# Long-Term Waste Management Plan

Municipality of Huron Shores

60698841

July 2024

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July 22, 2024

***Project #***
60698841

**Subject: Municipality of Huron Shores**
**Long-Term Waste Management Plan**

Dear Ms. Roberts:

We are pleased to provide you with the Municipality of Huron Shores Long-Term Waste Management Plan for your records and use.

Please contact the undersigned should you have any questions or concerns.

Sincerely,
**AECOM Canada Ltd.**

Tara Abernot
Project Manager
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Encl.

cc: Amber Burgler, Municipality of Huron Shores
Kevin Ravnaas, Municipality of Huron Shores

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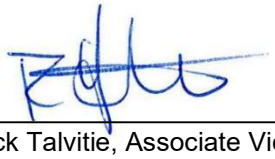
|  |  |
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| 1 | June 11, 2024 | TA | Draft Report for Client Review |
| 2 | July 22, 2024 | TA | Final Report |

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# 1. Introduction

AECOM Canada Ltd. (AECOM) was retained by the Municipality of Huron Shores (Municipality) to undertake a Long-Term Waste Management Study to guide the Municipality in managing their future waste management needs in a reliable, cost-effective and environmentally responsible manner over a period of approximately 25 years.

## 1.1 Background

The Municipality of Huron Shores was established in 1999 through the amalgamation of the former Village of Iron Bridge and three other former Townships (Thessalon, Day and Bright Additional, and Thompson). Each former Township previously maintained its own landfill site which the Municipality now owns and is responsible for operating. They include the following:

- Ward 1 – Township of Thessalon Landfill Site;
- Ward 2 – Township of Day and Bright Additional Landfill Site;
- Ward 3 – Iron Bridge Landfill Site; and
- Ward 4 – Township of Thompson Landfill Site.

Typically, each landfill site services the residents of their former Municipality; however, each site is licensed to receive waste from the entire geographic boundary of the Municipality of Huron Shores. A plan identifying the geographic boundary of the Municipality and location of each landfill site is included as Figure 1.

The Municipality is responsible for providing waste management services to a current population of approximately 1,860 permanent residents[1], an estimated 1,011 seasonal residents, and approximately 22 IC&I sector businesses[2]. To account for the estimated seasonal population, the 2021 Census identified 337 seasonal residences within the Municipality of Huron Shores and an average occupancy rate of 3 persons per residence was applied.

## 1.2 Problem/Opportunity Statement

The Municipality of Huron Shores is developing a Long-Term Waste Management Plan to determine the preferred way to address the future waste management needs for the existing service area over a 25-year planning period. The Municipality is in a unique position where it owns and operates four separate waste disposal sites to accommodate a relatively small population base (i.e., approximately 1,860 persons[1]) disbursed over a large geographic area (i.e., approximately 452 km$^2$). This translates to a population density of just 4.1 persons/km$^2$. It has been challenging for the Municipality to effectively operate and maintain four landfill sites having limited financial, labour and equipment resources available.

In general, it is inefficient and cost prohibitive for a single Municipality of this population to own and operate four separate waste disposal sites. This study therefore focuses on how to effectively and efficiently address the future waste management needs of the Municipality of Huron Shores.

Through investigative field and tabletop work completed over several years for the Municipality along with preliminary discussions with Municipal staff, several waste management options were identified for consideration. The waste management options explored within this study consist of the following:

[1] *Statistics Canada 2021 Census of Population – Municipality of Huron Shores*
[2] *IC&I sector business count provided by the Municipality of Huron Shores*

- Status quo – four operating waste disposal sites. This option provides a reference for comparing all other options;
- Operate two landfill sites while converting two landfill sites into waste transfer stations;
- Operate two landfill sites with no waste transfer stations;
- Operate one landfill site while converting two landfill sites into waste transfer stations;
- Operate one landfill site with no waste transfer stations; and
- Operate one landfill site while converting the remaining three landfill sites into waste transfer stations.

## 1.3 Study Objectives

The overall purpose of this study is to help guide the Municipality in managing their future waste management needs in a reliable, cost-effective and environmentally responsible manner over a period of approximately 25 years by selecting a preferred waste management option for possible future implementation. The specific tasks and activities undertaken during this study included:

a) Gather and research background data;
b) Develop a problem/opportunity statement;
c) Identify and summarize relevant Provincial waste management legislation and/or policies;
d) Review the Municipality's existing waste management programs and services;
e) Identify estimated residual capacity at each landfill site;
f) Identify current landfill operating costs;
g) Estimate future population projections;
h) Analyze the Municipality's future waste management needs including waste quantities;
i) Identify waste management options;
j) Evaluate options relative to each other considering convenience, health and safety, environmental, cost and other relevant criteria and identify a preliminary preferred option;
k) Solicit public and First Nations input on the preliminary preferred option through one public open house;
l) Incorporate public and First Nations input;
m) Select the final preferred waste management option; and
n) Document the process and summarize the results of the study in this report.

## 1.4 Terminology

The following terminology is used throughout this study:

- ***Active Waste Disposal Site*** – Refers to operational landfill sites that accept waste materials for final landfilling disposal.
- ***Bulky Waste*** - Refers to large waste items (i.e, furniture, mattresses, etc.) that are landfilled.
- ***Household Waste*** - Refers to bagged residential waste that is landfilled.
- ***Segregated Waste*** – Refers to waste materials delivered to disposal sites that will be diverted from disposal (i.e., blue box recyclables, metal and white goods, electronic waste, tires, batteries, etc.) or processed on-site (i.e., burning of clean wood waste and brush).
- ***Waste Transfer Bins*** – Refers to leak and bear proof waste disposal bins in which household waste can be deposited for temporary storage prior to final disposal.
- ***Waste Transfer Stations*** – Refers to sites that accept household waste in waste disposal bins for temporary storage and is ultimately transferred to a second site for final disposal.

# 2. Waste Management Legislation

Ontario Municipalities are mandated by the provincial government to provide waste management disposal services to residents in an environmentally responsible manner as dictated by R.R.O. 1990, Reg. 347: General - Waste Management under the *Environmental Protection Act* (EPA).

## 2.1 Waste Diversion Legislation (Blue Box)

In 2016, the Provincial government passed the Waste-Free Ontario Act (WFOA) which also included the passage of the Resource Recovery and Circular Economy Act (RRCEA) and Waste Diversion Transition Act (WDTA). This legislation provides a resource recovery and waste reduction road map for Ontario with a pronounced shift to producer responsibility for Ontario's waste diversion programs.

The WDTA is focused on promoting the reduction, reuse and recycling of waste and converting end of life material to a resource rather than waste. It is also intended to provide guidance on the operation of Ontario's waste diversion programs and to legislate a smooth transition to the producer responsibility model.

The RRCEA provides the framework for individual producer responsibility and designating the materials collected under Ontario's current recycling programs (Blue Box, tires, hazardous waste, etc.). Blue Box Regulation (O.Reg. 391/21) was adopted under the RRCEA which requires producers to operate and pay for the collection and reuse, refurbishment and recycling of Blue Box materials.

Under the RRCEA and the Blue Box Regulation (O.Reg. 391/21), all existing Blue Box programs in Ontario are expected to transition to full producer responsibility between July 1, 2023 and December 31, 2025, with the Municipality of Huron Shores scheduled to transition on June 27, 2025. Under the new legislation, Municipalities continue to have the option of being a collection service provider (eg. collecting recyclables under contract) and/or administering collection contracts with service providers (eg. administer GFL collection contract) or elect to have no further involvement in the Blue Box program. Furthermore, there is a commitment by Stewardship Ontario to ensure that the current Blue Box program as seen by residents will not change during the transition period (i.e., July 1, 2023 to December 31, 2025). This implies that the recycling collection program in the Municipality of Huron Shores will continue as depot collection at all four landfill sites. However, the collection approach and collection frequency may change post-transition (i.e., beginning January 1, 2026) as Municipal collection services will be procured through competitive Request for Proposals processes.[3]

O.Reg. 101/94 mandates Ontario Municipalities with populations greater than 5,000 residents to provide Blue Box recycling collection services. The Municipality of Huron Shores does not meet this population threshold but was proactive in providing Blue Box depots for their residents. However, O.Reg. 101/94 has been amended by O.Reg. 392/21 which requires any Municipality participating in the Blue Box transition to continue to operate their existing Blue Box system until their scheduled transition date. Therefore, this legislation requires the Municipality of Huron Shores to continue to provide Blue Box depot services to its residents until June 27, 2025. Following that date the Municipality will have no further Blue Box obligations.

For the purposes of this report, we have assumed that all Blue Box material recycling depots will remain at each landfill site post program transition and the Municipality of Huron Shores will no longer have costs associated with the Blue Box program. The Municipality should continue to be engaged in the transition process to understand their transition and post-transition options.

[3] *Circular Materials, Initial Report, July 1, 2022, Filed with the Resource Productivity and Recovery Authority pursuant to s. 50.1 (2) of Ontario Regulation 391/21 BLUE BOX under the Resource Recovery and Circular Economy Act 2016.*

# 3. Existing Municipal Waste Management Programs and Services

The Municipality of Huron Shores provides both waste disposal and waste diversion services to its residents. In addition, the Municipality has an extensive groundwater and surface water environmental monitoring and reporting program for each landfill site. The Municipality's existing waste management programs and services have been inventoried and are summarized within this Section.

## 3.1 Waste Collection Services

Residents and businesses self-haul waste directly to each of the Ward 1-4 Huron Shores Landfill Sites as needed. The Municipality does not provide curbside waste collection services to its residents as it is cost prohibitive due to the Municipality's large geographic area (Figure 1). It was agreed through consultation with the Municipality that curbside waste collection was not a suitable, cost-effective service option and therefore was excluded from consideration in this study.

Residents within the service area are provided with Access Cards which must be presented to the respective landfill Site Attendant prior to admittance and all waste entering the sites is inspected for general compliance by the Site Attendant. Upon inspection of each waste load, the Site Attendant ensures proper tipping fees are paid, if required, and directs vehicles to the active disposal area(s) within the landfill footprint and/or the segregation area(s). There is no waste bag limit at any of the Huron Shores landfill sites. Segregated materials are ultimately transferred off site by a third-party contractor or managed on-site (i.e, clean wood waste and brush).

## 3.2 Waste Disposal Services

All four waste disposal sites are open to the public 16 hours per week during the following days/times:

<u>April 1 to September 30</u>

- Monday and Wednesday – 4:00 pm to 8:00 pm
- Saturdays – 9:00 am to 5:00 pm

<u>October 1 to March 31</u>

- Monday and Wednesday – 2:00 pm to 6:00 pm
- Saturdays – 9:00 am to 5:00 pm

A common tipping fee schedule is also maintained by the Municipality for all waste disposal sites and is updated periodically when required.

A description of each active waste disposal site is provided in the following subsections.

### 3.2.1 Ward 1 - Township of Thessalon Landfill Site

The Ward 1 - Township of Thessalon Landfill Site (Ward 1 Landfill Site) is located on Lot 13 and 14, Concession H - 782 within the Municipality of Huron Shores, District of Algoma, Ontario. The Site is northeast of the Town of Thessalon and uses the physical address 200 Highway 129, Huron Shores, Ontario. The main entrance for the Site is directly off Highway 129. The Site location can be found on Figure 1.

The Ward 1 Landfill Site is estimated to have been in operation since the early 1970s and is approved for the use and operation of a 24 hectare (ha) total waste disposal site under current amended Environmental Compliance Approval (ECA) No. A561901 issued by the Ministry of the Environment, Conservation and Parks (MECP or Ministry) on August 20, 2015. The site is currently licensed to accept solid non-hazardous municipal waste generated by residential, industrial, commercial and institutional (IC&I) sectors. Currently there is no volumetric capacity included in the ECA but a Design and Operations Report (D&O) is currently being prepared for the site which will include a waste mound design with a defined volumetric capacity.

The Ward 1 Landfill Site primarily services an estimated permanent population of approximately 787 residents[4] and 170 seasonal residents[5] from the former Township of Thessalon, however the Site is licensed to receive waste from the entire geographic boundary of the Municipality of Huron Shores. Prior to the 1999 amalgamation of the Municipality, the Site would have only serviced the residents of the Township of Thessalon.

The Site also contains three (3) sewage drying trenches which are leased by an independent Contractor and are operated under a separate ECA. The lessee is responsible for maintaining an MECP permit to operate and maintain the sewage trenches. All costs associated with the operation and maintenance of the sewage drying trenches are the responsibility of the lessee and were excluded from this study.

### 3.2.2 Ward 2 - Township of Day and Bright Additional Landfill Site

The Ward 2 - Township of Day and Bright Landfill Site (Ward 2 Landfill Site) is located on the North 1/2 of Lot 4 and Lot 5, Concession 1 within Municipality of Huron Shores, District of Algoma. The Site is south of Highway 17 East, between the Town of Iron Bridge to the east and the Town of Thessalon to the west and uses the physical address 473 Cullis Road, Huron Shores, Ontario. The main entrance for the Site is off Cullis Road. The site location is shown on Figure 1.

The site is estimated to have been in operation since the early 1970s and is currently approved for the use and operation of a 1.2 hectare (ha) landfill site, and for use as a waste transfer station under current amended ECA No. A560701 issued by the MECP on May 21, 2021. Based on available site plans, it is estimated that the total landfill site area is approximately 50.7 ha. The site is currently licensed to accept solid non-hazardous municipal waste generated by residential, industrial, commercial and institutional (IC&I) sectors. Currently there is no volumetric capacity included in the ECA but a D&O Report is currently being prepared for the site which will include a waste mound design with a defined volumetric capacity.

Historically, the area serviced by the Ward 2 Landfill Site consisted of the former Township of Day and Bright Additional. Although the Site is intended to primarily receive waste from the same general area (i.e., former Township of Day and Bright Additional), it is licensed to receive waste from the entire geographic boundary of the Municipality of Huron Shores. The Ward 2 Landfill Site primarily services an estimated permanent population of approximately 302 residents[6] and an estimated seasonal population of 583 residents[7].

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*[4] Estimated based on historical Statistics Canada Census Profile - Township of Thessalon and Statistics Canada 2021 Census Profile – Municipality of Huron Shores*

*[5] Estimated based on historical seasonal household counts from Statistics Canada Census Profile – Township of Thessalon and Statistics Canada 2021 Census Profile – Municipality of Huron Shores and assumes an average occupancy rate of 3 persons per seasonal household.*

*[6] Estimated based on historical Statistics Canada Census Profile - Township of Day and Bright Additional and Statistics Canada 2021 Census Profile – Municipality of Huron Shores*

*[7] Estimated based on historical seasonal household counts from Statistics Canada Census Profile – Township of Day and Bright Additional and Statistics Canada 2021 Census Profile – Municipality of Huron Shores and assumes an average occupancy rate of 3 persons per seasonal household.*

### 3.2.3 Ward 3 - Iron Bridge Landfill Site

The Ward 3 - Iron Bridge Landfill Site is located on the Part North 1/2 Lot 6, Concession 3, Gladstone Township within Municipality of Huron Shores, District of Algoma. The Site is northwest of the Town of Iron Bridge and uses the physical address 41 Red Rock Road, Iron Bridge, Ontario. The main entrance for the Site is off Red Rock Road which is off Highway 546. The Site location is shown on Figure 1.

The Site is estimated to have been in operation since the early 1970s and is approved for a 6.82 hectare (ha) total waste disposal footprint within a total site area of 60 ha. A D&O Report was prepared for this site in 2020 which included a 1.05 ha waste mound design within the 6.82 ha waste disposal footprint. The site is currently licensed to accept solid non-hazardous municipal waste generated by residential, industrial, commercial and institutional (IC&I) sectors under current amended ECA No. A7059701 issued on June 18, 2021. The current approved 1.05 ha waste disposal footprint has an approved maximum fill capacity of 30,000 $m^3$.

Historically, the area serviced by the Ward 3 Landfill Site consisted of the former Village of Iron Bridge. Although the site is intended to primarily receive waste from the same general area (i.e., Iron Bridge), it is licensed to receive waste from the entire geographic boundary of the Municipality of Huron Shores. In total, approximately 286[8] permanent households or an estimated permanent population of 592 residents[9] and an estimated seasonal population of 117 residents[10] are being regularly serviced by the Ward 3 Landfill Site (note: includes Iron Bridge and excludes the remainder of the Municipality of Huron Shores).

Similar to Ward 1, the Ward 3 Landfill Site contains three (3) sewage drying trenches which are leased by an independent Contractor and are operated under a separate ECA. The lessee is responsible for maintaining an MECP permit to operate and maintain the sewage trenches. All costs associated with the operation and maintenance of the sewage drying trenches are the responsibility of the lessee and were excluded from this study.

### 3.2.4 Ward 4 - Township of Thompson Landfill Site

The Ward 4 - Thompson Landfill Site (Site) is located within the East 1/2 of the Northwest 1/4 of Section 29 within the Municipality of Huron Shores, District of Algoma. The Site is south of Highway 17 East, between the Town of Blind River to the east and the Town of Iron Bridge to the west and uses the physical address 1035 Dean Lake Road, Municipality of Huron Shores, Ontario. The main entrance for the Site is off Dean Lake Road which is accessible from Highway 17 East. The Site location can be found on Figure 1.

The Site is estimated to have been in operation since the early 1970s and currently operates under Environmental Compliance Approval (ECA) No. A562001 issued by the MECP on June 18, 1996. The site is approved for the use and operation of a 0.81 hectare (ha) disposal footprint within a total site area of 12.37 ha, has a maximum capacity of 2,200 tonnes and is currently licensed to accept solid non-hazardous municipal waste generated by residential, industrial, commercial and institutional (IC&I) sectors.

The Ward 4 Landfill site primarily services an estimated permanent population of approximately 179 residents[11] and 141 seasonal residents[12] from the former Township of Thompson.

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[8] *Statistics Canada 2021 Census Profile – Iron Bridge*

[9] *Statistics Canada 2021 Census Profile – Iron Bridge*

[10] *Estimated based on seasonal household counts from Statistics Canada 2021 Census Profile – Iron Bridge and assumes an average occupancy rate of 3 persons per seasonal household.*

[11] *Estimated based on historical Statistics Canada Census Profile - Township of Thompson and Statistics Canada 2021 Census Profile – Municipality of Huron Shores*

[12] *Estimated based on historical seasonal household counts from Statistics Canada Census Profile – Township of Thompson and Statistics Canada 2021 Census Profile – Municipality of Huron Shores and assumes an average occupancy rate of 3 persons per seasonal household.*

## 3.3 Waste Diversion Program

The Ward 1-4 landfill sites have dedicated segregation areas for public drop-off of Blue Box recyclables, metals and white goods, tires, electronic waste, batteries, and clean wood waste and brush. Not all segregated materials are accepted at each landfill site (see Table 1 for locations). Municipal Hazardous and Special Waste (MHSW) materials are not accepted at any location within the Municipality and residents are encouraged to take hazardous waste materials to either the City of Sault Ste. Marie Household Hazardous Waste Depot or to the Town of Blind River during their biennial Household Hazardous Waste Day event.

The waste diversion program provided by the Municipality is detailed in the following subsections and summarized in Table 1.

