300 Million to $500 Million

Note: It is noted that the Durham York Energy Centre, which began operations in February 2015, can provide a provincial example of this technology implemented at a 'local' level. Capital costs for the Durham York Energy Centre (DYEC) were reportedly $284.2 Million ($255 Million for construction and $29 Million for the EA). Construction was completed in 2014. This facility can process up to approximately 140,000 tonnes of residual waste per year.

Long-term Costs:

This approach is capital intensive since it requires relatively complex infrastructure to conduct operations. When compared to landfills, operation and maintenance costs for waste-to-energy plants are significantly higher. However, operational costs can be offset by the price of third-party wastes accepted and revenues from the sale of electricity and covered metals. The DYEC reportedly recovers an estimated 60% of its annual operating costs from the sale of electricity and metals alone.

Revenues: Energy Generation

The DYEC generates sufficient electricity to power the operation of its facility. The remaining electrical energy is sold to the provincial grid under a Power Purchase Agreement with the Ontario Power Authority. The electrical energy generated provides sufficient energy to power approximately 10,000 homes per year. Based on this information, it is estimated that a plant with a 100,000 per year capacity could generate enough energy to power approximately 7,000 homes.

Although there is limited information available on other facilities being planned, the following examples provide confirmation of the challenges associated with maintaining a sufficient quantity of waste for processing and/or the cost associated with constructing a thermal treatment facility.

1. **Waterloo Region:**

   The Waterloo Region is continuing to investigate the feasibility of the waste-to-energy alternative for its region. The cost for such a facility is estimated to be upwards of $500M (2019 costs) and, based on the information available, the region will likely be required to collect waste from other municipalities to support its operations.
   [Reference: Energy from Trash? What's next for Waterloo's landfill (Waterloo Chronicle – Published by Adam Jackson on October 8, 2019)].

2. **Edmonton:**

   The City of Edmonton, Alberta, recently reached a 15-year deal with a company called Varme Energy to have its solid waste managed at a new waste-to-energy facility starting in 2027. The capital cost for the facility is reportedly estimated to be $300M. It is estimated that the facility will process approximately 150,000 tonnes of residential waste annually. Regulatory approval for the plant is pending. In essence, the City of Edmonton has identified an opportunity to implement the energy-to-waste alternative through its commitment to a third-party provider.
   [Reference: Waste-to-energy: Edmonton signs deal to have garbage burned for power at new $300M facility (CTV News - Published by Sean Amato on January 24, 2024)].

5. SUMMARY OF FINDINGS AND RECOMMENDATIONS

The purpose of this Technical Memorandum is to identify whether the alternative to pursue *Alternative Waste Management Technologies* warrants additional consideration. In other words, are there any alternative waste management technologies available that could potentially address the Town's future waste management needs and, if so, should this alternative be advanced into the Environmental Assessment for the undertaking.

While it is recognized that waste-to-energy has many benefits, including reducing the overall volume of waste in landfills, generating heat and/or electricity, and the potential reduction of impacts to the environment compared to landfilling, the required supply of greater than 100,000 tonnes of waste per year, the significant capital cost, and the operational complexity associated with a thermal treatment facility make the development of a waste-to-energy facility both operationally and economically unfeasible for the Town of Saugeen Shores. It is also noted that, although thermal treatment reduces the volume significantly, it does not eliminate the need for landfill capacity as the residual ash still requires disposal. Therefore, alternatives for landfilling would still need to be reviewed.

Based on the review of alternative waste management technologies (i.e., incineration), there are several factors that would suggest that thermal treatment technologies are not suitable for the Town of Saugeen Shores. Therefore, it is recommended that this 'Alternative To' be eliminated from proceeding further through the Environmental Assessment process.

The development of waste management technologies is ever evolving and may continue to be reviewed as information becomes available. Consistent with the iterative approach to the Environmental Assessment process, it is noted that the findings and decisions of the assessments completed during the Terms of Reference stage of the process do not necessarily preclude the consideration of this alternative at a later stage of the process should new technology become available.

Justification for a Focused Environmental Assessment

The screening of alternatives can be used as justification to recommend that a refined range of alternatives be carried forward into the environmental assessment. In general, only alternatives that address the problem (or opportunity) statement will be carried forward into the Environmental Assessment process for further review. Based on the assessment of *Alternative Waste Management Technologies* presented herein, there is sufficient information available to justify that this alternative is not an applicable or suitable solid waste management strategy for the Town. Therefore, it is recommended that this alternative be eliminated from the list of 'Alternatives To' advanced into the Environmental Assessment.

The recommendation to eliminate the Alternative to *Establish a New Landfill Site* is included in the Proposed Terms of Reference (ToR) to be submitted to the MECP using this Technical Memorandum as the basis to support the recommendation. The Minister may either approve the ToR, approve the ToR with amendments, or reject the ToR. If approved, *Alternative Waste Management Technologies* would be removed from the list of alternatives and would not be further considered through the process.

6. REFERENCES

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