**Table 1: Waste Diversion Program Summary**

| Waste Diversion Program | Ward 1 Landfill Site | Ward 2 Landfill Site | Ward 3 Landfill Site | Ward 4 Landfill Site | Additional Locations Within Huron Shores |
|---|---|---|---|---|---|
| **Blue Box Recycling** | ✓ | ✓ | ✓ | ✓ | |
| **Metals & White Goods** | ✓ | ✓ | ✓ | ✓ | |
| **Tires** | ✓ | | ✓ | | |
| **Electronic Waste** | ✓ | | ✓ | | |
| **Batteries** | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Clean Wood Waste and Brush** | ✓ | ✓ | ✓ | ✓ | |

*Note: The Municipality's waste diversion program allows for unlimited disposal of all program materials.*

### 3.3.1 Blue Box Recycling

Although not provincially mandated, the Municipality provides Blue Box recycling services to its residents in order to be environmentally responsible and to ultimately extend the site life of the landfill sites by reducing the amount of Municipal waste being landfilled.

Blue Box recyclables are accepted at all Ward 1-4 landfill sites at no cost to residents (i.e, no tipping fee charged). Each site has a Blue Box recyclables collection area containing recycling bins that are clearly marked as to the waste material type that is accepted. The bins are managed by a recycling Contractor, GFL Environmental Inc. (GFL), and the contents are removed from the landfill sites on an as-needed basis and transferred for processing at GFL's material recovery facility (MRF) located in Blind River, ON.

The following materials are currently accepted through the Municipality's Blue Box program:

- Commingled materials (i.e. aluminum, steel, and #1 through #6 plastic beverage and food containers); and
- Fibres including OCC, boxboard, newsprint, magazines, catalogues, telephone books, paper/hard cover books, milk/juice containers and household print paper.

The Municipality does not generate any revenue from the processing of blue box materials.

As previously noted, the Municipality of Huron Shores existing Blue Box program is scheduled to transition to the producer responsibility model on June 27, 2025. It is assumed that after the transition date the Municipality will no longer have any costs related to residential Blue Box recycling. However, the new Blue Box recycling program

framework does not include Blue Box recycling services for the IC&I sector. The Municipality may be able to continue to operate recycling depot collection services for the IC&I sector at their cost. Approximately 6.75%[13] of the Blue Box recyclables collected at the existing Blue Box depots originate from the IC&I sector. The Municipality should continue to be engaged in the transition process to understand their transition and post-transition options.

### 3.3.2 Metals and White Goods

Metals and white goods (i.e, refrigerators, freezers, washers, dryers, etc.) are accepted at all Ward 1-4 landfill sites at no cost to residents (i.e., no tipping fee charged). Each site maintains a segregation area for the public drop-off of metal and white goods. Appliances containing refrigerant are accepted provided the refrigerant has been professionally removed and the appliance is tagged. Metal/white goods are removed from the landfill sites on an as-needed basis and taken to a recycling facility in Sault Ste. Marie, ON for processing. The Municipality generates revenue from the sale of collected metals and white goods.

### 3.3.3 Tires

Tires are accepted at the Ward 1 and Ward 3 landfill sites at no cost to residents (i.e, no tipping fee charged). Both sites maintain a segregation area for tires. Stockpiled tires are removed from the landfill sites on an as-needed basis and transferred to a recycling facility at no cost to the Municipality under the individual producer responsibility regulatory framework O. Reg. 225/18 (Tires Regulation), as defined in the RRCEA (2016). This is a cost neutral program as the Municipality does not generate revenue from the collection of tires and there is no cost to the Municipality for removal.

### 3.3.4 Electronic Waste

Electronic waste (e-waste) is accepted at the Ward 1 and Ward 3 landfill sites at no cost to residents (i.e., no tipping fee charged). Both sites maintain a segregation area for e-waste. The collected e-waste is removed from the landfill sites on an as-needed basis and transferred to a recycling facility at no cost to the Municipality through the Producer Responsibility Organization (PRO), Electronic Products Recycling Association (EPRA)/Recycling My Electronics. This program also falls under the individual producer responsibility regulatory framework, as defined in the RRCEA (2016), under the Electronic and Electrical Equipment (EEE) regulation (O.Reg. 522/20). This is a cost neutral program as the Municipality does not generate revenue from the collection of e-waste and there is no cost to the Municipality for removal.

### 3.3.5 Batteries

Single use, cell phone and computer batteries are accepted for recycling at all Ward 1-4 landfill sites and at several other locations within the Municipality including the Municipal office. Batteries are collected in marked recycling containers at each location and are transferred on an as-needed basis to a recycling facility for processing. This is a cost neutral program as the Municipality does not generate revenue from the collection of batteries and there is no cost to the Municipality for removal.

### 3.3.6 Clean Wood Waste and Brush

Clean wood waste and brush is accepted for burning at all Ward 1-4 landfill sites at no cost to residents (i.e., no tipping fee charged). Each site maintains a minimum of one burn trench and each have a 500-gallon water tank located adjacent to the burn area for fire management, if necessary.

[13] *Municipal Property Assessment Corporation (MPAC) Municipal Counts as of 2022 Roll Return - 400, 500 & 600 Property Code Series*

## 3.4 Environmental Monitoring and Reporting Program

The Municipality carries out an extensive annual environmental monitoring and reporting program for each landfill site in order to identify and monitor any environmental impacts that the landfills may be having on groundwater and surface water quality. The monitoring programs for the Ward 2-4 landfill sites are dictated by the individual site ECA's and the monitoring program for the Ward 1 landfill site is recommended by AECOM. A summary of the current environmental monitoring and reporting program for each landfill site is summarized in Table 2.

**Table 2: Current Monitoring and Environmental Reporting Program Frequency Summary**

| Landfill Site | No. of Groundwater (GW) Monitoring Wells | No. of Surface Water (SW) Monitoring Stations | Sampling Frequency | Environmental Monitoring Reporting Frequency |
|---|---|---|---|---|
| Twp. of Thessalon (Ward 1) | 8 | 0 | GW – 1 x annually (Spring) | Every 3rd year |
| Twp. of Day & Bright Additional (Ward 2) | 9 | 2 | GW – 1 x annually (Spring)<br>SW – 1 x annually (Spring) | Annually |
| Village of Iron Bridge (Ward 3) | 7 | 5 | GW – 2 x annually (Spring, Fall)<br>SW – 3 x annually (Spring, Summer, Fall) | Annually |
| Twp. of Thompson (Ward 4) | 8 | 0 | GW – 1 x annually (Spring) | Every 3rd year |

# 4. Ward 1-4 Landfill Sites Estimated Residual Disposal Capacity

The estimated residual disposal capacity of each landfill site is detailed in the following subsections and summarized in Table 3. The estimates have been developed for planning purposes using reasonably conservative inputs including a waste generation rate of 450 kg/person/year, permanent population projections assuming modest growth and allowances for seasonal residents (see Section 5 for population and waste quantity projections).

**Table 3: Ward 1-4 Landfill Sites Estimated Residual Disposal Capacity Summary**

| Landfill Site | Total Site Area (ha) | Current Waste Disposal Area (ha) | Landfill Disposal Capacity (Tonnes) | Estimated Landfill Residual Disposal Capacity (Tonnes)[5] |
|---|---|---|---|---|
| Twp. of Thessalon (Ward 1) | 24 | 1.2[2] | Assumed to be adequate for an estimated 25 years of disposal capacity for the Ward 1 service area[3] | Assumed to be adequate for an estimated 25 years of disposal capacity for the Ward 1 service area[3] |
| Twp. of Day & Bright Additional (Ward 2) | 50.7[1] | 1.2 | Assumed to be adequate for an estimated 25 years of disposal capacity for the Ward 2 service area[3] | Assumed to be adequate for an estimated 25 years of disposal capacity for the Ward 2 service area[3] |
| Village of Iron Bridge (Ward 3) | 60 | 1.05 | 9,600 | 9,177 |
| Twp. of Thompson (Ward 4) | 12.37 | 0.81 | 2,200 | 818[4] |

*Notes:*
1. *Ward 2 total site area estimated based on available site plans.*
2. *Ward 1 current disposal area estimated based on proposed disposal footprint in unapproved Draft D&O Report.*
3. *Ward 1 and Ward 2 disposal capacity not identified in current ECA's and will be addressed in unapproved Draft D&O reports with assumed 25-year disposal capacity for each site (see below details).*
4. *Ward 4 residual disposal capacity assumes 2,200 tonnes disposal capacity is from 1992 and not from beginning of site operations.*
5. *The estimated residual disposal capacity reflects capacity at the end of 2023.*

## 4.1 Ward 1 Landfill Site Estimated Residual Disposal Capacity

The Ward 1 landfill site is currently approved to operate as a 24 Ha landfill site under Amended ECA No. A561901. Although the current amended ECA identifies a 24 Ha landfill site, it is not practical to assume the entire site can receive waste without maintaining buffer lands around the site, particularly along the downstream portion of the site (i.e. in the direction of groundwater flow). A D&O Report is currently being prepared for the Ward 1 landfill site and a disposal footprint design is being developed for inclusion in the report.

For the purposes of this report, we have assumed an estimated 1.2 Ha footprint area with a 25-year disposal capacity based on the design currently being considered in the unapproved Draft D&O Report for this site. In addition, the current amended ECA for the Ward 1 landfill site does not identify a volumetric disposal capacity. A volumetric disposal capacity will also be established in the forthcoming Draft D&O Report.

## 4.2 Ward 2 Landfill Site Estimated Residual Disposal Capacity

The Ward 2 landfill site is currently approved for the use of a 1.2 ha disposal footprint under Amended ECA No. A560701 with no maximum fill capacity. A D&O Report is currently being prepared for the Ward 2 landfill site where a final waste mound design incorporating the approved 1.2 Ha disposal footprint will be developed for inclusion in the report. Once complete, a definitive site life can be determined.

For the purposes of this report, it has been assumed that the footprint design will be developed to provide 25 years of disposal capacity; however, the waste mound design is restricted by the current approved 1.2 ha disposal footprint which may impact the ability to achieve 25 years of capacity. A more definitive volumetric disposal capacity will also be established in the forthcoming Draft D&O Report.

## 4.3 Ward 3 Landfill Site Estimated Residual Disposal Capacity

The Ward 3 landfill site has a total site area of 60 Ha and is approved as a 6.82 Ha waste disposal site of which 1.05 Ha is currently approved to receive waste for landfilling under current Amended ECA No. A7059701. The approved D&O Report for this site, Ward 3 – Iron Bridge Landfill Site Design and Operations Report (AECOM, April 2020), has been designed with a disposal capacity of 9,600 tonnes based on a 25-year planning period for the site.

Based on capacity calculations completed for the purposes of this report, there is an estimated 9,177 tonnes of disposal capacity remaining at the Ward 3 landfill site at the end of 2023. This estimate is based on the estimated total volume of waste deposited within the current 1.05 ha waste footprint from the time the disposal footprint became active (i.e., July 2021).

## 4.4 Ward 4 Landfill Site Estimated Residual Disposal Capacity

The Ward 4 landfill site is currently approved for the use and operation of a 0.81 Ha disposal footprint within a total site area of 12.37 Ha with a maximum volumetric capacity of 2,200 tonnes under ECA No. A562001. Based on capacity calculations completed for the purposes of this report, there is an estimated 818 tonnes of capacity remaining at the Ward 4 landfill site at the end of 2023. This may be adequate to service an estimated annual equivalent permanent service population of 230 people for approximately 8 years based on an average annual disposal rate of 450 kgs/person/year (see Section 5.2 for estimated average annual disposal quantities).

It should be noted that it was previously assumed that the site capacity (i.e. 2,200 tonnes) identified in the ECA was from the beginning of Site operations in the early 1970s; however, it was recently established, through a review of historical supporting documentation, that the 2,200 tonne capacity may have been approved based on disposal operations beginning in 1992 and not from the beginning of site operations. Ministry confirmation of site capacity has been requested and is forthcoming. For the purposes of this report, we are assuming that the maximum fill capacity of 2,200 tonnes is from 1992 and not from the beginning of site operations in the early 1970s.

# 5. Future Waste Management Needs

## 5.1 Population Projections

Historical population figures for the Municipality of Huron Shores were prepared based on Statistics Canada 1986, 1991, 1996, 2001, 2006, 2011, 2016 and 2021 Census data and the Consultant's best estimates based on available historical reporting and municipal data. The 2021 permanent population of the Municipality of Huron Shores is 1,860 residents which represents an increase from the average population levels that existed through the period 1970 to 2016 which is estimated to be 1,812. However, the Municipality's estimated seasonal population declined in 2021 to 1011 from an average of 1542 for the 1970 to 2016 period. This was the result of a decline of approximately 170 seasonal households reported in the 2021 Census as compared to the 2016 Census. This decline in seasonal households was somewhat offset by an increase of approximately 88 additional permanent households reported in the 2021 Census compared to the 2016 Census.

Based on the above data, the historical average permanent population (1970-2021) for the entirety of the Municipality of Huron Shores is 1,817 persons and the historical average seasonal population is 1,483 persons. Therefore, the historical average equivalent permanent population for the general service area over a 50-year period is estimated to be 2,188 persons as summarized in Table 4.

**Table 4: Historical Population Estimates**

| Year | Population | | Average Permanent | Average Seasonal | Equivalent Permanent Annual Average[2] |
|---|---|---|---|---|---|
| | Permanent | Seasonal[1] | | | |
| **1970** | 1,882 | 1,539 | 1,817 | 1,483 | 2,188 |
| **1986** | 1,896 | 1,567 | | | |
| **1991** | 1,962 | 1,552 | | | |
| **1996** | 1,877 | 1,543 | | | |
| **2001** | 1,794 | 1,542 | | | |
| **2006** | 1,696 | 1,539 | | | |
| **2011** | 1,723 | 1,536 | | | |
| **2016** | 1,664 | 1,521 | | | |
| **2021** | 1,860 | 1,011 | | | |

*Notes:* *1. Seasonal population reflects estimated total summer population based on 3 persons per seasonal household.*
*2. Average permanent and average seasonal population is converted to an equivalent permanent population assuming an average full-time occupancy of 12 months for permanent population and 3 months for seasonal population.*

The population estimates in Table 4 were subsequently used as a basis to develop reasonable estimates of the future population to be serviced by the Municipality's waste management program. Although the Municipality does not have any formal population growth estimates they concurred that a reasonable approach, for planning purposes, would consist of a modest average annual growth rate of 0.5%-1% per annum. For the purposes of this study, we have assumed an annual growth rate of 0.5%. Based on this assumption Table 5 summarizes, in general terms, the estimated future service population. The 2021 population figures noted above have been used for the base year with a 0.5% annual growth rate added.

**Table 5: Service Area Future Population Estimates**

| Year | Population | | Average Permanent | Average Seasonal | Equivalent Permanent Annual Average[3] |
|---|---|---|---|---|---|
| | Permanent | Seasonal[2] | | | |
| **2023[1]** | 1,879 | 1,021 | 2,001 | 1,088 | 2,272 |
| **2028** | 1,926 | 1,047 | | | |
| **2033** | 1,975 | 1,073 | | | |
| **2038** | 2,025 | 1,100 | | | |
| **2043** | 2,076 | 1,128 | | | |
| **2048** | 2,128 | 1,157 | | | |

*Notes:*
1. *Base year population data taken from 2021 Statistics Canada Census with a 0.5% annual growth rate.*
2. *Seasonal population reflects estimated total summer population based on 3 persons per seasonal household.*
3. *Average permanent and average seasonal population is converted to an equivalent permanent population assuming an average full-time occupancy of 12 months for permanent population and 3 months for seasonal population.*

## 5.2 Waste Quantity Projections

In order to estimate appropriate waste generation rates for use in projecting future waste quantities to be managed, we have used data obtained from AECOM's experience with waste disposal rates at other similar northern Ontario municipal landfill sites based on actual survey results (i.e. Tri-Neighbours (Rose) Twp. Landfill Site, Chapleau Landfill Site and Serpent River Landfill Site).

Based on the review of available data we have established a reasonable estimate of per capita waste disposal rates for the Municipality of Huron Shores. It is anticipated that the disposal rate in the Municipality is likely in the range of 300 to 500 kg/person/year which reflects an annual waste quantity in the range of 682 to 1,136 tonnes per year (based on an estimated equivalent permanent population of 2,272). Given that the Municipality does not have an aggressive waste diversion program, a value at the higher end of the range (i.e. 450 kg/person/year or 1,022 tonnes/year) may be appropriate for future projections. The Municipality's estimated annual waste quantity projections for each waste disposal site is shown in Table 6.

**Table 6: Waste Quantity Projection Estimates**

| Landfill Site | Average Annual Equivalent Permanent Service Population | Estimated Average Annual Disposal Quantities (Tonnes) at 450 kg/per/yr |
|---|---|---|
| **Ward 1** | 893 | 402 |
| **Ward 2** | 481 | 216 |
| **Ward 3** | 668 | 301 |
| **Ward 4** | 230 | 104 |
| **Total:** | 2,272 | 1,022 |

Based on the foregoing, the Municipality should plan to provide waste disposal services to accommodate an average estimated 1,022 tonnes of waste generated within the Municipality each year over the 25-year planning period.

# 6. Waste Management Options, Evaluation and Preliminary Preferred

## 6.1 Waste Management Options

### 6.1.1 Description of Options

Through investigative tabletop and field work completed over several years for the Municipality, along with consultation with Municipal staff, five preliminary waste management options were identified for consideration (Options 1-5). Through the public and First Nations consultation process for this study (see Section 7), a sixth option was identified (Option 6) and added to the study for evaluation. The final six waste management options evaluated in this study are as follows:

- Option 1 – Status Quo – 4 Waste Disposal Sites
- Option 2 – 2 Waste Disposal Sites and 2 Waste Transfer Stations
- Option 3 – 2 Waste Disposal Sites and No Waste Transfer Stations
- Option 4 – 1 Waste Disposal Site and 2 Waste Transfer Stations
- Option 5 – 1 Waste Disposal Site and No Waste Transfer Stations
- Option 6 – 1 Waste Disposal Site and 3 Waste Transfer Stations

The following subsections provide a description of each proposed waste management option. Each option includes the self-haul of waste by residents and commercial users to either an active landfill site and/or a proposed waste transfer station. It is at the Municipality's discretion which existing landfill sites would be operated as active sites and which would be transitioned to transfer stations under each option.

It is estimated that there is adequate combined residual capacity at the Municipality's four landfill sites to accommodate the municipal waste generated over the entire 25-year planning period. It is assumed under all waste management options, except Option 1, that once an active waste disposal site(s) reaches capacity, one of the other existing sites with remaining capacity would be opened to receive waste.

It is assumed that transfer stations will be unattended with the exception of the first two to three months after a transfer site becomes operational in order to assist users and provide public education to residents. In addition, it has also been assumed within this study that the proposed transfer stations will only accept bagged household waste and will not accept segregated or bulky waste items (note: this does not include blue box recyclables which may still be collected at each site). It is at the discretion of the Municipality if they ultimately choose to service transfer stations with attendants and provide disposal services for segregated and bulky waste items at those locations.

In addition, transfer station locations do not have to be limited to the current waste disposal site locations. Preferred transfer station locations would be at the Municipality's discretion; however, the existing waste disposal sites offer the following advantages:

- Already licensed to accept waste and transitioning to a transfer station would be more cost effective relative to establishing a new site.
- Residents already use existing sites and site changes could lead to concerns or debates on preferred locations.
- There will continue to be some maintenance/monitoring required at existing sites and therefore fewer overall sites to maintain is preferred.

The waste material types identified in the following descriptions include regular bagged household waste, large bulky waste (i.e., furniture, mattresses, windows, doors, etc.) and segregated or diverted material (i.e., metal and white goods, e-waste, tires, batteries, clean wood waste and brush). Typically, households dispose of regular bagged waste and Blue Box recyclables once per week, and large bulky material and segregated material just once or twice annually.

It is unclear at this time if the Blue Box program transition will allow for residential recycling depots to remain at each existing landfill site (see Section 2.1) in perpetuity. For the purposes of this report, we are assuming residential Blue Box recycling depots will remain at each existing site post program transition; however, the Municipality will not be responsible for their cost or operation.

#### 6.1.1.1 Option 1 – Status Quo – 4 Waste Disposal Sites

Option 1 includes maintaining the status quo and continuing to operate all four Ward 1-4 landfill sites with existing waste management and diversion programs and services as is.

This option provides a reference for comparing all other options.

#### 6.1.1.2 Option 2 – 2 Waste Disposal Sites and 2 Waste Transfer Stations

Option 2 includes operating two active landfill sites and operating two waste transfer stations. Under this option, all landfilled waste generated within the Municipality would be disposed at two active landfill sites (note: the active landfill sites and transfer stations will change over the 25-year planning period and will transition to one active landfill site and three transfers stations near the end of the planning period as sites reach capacity).

This option includes transferring regular bagged household waste from two proposed transfer stations and self-haul by residents to two active landfill sites for final disposal. Large bulky waste and segregated items (i.e., metals/white goods, e-waste, tires, batteries, and clean wood waste/brush) would not be accepted at the transfer stations and would require self-haul by residents and commercial users directly to one of the two active landfill sites for disposal and/or recycling.

Services would remain unchanged for current users of the active landfill sites.

#### 6.1.1.3 Option 3 – 2 Waste Disposal Sites and No Waste Transfer Stations

Option 3 includes operating two active landfill sites with no waste transfer stations. Under this option, all landfilled waste generated within the Municipality would be disposed at two active landfill sites (note: the active landfill sites will change over the 25-year planning period and will transition to one active landfill site near the end of the planning period as sites reach capacity).

This option requires all Municipal residents and commercial users to self-haul regular household waste, large bulky waste and segregated materials (metals/white goods, e-waste, tires, batteries, and clean wood waste/brush) to one of two active landfill sites for disposal and/or recycling.

#### 6.1.1.4 Option 4 – 1 Waste Disposal Site and 2 Waste Transfer Stations

Option 4 includes operating one active landfill site and operating two waste transfer stations. Under this option, all landfilled waste generated within the Municipality would be disposed solely at one active landfill site throughout the entire planning period (note: the active landfill site and transfer station locations will change over the 25-year planning period as sites reach capacity).

This option includes transferring regular bagged household waste from two proposed transfer stations and self-haul by residents to one active landfill site for final disposal. Large bulky waste requiring disposal and segregated items

(i.e., metals/white goods, e-waste, tires, batteries, and clean wood waste/brush) would not be accepted at the transfer stations and would require self-haul by residents and commercial users directly to the active landfill site for disposal and/or recycling.

Services would remain unchanged for current users of the active landfill site.

#### 6.1.1.5 Option 5 – 1 Waste Disposal Site and No Waste Transfer Stations

Option 5 includes operating one active landfill site with no waste transfer stations. Under this option, all landfilled waste generated within the Municipality would be disposed solely at one active landfill site throughout the entire planning period (note: the active landfill site will change over the 25-year planning period as sites reach capacity).

This option requires all Municipal residents and commercial users to self-haul all regular household waste, large bulky waste and segregated materials (metals/white goods, e-waste, tires, batteries, and clean wood waste/brush) to the active landfill site for disposal and/or recycling.

#### 6.1.1.6 Option 6 – 1 Waste Disposal Site and 3 Waste Transfer Stations

Option 6 incudes operating one active landfill site and operating three waste transfer stations. Under this option, all landfilled waste generated within the Municipality would be disposed solely at one active landfill site throughout the entire planning period (note: the active landfill site and transfer station locations will change over the 25-year planning period as sites reach capacity).

This option includes transferring regular bagged household waste from three proposed transfer stations and self-haul by residents to one active landfill site for final disposal. Large bulky waste requiring disposal and segregated items (i.e., metals/white goods, e-waste, tires, batteries, and clean wood waste/brush) would not be accepted at the transfer stations and would require self-haul by residents and commercial users directly to the active landfill site for disposal and/or recycling.

Services would remain unchanged for current users of the active landfill site.

## 6.2 Waste Management Options Evaluation

To evaluate the different options, a total of seven comparative criteria were established under four broad categories which include public impact (convenience/acceptability/safety), environmental impact, operations and maintenance resources, and cost. A comparative qualitative approach was undertaken in evaluating each of the options, whereby a score of 1 to 4 was assigned to each Option for each criterion (1 being least preferred and 4 being most preferred). Initially the evaluation only included five options (Options 1-5); however, as noted in Section 6.1.1 Option 6 was added to the study for evaluation as a result of input received through the public and First Nations consultation process. The final options evaluation for this study is shown in Table 7 and includes the evaluation of additional Option 6.

Scoring for the evaluation was conducted as follows:

- Neutral or positive impact and/or relatively low cost – Score 4
- Reduced or minor impact and/or relatively medium cost – Score 3
- Moderate impact and/or relatively medium cost – Score 2
- Negative or severe impact and/or relatively high cost – Score 1

Note: All evaluation criteria were weighted equally in the scoring.

**Table 7: Final Waste Management Options Evaluation**

| Evaluation Description | Evaluation Criteria | Evaluation Results | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Option 1 – Do Nothing (Four Operating WDS) | Option 1 Score | Option 2 – Two WDS and Two Transfer Stations | Option 2 Score | Option 3 – Two WDS and No Transfer Stations | Option 3 Score | Option 4 – One WDS and Two Transfer Stations | Option 4 Score | Option 5 – One WDS and No Transfer Stations | Option 5 Score | Option 6 – One WDS and Three Transfer Stations | Option 6 Score |
| **Consideration of the convenience, acceptability and safety for ratepayers in terms of changes in travel distances by site users.** | **Public Impact (Convenience/Acceptability/Safety)** | | | | | | | | | | | | |
| | Change in travel distances. | No impact to current travel distances until W4 WDS closure (approx. 2031). | **4** | Longer travel distances for transfer station users for bulky waste and segregated material disposal only. | **4** | Longer travel distances for users of two inactive sites for disposal of all waste types. | **2** | Longer travel distances for users of one inactive site for disposal of all waste types and for transfer stations users for bulky waste and segregated material disposal only. | **3** | Longer travel distances for users of three inactive sites for disposal of all waste types. | **1** | Longer travel distances for transfer stations users for bulky waste and segregated material disposal only. | **4** |
| **Consideration of potential impacts to the natural environment in terms of litter sprawl and illegal waste dumping.** | **Environmental Impact** | | | | | | | | | | | | |
| | Potential litter impacts to land from litter sprawl. | Potential for litter sprawl to impact land at four/three active WDS. | **1** | Potential for litter sprawl to impact land at two active WDS. | **2** | Potential for litter sprawl to impact land at two active WDS. | **2** | Potential for litter sprawl to impact land at one active WDS. | **4** | Potential for litter sprawl to impact land at one active WDS. | **4** | Potential for litter sprawl to impact land at one active WDS. | **4** |
| | Potential for illegal waste dumping. | Modest potential for illegal waste dumping following closure of W4 WDS. | **3** | Limited additional potential for illegal waste dumping. | **4** | Potential for illegal waste dumping with no disposal services at two WDS. | **2** | Modest potential for illegal waste dumping with no disposal services at one WDS. | **3** | Potential for illegal waste dumping with no disposal services at three WDS. | **1** | Limited additional potential for illegal waste dumping. | **4** |
| **Consideration of challenges in attracting and retaining labour resources, dividing labour, equipment and cover material resources among waste disposal sites.** | **Operations and Maintenance Resources** | | | | | | | | | | | | |
| | Labour resources (i.e., site operators and attendants) – number of staff required, division of labour among WDS and number of person days/week required for operations staff (see Table 8 for breakdown). | Site operator(s) shared among four/three active WDS. Six person days/wk during the summer months and three person days/wk during the winter months (234 person days/yr). | **1** | Site operator(s) shared among two active WDS and two transfer stations. Four person days/wk during the summer months, two person days/wk winter months and allowance of 3 hr/wk for each transfer station (195 person days/yr). | **2** | Site operator(s) shared among two active WDS. Four person days/wk during the summer months and two person days/wk during the winter months (156 person days/yr). | **3** | Site operator(s) utilized at one active WDS and two transfer stations. Two person days/week during the summer months, one person day/wk during the winter months and allowance of 3 hrs/wk for each transfer station (117 person days/yr). | **4** | Site operator(s) utilized at one active WDS only. Three person days/wk during the summer months and two person days/wk during the winter months (130 person days/yr). | **3** | Site operator(s) utilized at one active WDS and three transfer stations. Two person days/wk during the summer months, one person day/wk during the winter months and allowance of 3 hrs/wk for each transfer station (136.5 person days/yr). | **3** |

| Evaluation Description | Evaluation Criteria | Evaluation Results | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Option 1 – Do Nothing (Four Operating WDS)** | **Option 1 Score** | **Option 2 – Two WDS and Two Transfer Stations** | **Option 2 Score** | **Option 3 – Two WDS and No Transfer Stations** | **Option 3 Score** | **Option 4 – One WDS and Two Transfer Stations** | **Option 4 Score** | **Option 5 – One WDS and No Transfer Stations** | **Option 5 Score** | **Option 6 – One WDS and Three Transfer Stations** | **Option 6 Score** |
| | | Four/three site attendants required at four/three active WDS. | **1** | Two site attendants required at two active WDS. | **3** | Two site attendants required at two active WDS. (note: site operating hours doubled and/or increased staffing with the same hours). | **1** | One site attendant required at one active WDS. | **4** | One site attendant required at one active WDS (note: site operating hours tripled and/or increased staffing with the same hours). | **2** | One site attendant required at one active WDS. | **4** |
| | Equipment resources divided among active WDS (note: operations equipment includes one dump truck and one backhoe). | Operations equipment shared among four/three active WDS. | **1** | Operations equipment shared among two active WDS and two transfer stations. | **2** | Operations equipment shared among two active WDS. | **3** | Operations equipment required at one active WDS and two transfer stations. | **3** | Operations equipment required at one active WDS only. | **4** | Operations equipment required at one active WDS and three transfer stations. | **3** |
| | Cover material needs. | Cover material required at four/three active WDS. | **1** | Cover material required at two active WDS. | **3** | Cover material required at two active WDS. | **3** | Cover material required at one active WDS only. | **4** | Cover material required at one active WDS only. | **4** | Cover material required at one active WDS only. | **4** |
| **Landfill site and transfer station cost considerations including capital costs, environmental monitoring and reporting costs, operations and maintenance costs, landfill interim and final closure costs.** | **Costs** | | | | | | | | | | | | |
| | Life Cycle costs. | Total estimated present value life cycle cost over 25 years - **$8,918,092** | **1** | Total estimated present value life cycle cost over 25 years - **$8,460,092** | **2** | Total estimated present value life cycle cost over 25 years - **$7,499,870** (note: site attendant costs doubled to reflect increased operating hours and/or increased staffing with the same hours). | **3** | Total estimated present value life cycle cost over 25 years - **$6,363,397** | **4** | Total estimated present value life cycle cost over 25 years - **$6,251,860** (note: site attendant costs tripled to reflect increased operating hours and/or increased staffing with the same hours; 50% increase in operator, equipment and third party contractor costs). | **4** | Total estimated present value life cycle cost over 25 years - **$7,394,784** | **3** |
| | **Scoring Total:** | **Option 1** | **13** | **Option 2** | **22** | **Option 3** | **19** | **Option 4** | **29** | **Option 5** | **23** | **Option 6** | **29** |

*Notes:*

1. *W4 = Ward 4 Landfill Site; TS = Transfer Station(s); WDS = Waste Disposal Site(s)*
2. *Summer months and winter months equate to 6 months for each.*
3. *Sites may be closed on an interim basis to allow future use of residual capacity.*

Based on the evaluation completed in Table 7, each waste management option received the following total score:

- Option 1 received a total score of 13;
- Option 2 received a total score of 22;
- Option 3 received a total score of 19;
- **Option 4 received a total score of 29;**
- Option 5 received a total score of 23; and
- **Option 6 received a total score of 29.**

Option 1 was the least preferred with a score of 13 and Option 4 and Option 6 were the most preferred with both receiving a score of 29. The evaluation criteria and the rationale for each criterion is detailed in the following subsections.

## 6.2.1 Public Impact (Convenience/Acceptability/Safety)

Consideration of the impact for ratepayers was considered in the waste management options evaluation particularly in terms of convenience, acceptability, and safety. This criterion considered a change in travel distance for residents for waste disposal access. Longer travel distances are less convenient and also result in greater risk.

Currently waste site users within the Municipality of Huron Shores have the option to dispose of waste at any active landfill site within the Municipality. For the purposes of this evaluation, we are assuming users will dispose of waste at the nearest active landfill site to their residence or business.

### 6.2.1.1 Travel Distance

One of the critical factors considered in the options evaluation was the convenience and acceptability for ratepayers particularly in terms of the distance site users will be required to travel to dispose of waste under each option. All options include changes in travel distance for site users with the changes ranging from modest to significant. In some instances, users travel longer distances to dispose of either bulky waste/segregated material only and in other instances users are required to travel longer distances for disposal of all waste types including regular bagged household waste.

The options with fewer active transfer stations or waste disposal sites (i.e., Options 3 and 5) received the lowest scores in the evaluation and were the least favourable options under this criterion as users of the inactive sites would be required to travel longer distances to dispose of all waste types.

***Options 1, 2 and 6*** received the highest score and were tied as the most favourable option under the travel distance criterion as there would be no impact to travel distance for users under Option 1 until Ward 4 reaches theoretical site capacity in approximately 2031, and only transfer station users would be required to travel longer distances relatively infrequently to dispose of bulky waste and segregated material for Options 2 and 6.

Option 4 received a median score as users of one inactive site would be required to travel longer distances to dispose of all waste types and transfer station users would be required to travel longer distances to dispose of bulky/segregated material.

Travel Distance evaluation scoring summary:

- **Option 1 – *Score 4*** ✔
- **Option 2 – *Score 4*** ✔
- Option 3 – *Score 2*
- Option 4 – *Score 3*
- Option 5 – *Score 1*
- **Option 6 – *Score 4*** ✔

## 6.2.2 Environmental Impact

Consideration of potential impacts to the natural environment was considered in the waste management options evaluation. This criterion considered potential impacts to land from litter sprawl and from illegal waste dumping.

### 6.2.2.1 Litter Sprawl

Litter sprawl within the sites and surrounding environment was evaluated in this study as an impact to the natural environment. All six options have the potential for litter impacts from waste disposal activities to varying degrees based on the number of active waste disposal sites and the length of time those sites are active.

Scoring for this criterion was therefore lower for the options with more active waste disposal sites (Options 1 to 3) and higher for the options with less active waste disposal sites (Options 4 to 6). The operation of only one active waste disposal site reduces the potential for litter impacts to just one site. ***Options 4, 5 and 6*** were therefore tied as the most favourable option under the litter sprawl criterion.

Litter sprawl could potentially be mitigated at the active waste disposal sites by implementing waste transfer bins directly at these sites. This would allow for bagged household waste to be contained within bins until tipped at the landfill working face and then controlled by immediately applying cover material. However, this would add to the operating costs of the active sites which may not be practical.

Litter Sprawl evaluation scoring summary:

- Option 1 – *Score 1*
- Option 2 – *Score 2*
- Option 3 – *Score 2*
- **Option 4 – *Score 4*** ✔
- **Option 5 – *Score 4*** ✔
- **Option 6 – *Score 4*** ✔

### 6.2.2.2 Illegal Waste Dumping

Illegal dumping of waste is always a concern when limiting waste disposal options for users. All options result in changes to the Municipality's current waste management disposal program and may have the potential for residents to illegally dump waste.

Options 3 and 5 received the lowest evaluation scores as they have more potential for illegal waste dumping with no disposal services at two to three existing landfill sites. Options 1 and 4 have modest potential for illegal waste dumping with no disposal services available at one existing landfill site for each option (note: this includes the 2031 closure of Ward 4 under Option 1).

Finally, ***Options 2 and 6*** have limited potential for illegal waste dumping as all four existing landfill sites will remain active as a disposal or transfer site under these options. With no additional potential or limited potential for illegal waste dumping these options received the highest score in the evaluation and were tied as the most favourable option under the illegal waste dumping criterion.

Illegal Waste Dumping evaluation scoring summary:

- Option 1 – *Score 3*
- **Option 2 – *Score 4*** ✔
- Option 3 – *Score 2*
- Option 4 – *Score 3*
- Option 5 – *Score 1*

- **Option 6 – *Score 4*** ✔

### 6.2.3 Operations and Maintenance Resources

Operations and maintenance resources were considered in the waste management options evaluation through a thorough review of the challenges in attracting and retaining labour resources and dividing labour, equipment, and cover material resources among waste disposal sites. In addition, it was taken into consideration that labour and equipment resources that are consumed by landfill site operations could potentially be devoted to other municipal activities (eg. road and ditch maintenance, etc.).

#### 6.2.3.1 Labour Resources

Labour resources considered during the evaluation include the staff hours required for the sites to function and the division of labour resources among all sites. Labour resources include site operators and site attendants. Site operators include Municipal Public Works staff who perform operations functions such as site maintenance and waste covering, and site attendants are hired by the Municipality to oversee and monitor site user activities.

##### 6.2.3.1.1 Site Operators

Table 8 outlines the estimated number of person days (weekly and annually) required for site operations staff under each individual option. The number of person days required for landfill operations is broken down between summer months (6 months) and winter months (6 months) for the active landfill sites as there is less operations time required during the winter months. These estimates were developed using Municipal input on existing landfill operations labour hours.

In addition, an allowance of 3 hours per week has been made for each transfer station under Options 2, 4 and 6 to allow for site opening and closing and general maintenance activities.

Options 1 and 2 were the least favourable options and received the lowest evaluation scores as they consume the most estimated person days per year for operations and maintenance (i.e., 234 person days/year for Option 1 and 195 person days/year for Option 2).

Options 3, 5 and 6 all received a median score under this criterion as Option 3 requires an estimated 156 person days/year, Option 5 requires an estimated 130 person days/year and Option 6 requires an estimated 136.5 person days/year for operation and maintenance.

***Option 4*** was the most favourable option and received the highest score with an estimated 117 person days/year required at just one waste disposal site and two transfer stations.

Labour Resources –Site Operators evaluation scoring summary:

- Option 1 – *Score 1*
- Option 2 – *Score 2*
- Option 3 – *Score 3*
- **Option 4 – *Score 4*** ✔
- Option 5 – *Score 3*
- Option 6 – *Score 3*

## Table 8: Estimated Person Days Required for Landfill Operations

| Option 1 | | | | Option 2 | | | | Option 3 | | | | Option 4 | | | | Option 5 | | | | Option 6 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of Person Days/Week | | | Total Person Days / Year | No. of Person Days/Week | | | Total Person Days / Year | No. of Person Days/Week | | | Total Person Days / Year | No. of Person Days/Week | | | Total Person Days / Year | No. of Person Days/Week | | | Total Person Days / Year | No. of Person Days/Week | | | Total Person Days / Year |
| Active Landfill Site(s)[1] | | Transfer Stations | | Active Landfill Sites(s)[2] | | Transfer Stations | | Active Landfill Sites(s)[3] | | Transfer Stations | | Active Landfill Sites(s)[4] | | Transfer Stations | | Active Landfill Sites(s)[5] | | Transfer Stations | | Active Landfill Sites(s)[6] | | Transfer Stations | |
| Summer Months | Winter Months | | | Summer Months | Winter Months | | | Summer Months | Winter Months | | | Summer Months | Winter Months | | | Summer Months | Winter Months | | | Summer Months | Winter Months | | |
| **6** | 3 | 0 | **234** | 4 | 2 | 0.75 | **195** | 4 | 2 | 0 | **156** | 2 | 1 | 0.75 | **117** | 3 | 2 | 0 | **130** | 2 | 1 | 1.13 | **136.5** |

Notes:

1. Option 1: Summer – 2 operations staff for 1 day/wk for 3 active WDS (6 days); Winter – 2 operations staff for ½ day/wk for 3 WDS (3 days) (note: Ward 4 only requires a few hours of maintenance per month and has been excluded).
2. Option 2: Summer – 2 operations staff for 1 day/wk for 2 active WDS (4 days); Winter – 2 operations staff for ½ day/wk for 2 WDS (2 days).
3. Option 3: Summer – 2 operations staff for 1 day/wk for 2 active WDS (4 days); Winter – 2 operations staff for ½ day/wk for 2 WDS (2 days).
4. Option 4: Summer – 2 operations staff for 1 day/wk for 1 active WDS (2 days); Winter – 2 operations staff for ½ day/wk for 1 WDS (1 day).
5. Option 5: Summer – 2 operations staff for 1.5 day/wk for 1 active WDS (3 days); Winter – 2 operations staff for 1 day/wk for 1 WDS (2 days) (note: increased hours required at active WDS to account for no transfer stations).
6. Option 6: Summer – 2 operations staff for 1 day/wk for 1 WDS (2 days); Winter – 2 operations staff for ½ day/wk for 1 WDS (1 day).
7. An allowance of 3 hours per week has been provided for each Transfer Station for site opening and closing and general maintenance.
8. Summer months and winter months equate to 6 months for each.

#### 6.2.3.1.2 Site Attendants

Site attendants are required at each active landfill site for the entire duration of the site's daily operating hours. The Municipality has found it challenging in recent years to secure and maintain site attendants for all four existing waste disposal sites, therefore the options evaluation considers the number of site attendants required under each proposed option. As previously noted, it is assumed that site attendants will not be required at transfer stations.

The least favourable options under this criterion were Options 1 and 3 as four site attendants are required under Option 1 (note: three site attendants required once Ward 4 reaches capacity), and the equivalent of four site attendants are required under Option 3. Additional staffing was added to Option 3 to account for an increase in traffic volume at active sites when there are no operating transfer stations under the proposed option.

Only one site attendant is required at one active waste disposal site under Option 5, however site attendant hours were tripled under this option to reflect increased operating hours and/or increased staffing with current operating hours. Similar to Option 3, the additional staffing was added to account for an increase in traffic volumes at the one active waste disposal site as there are no operating transfer stations under Option 5. Option 5 was given a score of 2.

Option 2 received a median score of 3 as it requires two site attendants at two active waste disposal sites.

The most favourable option under this criterion was ***Option 4 and Option 6*** which tied for the highest evaluation score (4) as only one site attendant is required at one active waste disposal site under these options.

Labour Resources – Site Attendants evaluation scoring summary:

- Option 1 – *Score 1*
- Option 2 – *Score 3*
- Option 3 – *Score 1*
- **Option 4 – *Score 4*** ✔
- Option 5 – *Score 2*
- **Option 6 – *Score 4*** ✔

### 6.2.3.2 Equipment Resources

Equipment resources taken into consideration during the evaluation include the division of equipment resources among all sites and the number of days per week the equipment is required for operations. Current equipment used for landfill operations include a dump truck and a backhoe which is used for compaction and covering. Transfer stations require periodic maintenance of roadways and site grading which only require occasional use of operations equipment so equipment use at transfer stations was given a lower weighting.

Option 1 was the least favourable option and received the lowest score under this criterion as operations equipment is shared among all four landfill sites initially and then shared among three sites when the Ward 4 landfill site reaches disposal capacity in approximately 2031. Option 2 received the second lowest score as equipment resources are divided among two active waste disposal sites and two transfer stations under this option. Options 3, 4 and 6 all received the same median score as they require operations equipment to be shared among two active waste disposal sites or one active waste disposal site and two or three transfer stations.

***Option 5*** received the highest score and was the most favourable option under this criterion as operations equipment is only required at one active waste disposal site and is not shared with any other active landfill sites or transfer stations.

Equipment Resources evaluation scoring summary:

- Option 1 – *Score 1*
- Option 2 – *Score 2*
- Option 3 – *Score 3*
- Option 4 – *Score 3*
- **Option 5 – *Score 4*** ✔
- Option 6 – *Score 3*

#### 6.2.3.3 Cover Material Needs

The estimated volume of imported cover material required to support disposal operations was included as an evaluation criterion. Imported cover material is typically sourced from with the Municipality mainly through ditching activities and through contaminated soil transported to the site(s) for disposal. The Municipality has been fortunate up to this point to have had an adequate supply of locally sourced imported cover material for use at the waste disposal sites. However, there is the potential that the Municipality may have to pay for cover at a future date if supply is reduced.

Option 1 received the lowest evaluation score and was least favourable option under this criterion as cover material is required at all four active landfill sites and then among three sites after Ward 4 reaches disposal capacity. Options 2 and 3 received a median score under this criterion as cover material is required at two active waste disposal.

***Options 4, 5 and 6*** all received the highest evaluation score and tied as the most favourable option as cover material is only required at one waste disposal site under each of these options.

Cover Material needs evaluation scoring summary:

- Option 1 – *Score 1*
- Option 2 – *Score 3*
- Option 3 – *Score 3*
- **Option 4 – *Score 4*** ✔
- **Option 5 – *Score 4*** ✔
- **Option 6 – *Score 4*** ✔

### 6.2.4 Life Cycle Costs

Landfill site and transfer station cost considerations including capital costs, environmental monitoring and reporting costs, operations and maintenance costs, and landfill interim and final closure costs were included in the options evaluation. A comprehensive 25-year life cycle cost estimate incorporating the criteria noted above was completed for each individual option. Three years of Municipal cost data for the Ward 1-4 landfill sites for the operating years 2020, 2021 and 2022 were reviewed and provided the basis for the life cycle cost estimates. In addition, cost estimates were obtained from waste disposal bin suppliers and a waste disposal Contractor to assist in estimating transfer station costs.

The detailed cost estimate for each option can be found in Appendix A. The costs presented in this study are for comparing the waste management options only and are not intended for budgeting purposes. The assumptions and approach used in developing the relevant life cycle cost estimates are described in the following paragraphs.

Environmental monitoring and reporting costs include one annual sampling event at each landfill site and reporting once every three years both during the operating life of the landfill sites as well as post closure. Also included in these costs is a site survey completed once every three years. A modest contingency has also been included to account for anomalies such as infrequent additional sampling or reporting.

Operations and maintenance costs include equipment and labour costs for site operators, site attendants and municipal administrative staff. An allowance has also been made for third-party contractor costs which are periodically required for maintenance activities such as excavating, transporting cover material, floating operations equipment between sites, wood waste/brush trench maintenance, etc.

Under the options with no proposed transfer stations (Options 3 and 5), site attendant costs were either doubled (Option 3) or tripled (Option 5) to reflect increased operating hours and/or increased staffing with current operating hours. This additional time was added to account for an increase in traffic volume at active sites with no operating transfer stations. Additionally, there was a 50% increase in operator, equipment and third-party contractor costs under Option 5 as this option only includes one active waste disposal site.

Interim closure was assumed to be completed at sites that have residual capacity but will be inactive as waste disposal sites for a period of time and final closure costs were applied to a disposal site when it reaches capacity.

Transfer station costs for each option generally include a one-time acquisition of waste disposal bins (number of bins under each option varies based on site service area population) and contracted services for weekly hauling of waste from a transfer station to an active waste disposal site. In addition, a modest one-time allowance for site modifications has been included for each transfer station.

Residential Blue Box recycling costs were not included for any of the options as it has been assumed these costs will no longer be carried by the Municipality once the existing Blue Box program transitions to the individual producer framework (see Section 2.1).

Options 1 and 2 received the lowest evaluation scores and were the least favourable options under the life cycle cost criterion as they had the highest estimated 25-year present value life cycle costs ($8,918,092 for Option 1 and $8,460,092 for Option 2). The 25-year present value life cycle cost estimates for Options 3 and 6 were nearly identical with an estimated cost of $7,499,870 for Option 3 and an estimated cost of $7,394,784 for Option 6, giving them both a median evaluation score.

Finally, ***Options 4 and 5*** received the highest evaluation score and tied for the most favourable option as they were determined to have the lowest 25-year present value life cycle costs. Options 4 and 5 had present value life cycle costs of $6,363,397 and $6,251,860 respectively.

Life Cycle Cost evaluation scoring summary:

- Option 1 – *Score 1*
- Option 2 – *Score 2*
- Option 3 – *Score 3*
- **Option 4 – *Score 4*** ✔
- **Option 5 – *Score 4*** ✔
- Option 6 – *Score 3*

The cost evaluation does not include any waste management revenues such as tipping fee revenues and any revenues received from the sale of collected segregated materials (i.e., metals/white goods and e-waste) which help to offset waste disposal site costs.

## 6.3 Preliminary Preferred Waste Management Option

The initial evaluation and results which consisted of Options 1-5 only were reviewed and vetted with Municipal staff. The preliminary preferred waste management option was identified as Option 4 (one active landfill site and two transfer stations) which includes the following:

- More flexibility for users to dispose of weekly regular bagged household waste at three sites (one operating waste disposal site and two transfer stations).
- No impact to travel distances for users of three sites for weekly regular household waste disposal.
- Less impact to the natural environment with waste disposal activities at one landfill site only.
- Improved overall site maintenance with only one active waste disposal site to manage.
- Improved litter sprawl mitigation and less waste disposal footprint air space consumed with waste collection vehicle compaction of transfer station waste.
- Less cover material required.
- Less need to attract and retain labour resources (i.e. site attendants).
- More labour and equipment resources available to be utilized elsewhere within the Municipality.
- Lower overall life cycle cost with fewer labour resources.

Option 4 was presented as the preliminary preferred option at the Public Information Centre (see Section 7.1).

# 7. Public and First Nations Consultation

## 7.1 Public Information Centre

An in-person Public Information Centre (PIC) was conducted on December 6, 2023 at Sowerby Hall, 1410 Basswood Lake Road, Municipality of Huron Shores. For those who were unable to attend in person, an online Zoom session was made available which provided a slideshow presentation of the PIC information displays as well as provided online attendees with the ability to submit questions or comments in real time. The session provided a forum for interested individuals, residents of the Municipality of Huron Shores, community leaders, and community members of Thessalon First Nation and Mississauga First Nation to review and discuss the Long-Term Waste Management Study and the preliminary preferred waste management option.

Representatives of AECOM and the Municipality of Huron Shores were in attendance throughout the session to provide information, address questions, and facilitate discussions. The in-person and online information session was open from 4:00 p.m. to 7:00 p.m. and was well attended with a total of 15 individuals recording their names on the sign-in sheet.

### 7.1.1 Notification of Public Information Centre

Notification of the PIC was advertised as follows:

- Postcard notice mail-out to all municipal constituents;
- Municipality of Huron Shores website;
- The North Shore Sentinel – Issue weeks Oct. 30 – Nov. 3, 2023 and Nov. 6 – Nov. 10, 2023; and
- Letter and postcard notice emailed to First Nations communities (Thessalon First Nation and Mississauga First Nation).

A copy of the notifications is included in Appendix B.

### 7.1.2 Information Available at Public Information Centre

Displays were posted throughout the venue to disseminate information to individuals that attended the information session. In addition, the displays were made available to Zoom attendees through a rotating slideshow presentation. The following displays were exhibited during the event:

- A display welcoming attendees;
- Explanation of what attendees should do at the PIC in-person and online;
- Introductory display explaining the purpose of the study and limits of the study area;
- Outline of specific tasks and activities undertaken during the study to-date;
- Definition of the problem/opportunity being addressed through the study;
- Visual depicting the process of existing municipal waste management programs and services;
- Estimated 25-year municipal population projections and waste disposal quantity estimates;
- Two displays identifying and providing a high-level description of the five waste management options that were identified for evaluation;
- Three displays explaining the waste management options evaluation approach and the detailed evaluation matrix with scoring and rationale for the scoring;
- Identification of the preliminary preferred waste management option;
- Graph displaying a possible operating sequence for the preliminary preferred option;
- Next steps identifying activities remaining to be undertaken during the study and proposed schedule; and

- A display thanking participants for attending and instructions on how to submit questions or comments.

A copy of the displays can be found in Appendix C.

### 7.1.3 Questions and Comments

A total of 6 comment sheets and emails were received prior to, during and after the information session. The comment sheet allowed individuals to provide comments and input regarding the study. The public consultation process was effective in obtaining meaningful input.

A detailed inventory of the comments and input received together with the project team's responses are included in Appendix D.

### 7.1.4 Public Consultation Outcome

Through the comments received during the public and First Nations consultation process for this study, a sixth waste management option was identified (Option 6) and included in the study for evaluation. Option 6 includes operating one active waste disposal site and three transfer stations (see Section 6.1.1.6 for option details). The additional option ensures all residents have access to waste disposal services within their existing service area (i.e., Wards 1-4).

# 8. Preferred Waste Management Option

## 8.1 Final Preferred Waste Management Option

The final evaluation and results scoring (Table 7) which consisted of Options 1-6 were reviewed with Municipal staff. The final preferred waste management option was identified by Municipal Council as Option 6 (one operating waste disposal site and three transfer stations) which includes the following:

- More flexibility for users to dispose of weekly regular bagged household waste at all four existing sites (one operating waste disposal site and three transfer stations).
- No impact to travel distances for all current site users for weekly regular household waste disposal.
- Less impact to the natural environment with waste disposal activities at one landfill site only.
- Improved overall site maintenance with only one active waste disposal site to manage.
- Improved litter sprawl mitigation and less waste disposal footprint air space consumed with waste collection vehicle compaction of transfer station waste.
- Less cover material required.
- Less need to attract and retain labour resources (i.e. site attendants).
- More labour and equipment resources available to be utilized elsewhere within the Municipality.
- Moderate overall present value life cycle cost with fewer labour resources.

Any changes to the existing operations of the Ward 1-4 waste disposal sites will require Ministry consultation and approvals including the implementation of the final preferred waste management option.

# 9. Conclusions and Recommendations

## 9.1 Conclusions

The following conclusions can be drawn from the completion of this study:

- The Municipality requires a preferred way to address future waste management needs for the existing service area, over a 25-year planning period.
- It is inefficient and cost prohibitive for a Municipality with such a small population base (i.e., 1,860 permanent residents) to operate four waste disposal sites simultaneously.
- Challenges with operating four waste disposal sites include:
    - Attracting and retaining labour resources (i.e. Site Attendants).
    - Resources divided among all sites (i.e., division of labour, equipment and cover material).
    - Site maintenance challenges including litter sprawl.
    - Higher operating costs.
- Projected average annual equivalent permanent population is estimated to be 2,272 residents over the planning period.
- Projected average annual municipal waste disposal quantities is estimated to be 1,022 tonnes per year based on 450 kg/person/year disposal rate.
- It is estimated that there is adequate combined residual disposal capacity among all four landfill sites to accommodate the waste generated within the Municipality over the entire 25-year planning period.
- Waste management Option 1 (do nothing – four operating waste disposal sites) was the least preferred option with a total evaluation score of 13.
- Waste management Option 4 (operate one active waste disposal site and two transfer stations) and Option 6 (operate one active waste disposal site and three transfer stations) were tied for the most favourable options and received the highest total evaluation score of 29.
- Option 4 was selected as the preliminary preferred waste management option.
- Public consultation feedback confirmed that stakeholders prefer all Municipal residents have access to a form of waste disposal services within their current service area (i.e., Ward 1-4) in the form of an active landfill site or waste transfer station.
- Waste management Option 6 was developed and included in the evaluation in response to the public input received.
- Option 6 was selected by Municipal Council as the final preferred waste management option as it provides the following benefits:
    - More flexibility for users to dispose of weekly regular bagged household waste at all four existing sites (one operating waste disposal site and three transfer stations).
    - No impact to travel distances for all current site users for weekly regular household waste disposal.
    - Less impact to the natural environment with waste disposal activities at one landfill site only.
    - Improved overall site maintenance with only one active waste disposal site to manage.
    - Improved litter sprawl mitigation and less waste disposal footprint air space consumed with waste collection vehicle compaction of transfer station waste.
    - Less cover material required.
    - Less need to attract and retain labour resources (i.e. site attendants).
    - More labour and equipment resources available to be utilized elsewhere within the Municipality.
    - Moderate overall present value life cycle cost with fewer labour resources.

## 9.2 Recommendations

Considering the above, it is proposed that the Municipality consider initiating the following recommendations to assist in effectively administering their current and future waste management program and responsibilities:

- Final preferred waste management Option No. 6, operating one active waste disposal site and three transfer stations, should be considered for implementation.
- A transfer station pilot program should be implemented during the summer months to better understand the operational needs and costs of a transfer station. Note: The Municipality implemented a transfer station pilot program at the Ward 2 Landfill Site for the months of May, June and July 2024.
- There should be some level of public education for the implementation of any transfer stations. It is suggested that transfer stations be staffed by attendants during a transition period (i.e., 2 to 3 months) to assist residents and educate the public. In addition, public education should be implemented by means of municipal website, public notices, social media, etc.
- Consideration should be given to procuring a landfill compactor if waste management Option 6 is implemented and the Municipality only operates one active landfill site at a time. Effective waste compaction has several benefits including reducing wind-blown litter, mitigating impacts from wildlife, and most importantly it increases waste density which enhances landfill site life.
- Any changes to the existing operations of the Ward 1-4 waste disposal sites will require Ministry consultation and approvals. For example, the implementation of the final preferred waste management option includes the conversion of three active waste disposal sites to transfer stations. This operational change will require the preparation of an ECA application and submission to the MECP for approval.

# Figures


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REVISIONS

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PLAN

# MUNICIPAL BOUNDARY AND LANDFILL SITE LOCATIONS

FIGURE NO.

1

# Appendix A

## Life Cycle Cost Estimates

**Municipality of Huron Shores Long-Term Waste Management Plan**
**Life Cycle Cost Estimate - Option 1**

Description: In this option all waste to W1, W2, W3 and W4 then all waste to W1, W2 and W3 and then all Waste to W2.

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Nov-23

| OPTION 1: Do Nothing - Four Operating Waste Disposal Sites | 0 Base Costs | 1 2024 | 2 2025 | 3 2026 | 4 2027 | 5 2028 | 6 2029 | 7 2030 | 8 2031 | 9 2032 | 10 2033 | 11 2034 | 12 2035 | 13 2036 | 14 2037 | 15 2038 | 16 2039 | 17 2040 | 18 2041 | 19 2042 | 20 2043 | 21 2044 | 22 2045 | 23 2046 | 24 2047 | 25 2048 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Population and Residual Capacity Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W1 Equivalent Permanent Population | 838 | 842 | 846 | 851 | 855 | 859 | 863 | 868 | 872 | 876 | 881 | 885 | 890 | 894 | 899 | 903 | 908 | 912 | 917 | 921 | 926 | 931 | 935 | 940 | 945 | 949 |
| W2 Equivalent Permanent Population | 452 | 454 | 457 | 459 | 461 | 463 | 466 | 468 | 470 | 473 | 475 | 477 | 480 | 482 | 485 | 487 | 490 | 492 | 494 | 497 | 499 | 502 | 504 | 507 | 509 | 512 |
| W3 Equivalent Permanent Population | 627 | 630 | 633 | 636 | 640 | 643 | 646 | 649 | 653 | 656 | 659 | 662 | 666 | 669 | 672 | 676 | 679 | 682 | 686 | 689 | 693 | 696 | 700 | 703 | 707 | 710 |
| W4 Equivalent Permanent Population | 216 | 217 | 218 | 219 | 220 | 221 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 245 |
| W1 Residual Capacity | 9977 | 9598 | 9217 | 8834 | 8450 | 8063 | 7675 | 7284 | 6892 | 6497 | 6101 | 5702 | 5302 | 4900 | 4495 | 4089 | 3681 | 3270 | 2858 | 2443 | 2026 | 1608 | 1187 | 764 | 339 | 0 |
| W2 Residual Capacity | 9193 | 8989 | 8783 | 8577 | 8369 | 8161 | 7951 | 7741 | 7529 | 7316 | 7102 | 6888 | 6672 | 6455 | 6236 | 6017 | 5797 | 5576 | 5353 | 5129 | 4905 | 4679 | 4452 | 4224 | 3994 | 2907 |
| W3 Residual Capacity | 9177 | 8893 | 8608 | 8322 | 8034 | 7745 | 7454 | 7162 | 6868 | 6471 | 6073 | 5672 | 5269 | 4864 | 4458 | 4049 | 3638 | 3225 | 2810 | 2393 | 1974 | 1553 | 1129 | 704 | 276 | 0 |
| W4 Residual Capacity | 818 | 720 | 622 | 523 | 424 | 324 | 224 | 123 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Financial Projection Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Closure (Final or Interim) W1 | $356,963 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $747,402 |
| Closure (Final or Interim) W2 | $234,476 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W3 | $374,461 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $784,039 |
| Closure (Final or Interim) W4 | $139,986 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $182,649 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W1 during Operating Life | $13,300 | $13,699 | $14,110 | $14,533 | $14,969 | $15,418 | $15,881 | $16,357 | $16,848 | $17,353 | $17,874 | $18,410 | $18,963 | $19,531 | $20,117 | $20,721 | $21,343 | $21,983 | $22,642 | $23,322 | $24,021 | $24,742 | $25,484 | $26,249 | $27,036 | $0 |
| Site Monitoring and Reporting W2 during Operating Life | $15,100 | $15,553 | $16,020 | $16,500 | $16,995 | $17,505 | $18,030 | $18,571 | $19,128 | $19,702 | $20,293 | $20,902 | $21,529 | $22,175 | $22,840 | $23,525 | $24,231 | $24,958 | $25,707 | $26,478 | $27,272 | $28,090 | $28,933 | $29,801 | $30,695 | $31,616 |
| Site Monitoring and Reporting W3 during Operating Life | $15,600 | $16,068 | $16,550 | $17,047 | $17,558 | $18,085 | $18,627 | $19,186 | $19,762 | $20,354 | $20,965 | $21,594 | $22,242 | $22,909 | $23,596 | $24,304 | $25,033 | $25,784 | $26,558 | $27,355 | $28,175 | $29,021 | $29,891 | $30,788 | $31,712 | $0 |
| Site Monitoring and Reporting W4 during Operating Life | $10,400 | $10,712 | $11,033 | $11,364 | $11,705 | $12,056 | $12,418 | $12,791 | $13,174 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W1 post Closure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $25,125 |
| Site Maintenance, Monitoring and Reporting W2 post Closure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W3 post clsoure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $25,125 |
| Site Maintenance, Monitoring and Reporting W4 post Closure | $8,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $10,438 | $10,751 | $11,074 | $11,406 | $11,748 | $12,101 | $12,464 | $12,838 | $13,223 | $13,619 | $14,028 | $14,449 | $14,882 | $15,329 | $15,789 | $16,262 | $16,750 |
| Site Attendant W1 | $27,000 | $27,810 | $28,644 | $29,504 | $30,389 | $31,300 | $32,239 | $33,207 | $34,203 | $35,229 | $36,286 | $37,374 | $38,496 | $39,650 | $40,840 | $42,065 | $43,327 | $44,627 | $45,966 | $47,345 | $48,765 | $50,228 | $51,735 | $53,287 | $54,885 | $0 |
| Site Attendant W2 | $27,000 | $27,810 | $28,644 | $29,504 | $30,389 | $31,300 | $32,239 | $33,207 | $34,203 | $35,229 | $36,286 | $37,374 | $38,496 | $39,650 | $40,840 | $42,065 | $43,327 | $44,627 | $45,966 | $47,345 | $48,765 | $50,228 | $51,735 | $53,287 | $54,885 | $84,798 |
| Site Attendant W3 | $27,000 | $27,810 | $28,644 | $29,504 | $30,389 | $31,300 | $32,239 | $33,207 | $34,203 | $35,229 | $36,286 | $37,374 | $38,496 | $39,650 | $40,840 | $42,065 | $43,327 | $44,627 | $45,966 | $47,345 | $48,765 | $50,228 | $51,735 | $53,287 | $54,885 | $0 |
| Site Attendant W4 | $27,000 | $27,810 | $28,644 | $29,504 | $30,389 | $31,300 | $32,239 | $33,207 | $34,203 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W1 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $92,909 | $95,696 | $98,567 | $101,524 | $104,570 | $107,707 | $0 |
| Site Operations including Equipment Reserve W2 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $92,909 | $95,696 | $98,567 | $101,524 | $104,570 | $107,707 | $166,407 |
| Site Operations including Equipment Reserve W3 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $92,909 | $95,696 | $98,567 | $101,524 | $104,570 | $107,707 | $0 |
| Site Operations including Equipment Reserve W4 | $16,400 | $16,892 | $17,399 | $17,921 | $18,458 | $19,012 | $19,582 | $20,170 | $20,775 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Admin and Supervision W1 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $0 |
| Admin and Supervision W2 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W3 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $0 |
| Admin and Supervision W4 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W1 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $35,070 | $36,122 | $37,206 | $38,322 | $39,472 | $40,656 | $0 |
| Third Party Contractor Allowance W2 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $35,070 | $36,122 | $37,206 | $38,322 | $39,472 | $40,656 | $62,813 |
| Third Party Contractor Allowance W3 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $35,070 | $36,122 | $37,206 | $38,322 | $39,472 | $40,656 | $0 |
| Third Party Contractor Allowance W4 | $10,000 | $10,300 | $10,609 | $10,927 | $11,255 | $11,593 | $11,941 | $12,299 | $12,668 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W1 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W2 | $46,769 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W3 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W4 | $46,059 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| **Totals** Year --> | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
| Annual Cost Total | | $427,402 | $440,225 | $453,431 | $467,034 | $481,045 | $495,477 | $510,341 | $525,651 | $648,915 | $480,254 | $494,661 | $509,501 | $524,786 | $540,530 | $556,746 | $573,448 | $590,651 | $608,371 | $626,622 | $645,421 | $664,783 | $684,727 | $705,269 | $726,427 | $1,947,845 |
| Present Value Annual Cost Total | **$8,918,092** | **$410,964** | **$407,012** | **$403,099** | **$399,223** | **$395,384** | **$391,582** | **$387,817** | **$384,088** | **$455,919** | **$324,442** | **$321,323** | **$318,233** | **$315,173** | **$312,142** | **$309,141** | **$306,169** | **$303,225** | **$300,309** | **$297,421** | **$294,562** | **$291,729** | **$288,924** | **$286,146** | **$283,395** | **$730,669** |

**Notes**

1. A DnO has not yet been approved for W1. It is assumed filling will initiate in the new waste mound with 9,600 t capacity in 2024.
2. A DnO has not yet been approved for W2. It appears a waste mound could be established with approx 30,000 $m^3$. It is assumed filling was initiated in the new waste mound with 9,600 t capacity in 2021 as this area is currently being filled. (Note: there may be operational challenges to circumvent this full capacity such as height of the mound).
3. When a site reaches capacity the waste is then self hauled to the nearest open site (eg. W4 reaches capacity in 2031 and waste then goes to W3).
4. Population Growth 0.5 %
5. Per Capita Waste Disposal 450 kg/per/yr
6. Site attendant staffing allocation has been doubled whenever two sites receive waste with no transfer stations (Option 2).
7. Site attendant staffing allocation has been tripled and site operations staffing and equipment allocation has been increased by 50% whenever a single site receives all waste with no transfer stations (Option 5).
8. Municipality will be required to address the steep side slopes and covering of the bulky waste mound at W1 regardless of the option selected. Hence the costs have been excluded from the anlysis.

**Assumptions**

1. Monitoring and reporting at each site based on once annual sampling + reporting every three years + survey every three years. A contingency has been included to account for anomolies such as infrequent additional sampling or reporting.
2. No recycling costs to be included for any of the options as it has been assumed this will disappear in the near term with the program transition to the Producer responsiblity model.
3. Option closure costs taken from 2021 closure costs previously reported to the Municipality.
4. If a site has not been utilized to full capacity we have assumed interim cover consisting of 300 mm imported cover.
5. Post-closure monitoring and reporting will be the same as when the site is operating.
6. Transfer station costs generally include one time acquisition of bins, one time site modifications allowance, and contracted service for regular hauling to a disposal site.

Completed by: Rick Talvitie, P.Eng.,
Reviewed by: Tara Abernot

**Municipality of Huron Shores Long-Term Waste Management Plan**
**Life Cycle Cost Estimate - Option 2**

Description: In this option all waste to W1 and W3 with T2 and T4 then all waste to W2 and W3 with T1 and T4 and then all waste to W2 and W4 with T1 and T3 and then all waste to W2 with T1, T3 and T4.

AECOM Imagine it. Delivered.

*Project Life -->* **25** yrs

Nov-23

| OPTION 2: Two/One Disposal Sites and Two/Three Transfer Stations | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Base Costs | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 |
| **Population and Residual Capacity Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W1 Equivalent Permanent Population | 838 | 842 | 846 | 851 | 855 | 859 | 863 | 868 | 872 | 876 | 881 | 885 | 890 | 894 | 899 | 903 | 908 | 912 | 917 | 921 | 926 | 931 | 935 | 940 | 945 | 949 |
| W2 Equivalent Permanent Population | 452 | 454 | 457 | 459 | 461 | 463 | 466 | 468 | 470 | 473 | 475 | 477 | 480 | 482 | 485 | 487 | 490 | 492 | 494 | 497 | 499 | 502 | 504 | 507 | 509 | 512 |
| W3 Equivalent Permanent Population | 627 | 630 | 633 | 636 | 640 | 643 | 646 | 649 | 653 | 656 | 659 | 662 | 666 | 669 | 672 | 676 | 679 | 682 | 686 | 689 | 693 | 696 | 700 | 703 | 707 | 710 |
| W4 Equivalent Permanent Population | 216 | 217 | 218 | 219 | 220 | 221 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 245 |
| W1 Residual Capacity | 9977 | 9598 | 9065 | 8530 | 7992 | 7451 | 6908 | 6362 | 5813 | 5261 | 4707 | 4150 | 3590 | 3027 | 2462 | 1893 | 1322 | 748 | 171 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W2 Residual Capacity | 9193 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8504 | 8018 | 7216 | 6411 | 5602 | 4520 | 3433 |
| W3 Residual Capacity | 9177 | 8893 | 8456 | 8017 | 7576 | 7133 | 6687 | 6240 | 5789 | 5337 | 4883 | 4426 | 3967 | 3505 | 3041 | 2575 | 2107 | 1636 | 1163 | 688 | 210 | 0 | 0 | 0 | 0 | 0 |
| W4 Residual Capacity | 818 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 455 | 189 | 0 | 0 | 0 |
| **Financial Projection Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Closure (Final or Interim) W1 | $356,963 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $625,937 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W2 | $80,405 | $0 | $85,302 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W3 | $374,461 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $696,609 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W4 | $48,003 | $0 | $50,926 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $284,562 | $0 |
| Site Monitoring and Reporting W1 during Operating Life | $13,300 | $13,699 | $14,110 | $14,533 | $14,969 | $15,418 | $15,881 | $16,357 | $16,848 | $17,353 | $17,874 | $18,410 | $18,963 | $19,531 | $20,117 | $20,721 | $21,343 | $21,983 | $22,642 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W2 during Operating Life | $15,100 | $15,553 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $26,478 | $27,272 | $28,090 | $28,933 | $29,801 | $30,695 | $31,616 |
| Site Monitoring and Reporting W3 during Operating Life | $15,600 | $16,068 | $16,550 | $17,047 | $17,558 | $18,085 | $18,627 | $19,186 | $19,762 | $20,354 | $20,965 | $21,594 | $22,242 | $22,909 | $23,596 | $24,304 | $25,033 | $25,784 | $26,558 | $27,355 | $28,175 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W4 during Operating Life | $10,400 | $10,712 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $19,347 | $19,927 | $20,525 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W1 post Closure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $21,042 | $21,673 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W2 post Closure | $12,000 | $0 | $12,731 | $13,113 | $13,506 | $13,911 | $14,329 | $14,758 | $15,201 | $15,657 | $16,127 | $16,611 | $17,109 | $17,622 | $18,151 | $18,696 | $19,256 | $19,834 | $20,429 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W3 post clsoure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W4 post Closure | $8,000 | $0 | $8,487 | $8,742 | $9,004 | $9,274 | $9,552 | $9,839 | $10,134 | $10,438 | $10,751 | $11,074 | $11,406 | $11,748 | $12,101 | $12,464 | $12,838 | $13,223 | $13,619 | $14,028 | $14,449 | $0 | $0 | $0 | $16,262 | $16,750 |
| Site Attendant W1 | $27,000 | $27,810 | $28,644 | $29,504 | $30,389 | $31,300 | $32,239 | $33,207 | $34,203 | $35,229 | $36,286 | $37,374 | $38,496 | $39,650 | $40,840 | $42,065 | $43,327 | $44,627 | $45,966 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W2 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $47,345 | $48,765 | $50,228 | $51,735 | $53,287 | $54,885 | $56,532 |
| Site Attendant W3 | $27,000 | $27,810 | $28,644 | $29,504 | $30,389 | $31,300 | $32,239 | $33,207 | $34,203 | $35,229 | $36,286 | $37,374 | $38,496 | $39,650 | $40,840 | $42,065 | $43,327 | $44,627 | $45,966 | $47,345 | $48,765 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W4 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $50,228 | $51,735 | $53,287 | $0 | $0 |
| Site Operations including Equipment Reserve W1 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W2 | $52,985 | $54,574 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $92,909 | $95,696 | $98,567 | $101,524 | $104,570 | $107,707 | $110,938 |
| Site Operations including Equipment Reserve W3 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $92,909 | $95,696 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W4 | $16,400 | $16,892 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $30,509 | $31,424 | $32,367 | $0 | $0 |
| Admin and Supervision W1 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W2 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W3 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W4 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Third Party Contractor Allowance W1 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W2 | $20,000 | $20,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $34,049 | $35,070 | $36,122 | $37,206 | $38,322 | $39,472 | $40,656 | $41,876 |
| Third Party Contractor Allowance W3 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $35,070 | $36,122 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W4 | $10,000 | $10,300 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $18,061 | $18,603 | $19,161 | $19,736 | $0 | $0 |
| Transfer Station W1 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $84,186 | $86,712 | $89,313 | $91,993 | $94,752 | $97,595 | $100,523 |
| Transfer Station W2 | $46,769 | $0 | $49,617 | $51,105 | $52,638 | $54,218 | $55,844 | $57,519 | $59,245 | $61,022 | $62,853 | $64,739 | $66,681 | $68,681 | $70,742 | $72,864 | $75,050 | $77,301 | $79,620 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W3 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $89,313 | $91,993 | $94,752 | $97,595 | $100,523 |
| Transfer Station W4 | $46,059 | $0 | $48,864 | $50,330 | $51,840 | $53,395 | $54,997 | $56,647 | $58,346 | $60,097 | $61,900 | $63,756 | $65,669 | $67,639 | $69,668 | $71,758 | $73,911 | $76,129 | $78,412 | $80,765 | $83,188 | $0 | $0 | $0 | $93,629 | $96,437 |
| **Totals** Year --> | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
| Annual Cost Total | | $427,402 | $506,373 | $381,249 | $392,686 | $404,467 | $416,601 | $429,099 | $441,972 | $455,231 | $468,888 | $482,955 | $497,443 | $512,367 | $527,738 | $543,570 | $559,877 | $576,673 | $628,022 | $1,243,064 | $653,701 | $1,266,054 | $586,529 | $604,125 | $887,009 | $620,521 |
| Present Value Annual Cost Total | **$8,460,092** | **$410,964** | **$468,170** | **$338,929** | **$335,670** | **$332,442** | **$329,246** | **$326,080** | **$322,945** | **$319,839** | **$316,764** | **$313,718** | **$310,702** | **$307,714** | **$304,755** | **$301,825** | **$298,923** | **$296,049** | **$310,009** | **$590,011** | **$298,341** | **$555,587** | **$247,489** | **$245,109** | **$346,041** | **$232,768** |

**Notes**

1. A DnO has not yet been approved for W1. It is assumed filling will initiate in the new waste mound with 9,600 t capacity in 2024.
2. A DnO has not yet been approved for W2. It appears a waste mound could be established with approx 30,000 $m^3$. It is assumed filling was initiated in the new waste mound with 9,600 t capacity in 2021 as this area is currently being filled. (Note: there may be operational challenges to circumvent this full capacity such as height of the mound).
3. When a site reaches capacity the waste is then self hauled to the nearest open site (eg. W4 reaches capacity in 2031 and waste then goes to W3).
4. Population Growth 0.5 %
5. Per Capita Waste Disposal 450 kg/per/yr
6. Site attendant staffing allocation has been doubled whenever two sites receive waste with no transfer stations (Option 2).
7. Site attendant staffing allocation has been tripled and site operations staffing and equipment allocation has been increased by 50% whenever a single site receives all waste with no transfer stations (Option 5).
8. Municipality will be required to address the steep side slopes and covering of the bulky waste mound at W1 regardless of the option selected. Hence the costs have been excluded from the anlysis.

**Assumptions**

1. Monitoring and reporting at each site based on once annual sampling + reporting every three years + survey every three years. A contingency has been included to account for anomolies such as infrequent additional sampling or reporting.
2. No recycling costs to be included for any of the options as it has been assumed this will disappear in the near term with the program transition to the Producer responsiblity model.
3. Option closure costs taken from 2021 closure costs previously reported to the Municipality.
4. If a site has not been utilized to full capacity we have assumed interim cover consisting of 300 mm imported cover.
5. Post-closure monitoring and reporting will be the same as when the site is operating.
6. Transfer station costs generally include one time acquisition of bins, one time site modifications allowance, and contracted service for regular hauling to a disposal site.

Completed by: Rick Talvitie, P.Eng.,
Reviewed by: Tara Abernot

**Municipality of Huron Shores Long-Term Waste Management Plan**
**Life Cycle Cost Estimate - Option 3**

Description: In this option all waste to W3 and W1 and then all waste to W2 and W3 and then all waste to W2 and W4 and then all waste to W2.

AECOM Imagine it. Delivered.

*Project Life -->* **25** yrs

Nov-23

| OPTION 3: Two/One Disposal Sites and No Transfer Stations | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Base Costs | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 |
| **Population and Residual Capacity Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W1 Equivalent Permanent Population | 838 | 842 | 846 | 851 | 855 | 859 | 863 | 868 | 872 | 876 | 881 | 885 | 890 | 894 | 899 | 903 | 908 | 912 | 917 | 921 | 926 | 931 | 935 | 940 | 945 | 949 |
| W2 Equivalent Permanent Population | 452 | 454 | 457 | 459 | 461 | 463 | 466 | 468 | 470 | 473 | 475 | 477 | 480 | 482 | 485 | 487 | 490 | 492 | 494 | 497 | 499 | 502 | 504 | 507 | 509 | 512 |
| W3 Equivalent Permanent Population | 627 | 630 | 633 | 636 | 640 | 643 | 646 | 649 | 653 | 656 | 659 | 662 | 666 | 669 | 672 | 676 | 679 | 682 | 686 | 689 | 693 | 696 | 700 | 703 | 707 | 710 |
| W4 Equivalent Permanent Population | 216 | 217 | 218 | 219 | 220 | 221 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 245 |
| W1 Residual Capacity | 9977 | 9598 | 9065 | 8530 | 7992 | 7451 | 6908 | 6362 | 5813 | 5261 | 4707 | 4150 | 3590 | 3027 | 2462 | 1893 | 1322 | 748 | 171 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W2 Residual Capacity | 9193 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8504 | 8018 | 7216 | 6411 | 5602 | 4520 | 3433 |
| W3 Residual Capacity | 9177 | 8893 | 8456 | 8017 | 7576 | 7133 | 6687 | 6240 | 5789 | 5337 | 4883 | 4426 | 3967 | 3505 | 3041 | 2575 | 2107 | 1636 | 1163 | 688 | 210 | 0 | 0 | 0 | 0 | 0 |
| W4 Residual Capacity | 818 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 455 | 189 | 0 | 0 | 0 |
| **Financial Projection Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Closure (Final or Interim) W1 | $356,963 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $625,937 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W2 | $80,405 | $0 | $85,302 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W3 | $374,461 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $696,609 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W4 | $48,003 | $0 | $50,926 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $284,562 | $0 |
| Site Monitoring and Reporting W1 during Operating Life | $13,300 | $13,699 | $14,110 | $14,533 | $14,969 | $15,418 | $15,881 | $16,357 | $16,848 | $17,353 | $17,874 | $18,410 | $18,963 | $19,531 | $20,117 | $20,721 | $21,343 | $21,983 | $22,642 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W2 during Operating Life | $15,100 | $15,553 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $26,478 | $27,272 | $28,090 | $28,933 | $29,801 | $30,695 | $31,616 |
| Site Monitoring and Reporting W3 during Operating Life | $15,600 | $16,068 | $16,550 | $17,047 | $17,558 | $18,085 | $18,627 | $19,186 | $19,762 | $20,354 | $20,965 | $21,594 | $22,242 | $22,909 | $23,596 | $24,304 | $25,033 | $25,784 | $26,558 | $27,355 | $28,175 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W4 during Operating Life | $10,400 | $10,712 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $19,347 | $19,927 | $20,525 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W1 post Closure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $21,042 | $21,673 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W2 post Closure | $12,000 | $0 | $12,731 | $13,113 | $13,506 | $13,911 | $14,329 | $14,758 | $15,201 | $15,657 | $16,127 | $16,611 | $17,109 | $17,622 | $18,151 | $18,696 | $19,256 | $19,834 | $20,429 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W3 post clsoure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W4 post Closure | $8,000 | $0 | $8,487 | $8,742 | $9,004 | $9,274 | $9,552 | $9,839 | $10,134 | $10,438 | $10,751 | $11,074 | $11,406 | $11,748 | $12,101 | $12,464 | $12,838 | $13,223 | $13,619 | $14,028 | $14,449 | $0 | $0 | $0 | $16,262 | $16,750 |
| Site Attendant W1 | $27,000 | $27,810 | $57,289 | $59,007 | $60,777 | $62,601 | $64,479 | $66,413 | $68,406 | $70,458 | $72,571 | $74,749 | $76,991 | $79,301 | $81,680 | $84,130 | $86,654 | $89,254 | $91,931 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W2 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $94,689 | $97,530 | $100,456 | $103,470 | $106,574 | $109,771 | $113,064 |
| Site Attendant W3 | $27,000 | $27,810 | $57,289 | $59,007 | $60,777 | $62,601 | $64,479 | $66,413 | $68,406 | $70,458 | $72,571 | $74,749 | $76,991 | $79,301 | $81,680 | $84,130 | $86,654 | $89,254 | $91,931 | $94,689 | $97,530 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W4 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $100,456 | $103,470 | $106,574 | $0 | $0 |
| Site Operations including Equipment Reserve W1 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W2 | $52,985 | $54,574 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $92,909 | $95,696 | $98,567 | $101,524 | $104,570 | $161,560 | $166,407 |
| Site Operations including Equipment Reserve W3 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $92,909 | $95,696 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W4 | $16,400 | $16,892 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $30,509 | $31,424 | $32,367 | $0 | $0 |
| Admin and Supervision W1 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $0 | $0 | $0 | $0 | $0 | $0 |
| Admin and Supervision W2 | $1,800 | $1,854 | $1,910 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W3 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $0 | $0 | $0 | $0 |
| Admin and Supervision W4 | $1,800 | $1,854 | $1,910 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $0 |
| Third Party Contractor Allowance W1 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W2 | $20,000 | $20,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $34,049 | $35,070 | $36,122 | $37,206 | $38,322 | $39,472 | $60,984 | $62,813 |
| Third Party Contractor Allowance W3 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $35,070 | $36,122 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W4 | $10,000 | $10,300 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $18,061 | $18,603 | $19,161 | $19,736 | $0 | $0 |
| Transfer Station W1 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W2 | $46,769 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W3 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W4 | $46,059 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| **Totals** Year --> | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
| Annual Cost Total | | $427,402 | $465,181 | $334,887 | $344,934 | $355,282 | $365,940 | $376,918 | $388,226 | $399,873 | $411,869 | $424,225 | $436,952 | $450,060 | $463,562 | $477,469 | $491,793 | $506,547 | $558,856 | $1,169,646 | $578,081 | $1,184,535 | $499,115 | $514,089 | $719,939 | $444,670 |
| Present Value Annual Cost Total | **$7,499,870** | **$410,964** | **$430,086** | **$297,714** | **$294,851** | **$292,016** | **$289,208** | **$286,427** | **$283,673** | **$280,945** | **$278,244** | **$275,569** | **$272,919** | **$270,295** | **$267,696** | **$265,122** | **$262,572** | **$260,048** | **$275,867** | **$555,163** | **$263,828** | **$519,814** | **$210,604** | **$208,579** | **$280,864** | **$166,803** |

**Notes**

1. A DnO has not yet been approved for W1. It is assumed filling will initiate in the new waste mound with 9,600 t capacity in 2024.
2. A DnO has not yet been approved for W2. It appears a waste mound could be established with approx 30,000 $m^3$. It is assumed filling was initiated in the new waste mound with 9,600 t capacity in 2021 as this area is currently being filled. (Note: there may be operational challenges to circumvent this full capacity such as height of the mound).
3. When a site reaches capacity the waste is then self hauled to the nearest open site (eg. W4 reaches capacity in 2031 and waste then goes to W3).
4. Population Growth 0.5 %
5. Per Capita Waste Disposal 450 kg/per/yr
6. Site attendant staffing allocation has been doubled whenever two sites receive waste with no transfer stations (Option 2).
7. Site attendant staffing allocation has been tripled and site operations staffing and equipment allocation has been increased by 50% whenever a single site receives all waste with no transfer stations (Option 5).
8. Municipality will be required to address the steep side slopes and covering of the bulky waste mound at W1 regardless of the option selected. Hence the costs have been excluded from the anlysis.

**Assumptions**

1. Monitoring and reporting at each site based on once annual sampling + reporting every three years + survey every three years. A contingency has been included to account for anomolies such as infrequent additional sampling or reporting.
2. No recycling costs to be included for any of the options as it has been assumed this will disappear in the near term with the program transition to the Producer responsiblity model.
3. Option closure costs taken from 2021 closure costs previously reported to the Municipality.
4. If a site has not been utilized to full capacity we have assumed interim cover consisting of 300 mm imported cover.
5. Post-closure monitoring and reporting will be the same as when the site is operating.
6. Transfer station costs generally include one time acquisition of bins, one time site modifications allowance, and contracted service for regular hauling to a disposal site.

Completed by: Rick Talvitie, P.Eng.,
Reviewed by: Tara Abernot

**Municipality of Huron Shores Long-Term Waste Management Plan**
**Life Cycle Cost Estimate - Option 4**

Description: In this option all waste to W3 with T1 and T4 then all waste to W1 with T3 and T4 and then all waste to W2 with T3 and T4.

AECOM Imagine it. Delivered.

Nov-23

*Project Life -->* **25** yrs

| **OPTION 4: One Disposal Site and Two Transfer Stations** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Base Costs** | **2024** | **2025** | **2026** | **2027** | **2028** | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** | **2035** | **2036** | **2037** | **2038** | **2039** | **2040** | **2041** | **2042** | **2043** | **2044** | **2045** | **2046** | **2047** | **2048** |
| **Population and Residual Capacity Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W1 Equivalent Permanent Population | 838 | 842 | 846 | 851 | 855 | 859 | 863 | 868 | 872 | 876 | 881 | 885 | 890 | 894 | 899 | 903 | 908 | 912 | 917 | 921 | 926 | 931 | 935 | 940 | 945 | 949 |
| W2 Equivalent Permanent Population | 452 | 454 | 457 | 459 | 461 | 463 | 466 | 468 | 470 | 473 | 475 | 477 | 480 | 482 | 485 | 487 | 490 | 492 | 494 | 497 | 499 | 502 | 504 | 507 | 509 | 512 |
| W3 Equivalent Permanent Population | 627 | 630 | 633 | 636 | 640 | 643 | 646 | 649 | 653 | 656 | 659 | 662 | 666 | 669 | 672 | 676 | 679 | 682 | 686 | 689 | 693 | 696 | 700 | 703 | 707 | 710 |
| W4 Equivalent Permanent Population | 216 | 217 | 218 | 219 | 220 | 221 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 245 |
| W1 Residual Capacity | 9977 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 8584 | 7565 | 6541 | 5512 | 4477 | 3438 | 2393 | 1343 | 288 | 0 | 0 | 0 | 0 | 0 | 0 |
| W2 Residual Capacity | 9193 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 7928 | 6862 | 5791 | 4715 | 3633 | 2546 |
| W3 Residual Capacity | 9177 | 8893 | 7924 | 6949 | 5970 | 4986 | 3997 | 3003 | 2004 | 1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W4 Residual Capacity | 818 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 |
| **Financial Projection Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Closure (Final or Interim) W1 | $356,963 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $644,715 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W2 | $80,405 | $0 | $85,302 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W3 | $374,461 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $518,342 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W4 | $48,003 | $0 | $50,926 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W1 during Operating Life | $13,300 | $13,699 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $18,410 | $18,963 | $19,531 | $20,117 | $20,721 | $21,343 | $21,983 | $22,642 | $23,322 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W2 during Operating Life | $15,100 | $15,553 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $27,272 | $28,090 | $28,933 | $29,801 | $30,695 | $31,616 |
| Site Monitoring and Reporting W3 during Operating Life | $15,600 | $16,068 | $16,550 | $17,047 | $17,558 | $18,085 | $18,627 | $19,186 | $19,762 | $20,354 | $20,965 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W4 during Operating Life | $10,400 | $10,712 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W1 post Closure | $12,000 | $0 | $12,731 | $13,113 | $13,506 | $13,911 | $14,329 | $14,758 | $15,201 | $15,657 | $16,127 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $21,673 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W2 post Closure | $12,000 | $0 | $12,731 | $13,113 | $13,506 | $13,911 | $14,329 | $14,758 | $15,201 | $15,657 | $16,127 | $16,611 | $17,109 | $17,622 | $18,151 | $18,696 | $19,256 | $19,834 | $20,429 | $21,042 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W3 post clsoure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $16,611 | $17,109 | $17,622 | $18,151 | $18,696 | $19,256 | $19,834 | $20,429 | $21,042 | $21,673 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W4 post Closure | $8,000 | $0 | $8,487 | $8,742 | $9,004 | $9,274 | $9,552 | $9,839 | $10,134 | $10,438 | $10,751 | $11,074 | $11,406 | $11,748 | $12,101 | $12,464 | $12,838 | $13,223 | $13,619 | $14,028 | $14,449 | $14,882 | $15,329 | $15,789 | $16,262 | $16,750 |
| Site Attendant W1 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $37,374 | $38,496 | $39,650 | $40,840 | $42,065 | $43,327 | $44,627 | $45,966 | $47,345 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W2 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $48,765 | $50,228 | $51,735 | $53,287 | $54,885 | $56,532 |
| Site Attendant W3 | $27,000 | $27,810 | $28,644 | $29,504 | $30,389 | $31,300 | $32,239 | $33,207 | $34,203 | $35,229 | $36,286 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W4 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W1 | $52,985 | $54,574 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $92,909 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W2 | $52,985 | $54,574 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $95,696 | $98,567 | $101,524 | $104,570 | $107,707 | $110,938 |
| Site Operations including Equipment Reserve W3 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W4 | $16,400 | $16,892 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Admin and Supervision W1 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $0 | $0 | $0 | $0 | $0 | $0 |
| Admin and Supervision W2 | $1,800 | $1,854 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W3 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W4 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Third Party Contractor Allowance W1 | $20,000 | $20,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $35,070 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W2 | $20,000 | $20,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $36,122 | $37,206 | $38,322 | $39,472 | $40,656 | $41,876 |
| Third Party Contractor Allowance W3 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W4 | $10,000 | $10,300 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W1 | $48,010 | $0 | $50,934 | $52,462 | $54,036 | $55,657 | $57,327 | $59,047 | $60,818 | $62,642 | $64,522 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W2 | $46,769 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W3 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $66,457 | $68,451 | $70,505 | $72,620 | $74,798 | $77,042 | $79,354 | $81,734 | $84,186 | $86,712 | $89,313 | $91,993 | $94,752 | $97,595 | $100,523 |
| Transfer Station W4 | $46,059 | $0 | $48,864 | $50,330 | $51,840 | $53,395 | $54,997 | $56,647 | $58,346 | $60,097 | $61,900 | $63,756 | $65,669 | $67,639 | $69,668 | $71,758 | $73,911 | $76,129 | $78,412 | $80,765 | $83,188 | $85,683 | $88,254 | $90,902 | $93,629 | $96,437 |
| **Totals** Year --> | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
| Annual Cost Total | | $427,402 | $398,328 | $269,962 | $278,061 | $286,403 | $294,995 | $303,845 | $312,960 | $322,349 | $332,020 | $857,139 | $348,961 | $359,429 | $370,212 | $381,319 | $392,758 | $404,541 | $416,677 | $429,177 | $1,090,019 | $458,663 | $472,423 | $486,595 | $501,193 | $516,229 |
| Present Value Annual Cost Total | **$6,363,397** | **$410,964** | **$368,276** | **$239,996** | **$237,688** | **$235,403** | **$233,139** | **$230,897** | **$228,677** | **$226,478** | **$224,301** | **$556,781** | **$217,960** | **$215,864** | **$213,788** | **$211,733** | **$209,697** | **$207,680** | **$205,684** | **$203,706** | **$497,471** | **$201,277** | **$199,341** | **$197,425** | **$195,526** | **$193,646** |

**Notes**
1. A DnO has not yet been approved for W1. It is assumed filling will initiate in the new waste mound with 9,600 t capacity in 2024.
2. A DnO has not yet been approved for W2. It appears a waste mound could be established with approx 30,000 $m^3$. It is assumed filling was initiated in the new waste mound with 9,600 t capacity in 2021 as this area is currently being filled. (Note: there may be operational challenges to circumvent this full capacity such as height of the mound).
3. When a site reaches capacity the waste is then self hauled to the nearest open site (eg. W4 reaches capacity in 2031 and waste then goes to W3).
4. Population Growth 0.5 %
5. Per Capita Waste Disposal 450 kg/per/yr
6. Site attendant staffing allocation has been doubled whenever two sites receive waste with no transfer stations (Option 2).
7. Site attendant staffing allocation has been tripled and site operations staffing and equipment allocation has been increased by 50% whenever a single site receives all waste with no transfer stations (Option 5).
8. Municipality will be required to address the steep side slopes and covering of the bulky waste mound at W1 regardless of the option selected. Hence the costs have been excluded from the anlysis.

**Assumptions**
1. Monitoring and reporting at each site based on once annual sampling + reporting every three years + survey every three years. A contingency has been included to account for anomolies such as infrequent additional sampling or reporting.
2. No recycling costs to be included for any of the options as it has been assumed this will disappear in the near term with the program transition to the Producer responsiblity model.
3. Option closure costs taken from 2021 closure costs previously reported to the Municipality.
4. If a site has not been utilized to full capacity we have assumed interim cover consisting of 300 mm imported cover.
5. Post-closure monitoring and reporting will be the same as when the site is operating.
6. Transfer station costs generally include one time acquisition of bins, one time site modifications allowance, and contracted service for regular hauling to a disposal site.

Completed by: Rick Talvitie, P.Eng.,
Reviewed by: Tara Abernot

**Municipality of Huron Shores Long-Term Waste Management Plan**
**Life Cycle Cost Estimate - Option 5**

Description: In this option all waste to W3 then all waste to W1 and then all waste to W2.

AECOM Imagine it. Delivered.

Nov-23

*Project Life -->* **25** yrs

| OPTION 5: One Disposal Site and No Transfer Stations | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Base Costs | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 |
| **Population and Residual Capacity Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W1 Equivalent Permanent Population | 838 | 842 | 846 | 851 | 855 | 859 | 863 | 868 | 872 | 876 | 881 | 885 | 890 | 894 | 899 | 903 | 908 | 912 | 917 | 921 | 926 | 931 | 935 | 940 | 945 | 949 |
| W2 Equivalent Permanent Population | 452 | 454 | 457 | 459 | 461 | 463 | 466 | 468 | 470 | 473 | 475 | 477 | 480 | 482 | 485 | 487 | 490 | 492 | 494 | 497 | 499 | 502 | 504 | 507 | 509 | 512 |
| W3 Equivalent Permanent Population | 627 | 630 | 633 | 636 | 640 | 643 | 646 | 649 | 653 | 656 | 659 | 662 | 666 | 669 | 672 | 676 | 679 | 682 | 686 | 689 | 693 | 696 | 700 | 703 | 707 | 710 |
| W4 Equivalent Permanent Population | 216 | 217 | 218 | 219 | 220 | 221 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 245 |
| W1 Residual Capacity | 9977 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 8584 | 7565 | 6541 | 5512 | 4477 | 3438 | 2393 | 1343 | 288 | 0 | 0 | 0 | 0 | 0 | 0 |
| W2 Residual Capacity | 9193 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 7928 | 6862 | 5791 | 4715 | 3633 | 2546 |
| W3 Residual Capacity | 9177 | 8893 | 7924 | 6949 | 5970 | 4986 | 3997 | 3003 | 2004 | 1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W4 Residual Capacity | 818 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 |
| **Financial Projection Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Closure (Final or Interim) W1 | $356,963 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $644,715 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W2 | $80,405 | $0 | $85,302 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W3 | $374,461 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $518,342 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W4 | $48,003 | $0 | $50,926 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W1 during Operating Life | $13,300 | $13,699 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $18,410 | $18,963 | $19,531 | $20,117 | $20,721 | $21,343 | $21,983 | $22,642 | $23,322 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W2 during Operating Life | $15,100 | $15,553 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $27,272 | $28,090 | $28,933 | $29,801 | $30,695 | $31,616 |
| Site Monitoring and Reporting W3 during Operating Life | $15,600 | $16,068 | $16,550 | $17,047 | $17,558 | $18,085 | $18,627 | $19,186 | $19,762 | $20,354 | $20,965 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W4 during Operating Life | $10,400 | $10,712 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W1 post Closure | $12,000 | $0 | $12,731 | $13,113 | $13,506 | $13,911 | $14,329 | $14,758 | $15,201 | $15,657 | $16,127 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $21,042 | $21,673 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W2 post Closure | $12,000 | $0 | $12,731 | $13,113 | $13,506 | $13,911 | $14,329 | $14,758 | $15,201 | $15,657 | $16,127 | $16,611 | $17,109 | $17,622 | $18,151 | $18,696 | $19,256 | $19,834 | $20,429 | $21,042 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W3 post clsoure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $16,611 | $17,109 | $17,622 | $18,151 | $18,696 | $19,256 | $19,834 | $20,429 | $21,042 | $21,673 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W4 post Closure | $8,000 | $0 | $8,487 | $8,742 | $9,004 | $9,274 | $9,552 | $9,839 | $10,134 | $10,438 | $10,751 | $11,074 | $11,406 | $11,748 | $12,101 | $12,464 | $12,838 | $13,223 | $13,619 | $14,028 | $14,449 | $14,882 | $15,329 | $15,789 | $16,262 | $16,750 |
| Site Attendant W1 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $112,123 | $115,487 | $118,951 | $122,520 | $126,195 | $129,981 | $133,881 | $137,897 | $142,034 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W2 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $146,295 | $150,684 | $155,204 | $159,861 | $164,656 | $169,596 |
| Site Attendant W3 | $27,000 | $27,810 | $85,933 | $88,511 | $91,166 | $93,901 | $96,718 | $99,620 | $102,608 | $105,687 | $108,857 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W4 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W1 | $52,985 | $54,574 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $110,015 | $113,315 | $116,715 | $120,216 | $123,822 | $127,537 | $131,363 | $135,304 | $139,363 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W2 | $52,985 | $54,574 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $143,544 | $147,850 | $152,286 | $156,855 | $161,560 | $166,407 |
| Site Operations including Equipment Reserve W3 | $52,985 | $54,574 | $84,317 | $86,847 | $89,452 | $92,136 | $94,900 | $97,747 | $100,679 | $103,699 | $106,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W4 | $16,400 | $16,892 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Admin and Supervision W1 | $1,800 | $1,854 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $0 | $0 | $0 | $0 | $0 | $0 |
| Admin and Supervision W2 | $1,800 | $1,854 | $1,910 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W3 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Admin and Supervision W4 | $1,800 | $1,854 | $1,910 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W1 | $20,000 | $20,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $41,527 | $42,773 | $44,056 | $45,378 | $46,739 | $48,141 | $49,585 | $51,073 | $52,605 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W2 | $20,000 | $20,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $52,605 | $54,183 | $55,809 | $57,483 | $59,208 | $60,984 | $62,813 |
| Third Party Contractor Allowance W3 | $20,000 | $20,600 | $31,827 | $32,782 | $33,765 | $34,778 | $35,822 | $36,896 | $38,003 | $39,143 | $40,317 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W4 | $10,000 | $10,300 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W1 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W2 | $46,769 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W3 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W4 | $46,059 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| **Totals** Year --> | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
| Annual Cost Total | | $427,402 | $394,533 | $262,120 | $269,984 | $278,083 | $286,426 | $295,018 | $303,869 | $312,985 | $322,375 | $847,204 | $338,728 | $348,890 | $359,356 | $370,137 | $381,241 | $392,678 | $404,459 | $493,396 | $1,077,057 | $445,312 | $458,671 | $472,431 | $486,604 | $501,202 |
| Present Value Annual Cost Total | **$6,251,860** | **$410,964** | **$364,768** | **$233,024** | **$230,783** | **$228,564** | **$226,366** | **$224,190** | **$222,034** | **$219,899** | **$217,785** | **$550,328** | **$211,568** | **$209,534** | **$207,519** | **$205,524** | **$203,548** | **$201,591** | **$199,652** | **$234,187** | **$491,555** | **$195,418** | **$193,539** | **$191,678** | **$189,835** | **$188,009** |

**Notes**

1. A DnO has not yet been approved for W1. It is assumed filling will initiate in the new waste mound with 9,600 t capacity in 2024.
2. A DnO has not yet been approved for W2. It appears a waste mound could be established with approx 30,000 $m^3$. It is assumed filling was initiated in the new waste mound with 9,600 t capacity in 2021 as this area is currently being filled. (Note: there may be operational challenges to circumvent this full capacity such as height of the mound).
3. When a site reaches capacity the waste is then self hauled to the nearest open site (eg. W4 reaches capacity in 2031 and waste then goes to W3).
4. Population Growth 0.5 %
5. Per Capita Waste Disposal 450 kg/per/yr
6. Site attendant staffing allocation has been doubled whenever two sites receive waste with no transfer stations (Option 2).
7. Site attendant staffing allocation has been tripled and site operations staffing and equipment allocation has been increased by 50% whenever a single site receives all waste with no transfer stations (Option 5).
8. Municipality will be required to address the steep side slopes and covering of the bulky waste mound at W1 regardless of the option selected. Hence the costs have been excluded from the anlysis.

**Assumptions**

1. Monitoring and reporting at each site based on once annual sampling + reporting every three years + survey every three years. A contingency has been included to account for anomolies such as infrequent additional sampling or reporting.
2. No recycling costs to be included for any of the options as it has been assumed this will disappear in the near term with the program transition to the Producer responsiblity model.
3. Option closure costs taken from 2021 closure costs previously reported to the Municipality.
4. If a site has not been utilized to full capacity we have assumed interim cover consisting of 300 mm imported cover.
5. Post-closure monitoring and reporting will be the same as when the site is operating.
6. Transfer station costs generally include one time acquisition of bins, one time site modifications allowance, and contracted service for regular hauling to a disposal site.

Completed by: Rick Talvitie, P.Eng.,
Reviewed by: Tara Abernot

**Municipality of Huron Shores Long-Term Waste Management Plan**
**Life Cycle Cost Estimate - Option 6**

Description: In this option all waste to W3 with T1, T2 and T4 then all waste to W1 with T2, T3 and T4 and then all waste to W2 with T1, T3 and T4.

AECOM Imagine it. Delivered.

Dec-23

*Project Life -->* **25** yrs

| **OPTION 6: One Disposal Site and Three Transfer Stations** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Base Costs** | **2024** | **2025** | **2026** | **2027** | **2028** | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** | **2035** | **2036** | **2037** | **2038** | **2039** | **2040** | **2041** | **2042** | **2043** | **2044** | **2045** | **2046** | **2047** | **2048** |
| **Population and Residual Capacity Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W1 Equivalent Permanent Population | 838 | 842 | 846 | 851 | 855 | 859 | 863 | 868 | 872 | 876 | 881 | 885 | 890 | 894 | 899 | 903 | 908 | 912 | 917 | 921 | 926 | 931 | 935 | 940 | 945 | 949 |
| W2 Equivalent Permanent Population | 452 | 454 | 457 | 459 | 461 | 463 | 466 | 468 | 470 | 473 | 475 | 477 | 480 | 482 | 485 | 487 | 490 | 492 | 494 | 497 | 499 | 502 | 504 | 507 | 509 | 512 |
| W3 Equivalent Permanent Population | 627 | 630 | 633 | 636 | 640 | 643 | 646 | 649 | 653 | 656 | 659 | 662 | 666 | 669 | 672 | 676 | 679 | 682 | 686 | 689 | 693 | 696 | 700 | 703 | 707 | 710 |
| W4 Equivalent Permanent Population | 216 | 217 | 218 | 219 | 220 | 221 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 245 |
| W1 Residual Capacity | 9977 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 9598 | 8584 | 7565 | 6541 | 5512 | 4477 | 3438 | 2393 | 1343 | 288 | 0 | 0 | 0 | 0 | 0 | 0 |
| W2 Residual Capacity | 9193 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 8989 | 7928 | 6862 | 5791 | 4715 | 3633 | 2546 |
| W3 Residual Capacity | 9177 | 8893 | 7924 | 6949 | 5970 | 4986 | 3997 | 3003 | 2004 | 1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W4 Residual Capacity | 818 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 |
| **Financial Projection Estimates** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Closure (Final or Interim) W1 | $356,963 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $644,715 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W2 | $80,405 | $0 | $85,302 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W3 | $374,461 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $518,342 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Closure (Final or Interim) W4 | $48,003 | $0 | $50,926 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W1 during Operating Life | $13,300 | $13,699 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $18,410 | $18,963 | $19,531 | $20,117 | $20,721 | $21,343 | $21,983 | $22,642 | $23,322 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W2 during Operating Life | $15,100 | $15,553 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $27,272 | $28,090 | $28,933 | $29,801 | $30,695 | $31,616 |
| Site Monitoring and Reporting W3 during Operating Life | $15,600 | $16,068 | $16,550 | $17,047 | $17,558 | $18,085 | $18,627 | $19,186 | $19,762 | $20,354 | $20,965 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Monitoring and Reporting W4 during Operating Life | $10,400 | $10,712 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W1 post Closure | $12,000 | $0 | $12,731 | $13,113 | $13,506 | $13,911 | $14,329 | $14,758 | $15,201 | $15,657 | $16,127 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $21,673 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W2 post Closure | $12,000 | $0 | $12,731 | $13,113 | $13,506 | $13,911 | $14,329 | $14,758 | $15,201 | $15,657 | $16,127 | $16,611 | $17,109 | $17,622 | $18,151 | $18,696 | $19,256 | $19,834 | $20,429 | $21,042 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Maintenance, Monitoring and Reporting W3 post clsoure | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $16,611 | $17,109 | $17,622 | $18,151 | $18,696 | $19,256 | $19,834 | $20,429 | $21,042 | $21,673 | $22,324 | $22,993 | $23,683 | $24,394 | $25,125 |
| Site Maintenance, Monitoring and Reporting W4 post Closure | $8,000 | $0 | $8,487 | $8,742 | $9,004 | $9,274 | $9,552 | $9,839 | $10,134 | $10,438 | $10,751 | $11,074 | $11,406 | $11,748 | $12,101 | $12,464 | $12,838 | $13,223 | $13,619 | $14,028 | $14,449 | $14,882 | $15,329 | $15,789 | $16,262 | $16,750 |
| Site Attendant W1 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $37,374 | $38,496 | $39,650 | $40,840 | $42,065 | $43,327 | $44,627 | $45,966 | $47,345 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W2 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $48,765 | $50,228 | $51,735 | $53,287 | $54,885 | $56,532 |
| Site Attendant W3 | $27,000 | $27,810 | $28,644 | $29,504 | $30,389 | $31,300 | $32,239 | $33,207 | $34,203 | $35,229 | $36,286 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Attendant W4 | $27,000 | $27,810 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W1 | $52,985 | $54,574 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $73,343 | $75,543 | $77,810 | $80,144 | $82,548 | $85,025 | $87,575 | $90,203 | $92,909 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W2 | $52,985 | $54,574 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $95,696 | $98,567 | $101,524 | $104,570 | $107,707 | $110,938 |
| Site Operations including Equipment Reserve W3 | $52,985 | $54,574 | $56,211 | $57,898 | $59,635 | $61,424 | $63,266 | $65,164 | $67,119 | $69,133 | $71,207 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Site Operations including Equipment Reserve W4 | $16,400 | $16,892 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Admin and Supervision W1 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W2 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W3 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Admin and Supervision W4 | $1,800 | $1,854 | $1,910 | $1,967 | $2,026 | $2,087 | $2,149 | $2,214 | $2,280 | $2,349 | $2,419 | $2,492 | $2,566 | $2,643 | $2,723 | $2,804 | $2,888 | $2,975 | $3,064 | $3,156 | $3,251 | $3,349 | $3,449 | $3,552 | $3,659 | $3,769 |
| Third Party Contractor Allowance W1 | $20,000 | $20,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $27,685 | $28,515 | $29,371 | $30,252 | $31,159 | $32,094 | $33,057 | $34,049 | $35,070 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W2 | $20,000 | $20,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $36,122 | $37,206 | $38,322 | $39,472 | $40,656 | $41,876 |
| Third Party Contractor Allowance W3 | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $26,878 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Third Party Contractor Allowance W4 | $10,000 | $10,300 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W1 | $48,010 | $0 | $50,934 | $52,462 | $54,036 | $55,657 | $57,327 | $59,047 | $60,818 | $62,642 | $64,522 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $86,712 | $89,313 | $91,993 | $94,752 | $97,595 | $100,523 |
| Transfer Station W2 | $46,769 | $0 | $49,617 | $51,105 | $52,638 | $54,218 | $55,844 | $57,519 | $59,245 | $61,022 | $62,853 | $64,739 | $66,681 | $68,681 | $70,742 | $72,864 | $75,050 | $77,301 | $79,620 | $82,009 | $0 | $0 | $0 | $0 | $0 | $0 |
| Transfer Station W3 | $48,010 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $66,457 | $68,451 | $70,505 | $72,620 | $74,798 | $77,042 | $79,354 | $81,734 | $84,186 | $86,712 | $89,313 | $91,993 | $94,752 | $97,595 | $100,523 |
| Transfer Station W4 | $46,059 | $0 | $48,864 | $50,330 | $51,840 | $53,395 | $54,997 | $56,647 | $58,346 | $60,097 | $61,900 | $63,756 | $65,669 | $67,639 | $69,668 | $71,758 | $73,911 | $76,129 | $78,412 | $80,765 | $83,188 | $85,683 | $88,254 | $90,902 | $93,629 | $96,437 |
| **Totals** Year --> | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
| Annual Cost Total | | $427,402 | $449,854 | $323,035 | $332,726 | $342,707 | $352,989 | $363,578 | $374,486 | $385,720 | $397,292 | $924,369 | $418,208 | $430,754 | $443,677 | $456,987 | $470,696 | $484,817 | $499,362 | $514,343 | $1,179,982 | $551,325 | $567,864 | $584,900 | $602,447 | $620,521 |
| Present Value Annual Cost Total | **$7,394,784** | **$410,964** | **$415,915** | **$287,177** | **$284,415** | **$281,681** | **$278,972** | **$276,290** | **$273,633** | **$271,002** | **$268,396** | **$600,453** | **$261,211** | **$258,700** | **$256,212** | **$253,749** | **$251,309** | **$248,892** | **$246,499** | **$244,129** | **$538,528** | **$241,940** | **$239,613** | **$237,309** | **$235,028** | **$232,768** |

**Notes**
1. A DnO has not yet been approved for W1. It is assumed filling will initiate in the new waste mound with 9,600 t capacity in 2024.
2. A DnO has not yet been approved for W2. It appears a waste mound could be established with approx 30,000 $m^3$. It is assumed filling was initiated in the new waste mound with 9,600 t capacity in 2021 as this area is currently being filled. (Note: there may be operational challenges to circumvent this full capacity such as height of the mound).
3. When a site reaches capacity the waste is then self hauled to the nearest open site (eg. W4 reaches capacity in 2031 and waste then goes to W3).
4. Population Growth 0.5 %
5. Per Capita Waste Disposal 450 kg/per/yr
6. Site attendant staffing allocation has been doubled whenever two sites receive waste with no transfer stations (Option 2).
7. Site attendant staffing allocation has been tripled and site operations staffing and equipment allocation has been increased by 50% whenever a single site receives all waste with no transfer stations (Option 5).
8. Municipality will be required to address the steep side slopes and covering of the bulky waste mound at W1 regardless of the option selected. Hence the costs have been excluded from the anlysis.

**Assumptions**
1. Monitoring and reporting at each site based on once annual sampling + reporting every three years + survey every three years. A contingency has been included to account for anomolies such as infrequent additional sampling or reporting.
2. No recycling costs to be included for any of the options as it has been assumed this will disappear in the near term with the program transition to the Producer responsiblity model.
3. Option closure costs taken from 2021 closure costs previously reported to the Municipality.
4. If a site has not been utilized to full capacity we have assumed interim cover consisting of 300 mm imported cover.
5. Post-closure monitoring and reporting will be the same as when the site is operating.
6. Transfer station costs generally include one time acquisition of bins, one time site modifications allowance, and contracted service for regular hauling to a disposal site.

Completed by: Rick Talvitie, P.Eng.,
Reviewed by: Tara Abernot

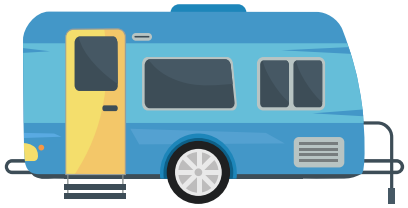
# Appendix B

## Public Information Centre Notification

# SHAPING YOUR FUTURE MUNICIPALITY

**Official Plan Open House - VIRTUAL**
Nov. 1, 2023 7-9PM (Register in advance)
Zoom Link at **www.huronshores.ca/stayinformed**

**Official Plan Open House - IN PERSON**
Nov. 14, 2023 7-9PM
Location: Sowerby Hall, 1410 Basswood Lake Rd.



***NEW* Proposed Trailer License By-law**
PUBLIC INFORMATION SESSION - Nov. 15, 2023 6-8PM
Location: Sowerby Hall / Zoom

**Long Term Waste Management Plan**
PUBLIC INFORMATION SESSION - Dec. 6, 2023 4-7PM
Location: Sowerby Hall / Zoom

**Flood Mapping - Phase 2 - Coming Soon**
PUBLIC INFORMATION SESSION - (Date TBD)

**Zoom Links can be found @huronshores.ca/stayinformed**

Visit our website or call for full details and information.
705-843-2033 and www.huronshores.ca/stayinformed

MUNICIPALITY OF
HURON
SHORES

You're Invited!

## Join the Mailing List

Subscribe to the Huron Shores mailing list. Receive periodic updates and announcements.

*[your-email-here]*

SUBSCRIBE

www.huronshores.ca/stayinformed

# Long Term Waste Management Planning

« All Events

This event has passed.

## Long Term Waste Management Planning

6 December 2023 @ 4:00 pm - 7:00 pm

AECOM will facilitate this Open House and provide information on the Municipality's four Waste Sites and their long-term plans for operations.

- December 6, 2023 4:00PM-7:00PM
- FORMAT: Sowerby Hall – In Person – Come and Go/Open House
- *If unable to attend in person, Zoom will be available to view slideshow information and submit questions or comments for follow up. Email us for the link to register for this alternative format.*

For background information please review the link: Preliminary Document for the Long Term Waste Management Plan

Add to calendar

**DETAILS**

**Date:**
6 December 2023

**Time:**
4:00 pm - 7:00 pm

**Event Category:**
Community News

**Event Tags:**
Information Session, Waste Disposal Sites

**ORGANIZER**

Municipality of Huron Shores

**Email**
email@huronshores.ca

**VENUE**

Sowerby Hall
1410 Basswood Lake
Thessalon, Ontario P0R 1L0 Canada + Google Map

**Phone**
705-843-2033

View Venue Website

‹ Annual Christmas Tea and Bake Sale

Spaghetti Dinner ›

## Join the Mailing List

Subscribe to the Huron Shores mailing list. Receive periodic updates and announcements.

Email address SUBSCRIBE



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**Municipality of Huron Shores**
7 Bridge Street, PO Box 460
Iron Bridge, ON P0R 1H0

November 28, 2023

**To:** **Chief and Council, Thessalon First Nation**
**Subject:** **Invitation and Public Notice**
**Re:** **Long-Term Waste Management Plan**

I am writing on behalf of the Municipality of Huron Shores regarding the Municipality's Long-Term Waste Management Plan and, to extend an invitation to the members of Thessalon First Nation to attend our upcoming Long-Term Waste Management Public Information Session.

**Date: December 6, 2023**
**Time: 4:00 – 7:00pm**
**Location: Sowerby Hall, 1410 Basswood Lake Road**

This session aims to provide valuable insights into our waste management strategies and, discuss long-term plans for the four Waste Sites in the Municipality. The session will also serve to address any concerns or questions the community may have. Your presence and participation would greatly contribute to the success of this event.

Additionally, this letter serves as a formal notice that the Long-Term Waste Management Plan public consultation period has initiated should members of Chief and Council of the Thessalon First Nation wish to provide any feedback to be noted while in these planning stages.

We appreciate your attention to this matter and look forward to your participation. Please feel free to contact me if you require further details or have any specific items you would like addressed.

Thank you for your time, and we sincerely hope to see your representatives at this important event.

Warm regards,

*Natashia Roberts*

CAO/Clerk
Municipality of Huron Shores

**Municipality of Huron Shores**
7 Bridge Street, PO Box 460
Iron Bridge, ON P0R 1H0

November 28, 2023

**To:** **Chief and Council, Mississauga First Nation**
**Subject:** **Invitation and Public Notice**
**Re:** **Long-Term Waste Management Plan**

I am writing on behalf of the Municipality of Huron Shores regarding the Municipality's Long-Term Waste Management Plan and to extend an invitation to the members of Mississauga First Nation to attend our upcoming Long-Term Waste Management Public Information Session.

**Date: December 6, 2023**
**Time: 4:00 – 7:00pm**
**Location: Sowerby Hall, 1410 Basswood Lake Road**

This session aims to provide valuable insights into our waste management strategies and discuss long-term plans for the four Waste Sites in the Municipality. The session will also serve to address any concerns or questions the community may have. Your presence and participation would greatly contribute to the success of this event.

Additionally, this letter serves as a formal notice that the Long-Term Waste Management Plan public consultation period has initiated should members of Chief and Council of the Mississauga First Nation wish to provide any feedback to be noted while in these planning stages.

We appreciate your attention to this matter and look forward to your participation. Please feel free to contact me if you require further details or have any specific items you would like addressed.

Thank you for your time, and we sincerely hope to see your representatives at this important event.

Warm regards,

*Natashia Roberts*

CAO/Clerk
Municipality of Huron Shores

# SHAPING YOUR FUTURE MUNICIPALITY

**Long Term Waste Management Plan**

PUBLIC INFORMATION SESSION

December 6, 2023 4:00-7:00 PM

Sowerby Hall, 1410 Basswood Lake Rd

*Alternative Format: Zoom*

---

The Municipality of Huron Shores invites you to attend an Open House presented by AECOM to provide information on the Municipality's four Waste Sites and their long-term plans for operations.

---

Visit our website or call for full details and information.
705-843-2033 and www.huronshores.ca/stayinformed

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# Appendix C

## Public Information Centre Displays

# Welcome

# Municipality of Huron Shores
# Long-Term Waste Management Plan

***Public Information Centre***

***December 6, 2023***

***4:00 pm to 7:00 pm***

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# What to Do

In-Person Attendees

- Please record your name on the sign-in sheet.
- AECOM staff are available to present the project materials and answer questions.
- Complete a Comment Sheet, if desired.

Zoom Attendees

- Please provide your name in the chat so we can document your attendance.
- Provide any questions/comments through the chat and please provide your contact information in the event we cannot address your concerns this evening.

# Introduction

A Long-Term Waste Management Study was initiated by the Municipality of Huron Shores to guide the Municipality in managing waste in a reliable, efficient, cost-effective and environmentally responsible manner over a planning period of approximately 25 years.

## Study Tasks and Activities

**The specific tasks and activities undertaken during this study to-date:**

1. Developed a problem/opportunity statement.
2. Provincial waste management legislation and/or policies were reviewed.
3. Existing Municipal waste management programs and services were documented.
4. Current operating costs for each existing landfill site were collected and analysed.
5. Residual capacity at each existing landfill site was estimated.
6. Future Municipal waste management needs were determined including establishing population projections and developing waste quantity estimates.
7. Five waste management options were identified and evaluated based on relevant comparative criteria.
8. Solicit public and First Nations input on the preliminary preferred option through a Public Open House.

## Problem/Opportunity Statement

The Municipality of Huron Shores is developing a Long-Term Waste Management Plan to determine the preferred way to address the future waste management needs for the existing service area over a 25-year planning period. The Municipality is in a unique position where it owns and operates four separate waste disposal sites to accommodate a relatively small population base (i.e., approximately 1,860 persons) disbursed over a large geographic area (i.e., approximately 452 $km^2$). This translates to a population density of just 4.1 persons/$km^2$. It has been challenging for the Municipality to effectively operate and maintain four landfill sites having limited financial, labour and equipment resources available.

In general, it may be inefficient and cost prohibitive for a single Municipality of this population to own and operate four separate waste disposal sites. This study focuses on how to effectively and efficiently address the Municipality of Huron Shores' future waste management needs.

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# Existing Municipal Waste Management Programs and Services

3 x Week

REGULAR BAGGED HOUSEHOLD WASTE AND LARGE BULKY WASTE SELF-HAULED TO WARD 1, WARD 2, WARD 3, OR WARD 4 WDS FOR DISPOSAL

3 x Week

METALS, WHITE GOODS, BLUE BOX RECYCLING, BATTERIES AND WOOD/BRUSH SELF-HAULED TO WARD 1, WARD 2, WARD 3 OR WARD 4 WDS (WOOD/BRUSH BURNED AT ALL SITES)

As Needed

RECYCLING FACILITIES

3 x Week

ELECTRONIC WASTE AND TIRES SELF-HAULED TO WARD 1 OR WARD 3 WDS

As Needed

RECYCLING FACILITIES

# Population Projections and Waste Disposal Quantity Estimates

Future population projections were developed in order to assist with determining future waste quantities to be managed by the Municipality. The Municipality should plan to provide waste disposal services to accommodate an estimated 1,022 tonnes of waste each year based on an average annual equivalent permanent population of 2,272 residents.

### 25-Year Population Projections

| Year | Estimated Population | | Estimated Average Permanent Population | Estimated Average Seasonal Population | Estimated Equivalent Permanent Annual Average[3] |
|---|---|---|---|---|---|
| | Permanent | Seasonal[2] | | | |
| **2023[1]** | 1,879 | 1,021 | 2,001 | 1,088 | **2,272** |
| **2028** | 1,926 | 1,047 | | | |
| **2033** | 1,975 | 1,073 | | | |
| **2038** | 2,025 | 1,100 | | | |
| **2043** | 2,076 | 1,128 | | | |
| **2048** | 2,128 | 1,157 | | | |

Notes:

1. Base year population data taken from 2021 Statistics Canada Census with a 0.5% annual growth rate.
2. Seasonal population reflects estimated total summer population based on 3 persons per seasonal household.
3. Average seasonal population is converted to an equivalent permanent population assuming an average full-time occupancy of 3 months.

### Waste Quantity Estimates

| Landfill Site | Estimated Average Annual Equivalent Permanent Service Population | Estimated Average Annual Disposal Quantities (Tonnes) at 450 kg/per/yr |
|---|---|---|
| **Ward 1** | 893 | 402 |
| **Ward 2** | 481 | 216 |
| **Ward 3** | 668 | 301 |
| **Ward 4** | 230 | 104 |
| **Total:** | **2,272** | **1,022** |

## Waste Management Options

**Several waste management options were identified for consideration:**

- Option 1 – Do Nothing – 4 operating waste disposal sites
- Option 2 – 2 operating waste disposal sites and 2 waste transfer stations
- Option 3 – 2 operating waste disposal sites and no waste transfer stations
- Option 4 – 1 operating waste disposal site and 2 waste transfer stations
- Option 5 – 1 operating waste disposal site and no waste transfer stations

Each option includes self-haul of waste by users to either an active landfill site or a waste transfer station. Transfer stations include public drop-off of regular bagged household waste only into waste bins for transfer by a waste contractor to an active landfill site. Large bulky waste (i.e., furniture, mattresses, etc.) and segregated material (i.e., metal and white goods, e-waste, tires, batteries, clean wood and brush) would be required to be taken to an active landfill site for disposal and/or recycling.

# Description of Waste Management Options

| Option No. | Description |
|---|---|
| 1 | **Do Nothing** – includes maintaining the status quo and continuing to operate all four Ward 1-4 landfill sites as is. This option provides a reference for comparing all other options. Note: under this option the Ward 4 landfill site would undertake full closure in approximately 2032 when it reaches its approved capacity and only three landfill sites would be active for the remainder of the planning period. |
| 2 | **2 Operating WDS and 2 TS** – under this option there would be two operating waste disposal sites and two waste transfer stations for most of the planning period. This option would require users to self-haul all regular bagged household waste to either one of the two active landfill sites or to a transfer station for disposal. This option involves transporting waste from the transfer stations to the active landfill sites once per week by a waste contractor. Large bulky items and segregated items would NOT be accepted at the transfer stations and would require self-haul by users directly to one of the two active landfill sites for disposal and/or recycling. Operating hours at the landfills and transfer stations are expected to be similar to existing operating hours. |
| 3 | **2 Operating WDS and No TS** – under this option there would be two operating waste disposal sites only for most of the planning period. This option would require users to self-haul all regular bagged household waste, large bulky waste and segregated materials to one of two active landfill sites for disposal and/or recycling. To accommodate an increase in traffic volume at the active landfill sites, operating hours would be increased and/or additional site attendant presence would be required. |
| 4 | **1 Operating WDS and 2 TS** – under this option there would be one operating waste disposal site and two waste transfer stations. This option would require users to self-haul all regular bagged household waste to either the active landfill site or a transfer station for disposal. This option involves transporting waste from the transfer stations to the active landfill site once per week by a waste contractor. Large bulky items and segregated items would NOT be accepted at the transfer stations and would require self-haul by users directly to the active landfill site for disposal and/or recycling. Operating hours at the landfill and transfer stations are expected to be similar to existing operating hours. |
| 5 | **1 Operating WDS and No TS** – under this option there would be one operating waste disposal site where all waste generated within the Municipality would be disposed at one site. This option would require users to self-haul all regular bagged household waste, large bulky waste and segregated materials to one landfill site for disposal and/or recycling. To accommodate an increase in traffic volume at the active landfill site, operating hours would be increased and/or additional site attendant presence would be required. |

## Waste Management Options Evaluation

To evaluate the different options, a total of seven comparative criteria were established under four broad categories: convenience/acceptability, environmental impact, operations and maintenance resources and costs.

A comparative qualitative approach was undertaken in evaluating each of the options, whereby a score of 1 to 4 was assigned to each option for each criterion (1 being least preferred and 3 being most preferred).

Scoring of the evaluation was conducted as follows:

- Neutral or positive impact and/or relatively low cost – ***Score 4***
- Reduced or minor impact and/or relatively medium cost – ***Score 3***
- Reduced or moderate impact and/or relatively medium cost – ***Score 2***
- Negative or severe impact and/or relatively high cost – ***Score 1***

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# Waste Management Options Evaluation Matrix

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| Evaluation Description | Evaluation Criteria | Evaluation Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Option 1 – Do Nothing (Four Operating WDS) | Option 1 Score | Option 2 – Two WDS and Two Transfer Stations | Option 2 Score | Option 3 – Two WDS and No Transfer Stations | Option 3 Score | Option 4 – One WDS and Two Transfer Stations | Option 4 Score | Option 5 – One WDS and No Transfer Stations | Option 5 Score |
| **Consideration of the convenience, acceptability and safety for ratepayers in terms of changes in travel distances by site users.** | **Public Impact (Convenience/Acceptability/Safety)** | | | | | | | | | | |
| | Change in travel distances. | No impact to current travel distances until W4 closure (approx. 2032). | 3 | Longer travel distances for transfer station users for bulky waste and segregated material disposal. | 4 | Longer travel distances for users of two inactive sites for disposal of all waste types. | 2 | Longer travel distances for users of one inactive site for disposal of all waste types and for transfer stations users for bulky waste and segregated material disposal only. | 3 | Longer travel distances for users of three inactive sites for disposal of all waste types. | 1 |
| **Consideration of potential impacts to the natural environment in terms of litter sprawl and illegal waste dumping.** | **Environmental Impact** | | | | | | | | | | |
| | Potential litter impacts to land from litter sprawl. | Potential for litter sprawl to impact land at four/three active WDS. | 1 | Potential for litter sprawl to impact land at two active WDS. | 2 | Potential for litter sprawl to impact land at two active WDS. | 2 | Potential for litter sprawl to impact land at one active WDS. | 4 | Potential for litter sprawl to impact land at one active WDS. | 4 |
| | Potential for illegal waste dumping. | Modest potential for illegal waste dumping following closure of W4 WDS. | 3 | No or limited additional potential for illegal waste dumping. | 4 | Potential for illegal waste dumping with no disposal services at two WDS. | 2 | Potential for illegal waste dumping with no disposal services at one WDS. | 3 | Potential for illegal waste dumping with no disposal services at three WDS. | 1 |
| **Consideration of challenges in attracting and retaining labour resources, dividing labour, equipment and cover material resources among waste disposal sites.** | **Operations and Maintenance Resources** | | | | | | | | | | |
| | Labour resources (i.e., site operators and attendants) – number of staff required, division of labour among WDS and number of person days/week required for operations staff. | Site operator(s) shared among four/three active WDS. Six person days/wk during the summer months and three person days/wk during the winter months (234 person days/yr). | 1 | Site operator(s) shared among two active WDS and two transfer stations. Four person days/wk during the summer months, two person days/wk winter months and allowance of 3 hr/wk for each transfer station (195 person days/yr). | 2 | Site operator(s) shared among two active WDS. Four person days/wk during the summer months and two person days/wk during the winter months (156 person days/yr). | 3 | Site operator(s) utilized at one active WDS and two transfer stations. Two person days/week during the summer months, one person day/wk during the winter months and allowance of 3 hrs/wk for each transfer station (117 person days/yr). | 4 | Site operator(s) utilized at one active WDS only. Three person days/wk during the summer months and two person days/wk during the winter months (130 person days/yr). | 3 |
| | | Four/three site attendants required at four/three active WDS. | 1 | Two site attendants required at two active WDS. | 2 | Two site attendants required at two active WDS.<br><br>(note: site operating hours doubled and/or increased staffing with the same hours). | 2 | One site attendant required at one active WDS. | 4 | One site attendant required at one active WDS<br><br>(note: site operating hours tripled and/or increased staffing with the same hours). | 3 |

# Waste Management Options Evaluation Matrix

| Evaluation Description | Evaluation Criteria | Evaluation Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Option 1 – Do Nothing (Four Operating WDS) | Option 1 Score | Option 2 – Two WDS and Two Transfer Stations | Option 2 Score | Option 3 – Two WDS and No Transfer Stations | Option 3 Score | Option 4 – One WDS and Two Transfer Stations | Option 4 Score | Option 5 – One WDS and No Transfer Stations | Option 5 Score |
| | Equipment resources divided among active WDS (note: operations equipment includes one dump truck and one backhoe). | Operations equipment shared among four/three active WDS. | 1 | Operations equipment shared among two active WDS and two transfer stations. | 2 | Operations equipment shared among two active WDS. | 3 | Operations equipment required at one active WDS and two transfer stations. | 3 | Operations equipment required at one active WDS only. | 4 |
| | Cover material needs. | Cover material required at four/three active WDS. | 1 | Cover material required at two active WDS. | 3 | Cover material required at two active WDS. | 3 | Cover material required at one active WDS only. | 4 | Cover material required at one active WDS only. | 4 |
| **Landfill site and transfer station cost considerations including capital costs, environmental monitoring and reporting costs, operations and maintenance costs, landfill interim and final closure costs.** | **Costs** | | | | | | | | | | |
| | Lifecycle costs | Total estimated lifecycle cost over 25 years - **$8,918,092** | 1 | Total estimated lifecycle cost over 25 years - **$8,460,092** | 2 | Total estimated lifecycle cost over 25 years - **$7,499,870** (note: site attendant costs doubled to reflect increased operating hours and/or increased staffing with the same hours). | 3 | Total estimated lifecycle cost over 25 years - **$6,363,397** | 4 | Total estimated lifecycle cost over 25 years - **$6,251,860** (note: site attendant costs tripled to reflect increased operating hours and/or increased staffing with the same hours; 50% increase in operator, equipment and third party contractor costs). | 4 |
| | **Scoring Total:** | **Option 1** | **12** | **Option 2** | **21** | **Option 3** | **20** | **Option 4** | **29** | **Option 5** | **24** |

Notes:

1. W4 = Ward 4 Landfill Site; WDS = Waste Disposal Site(s).
2. Summer months and winter months equate to 6 months for each.
3. Sites may be closed on an interim basis to allow future use of residual capacity.

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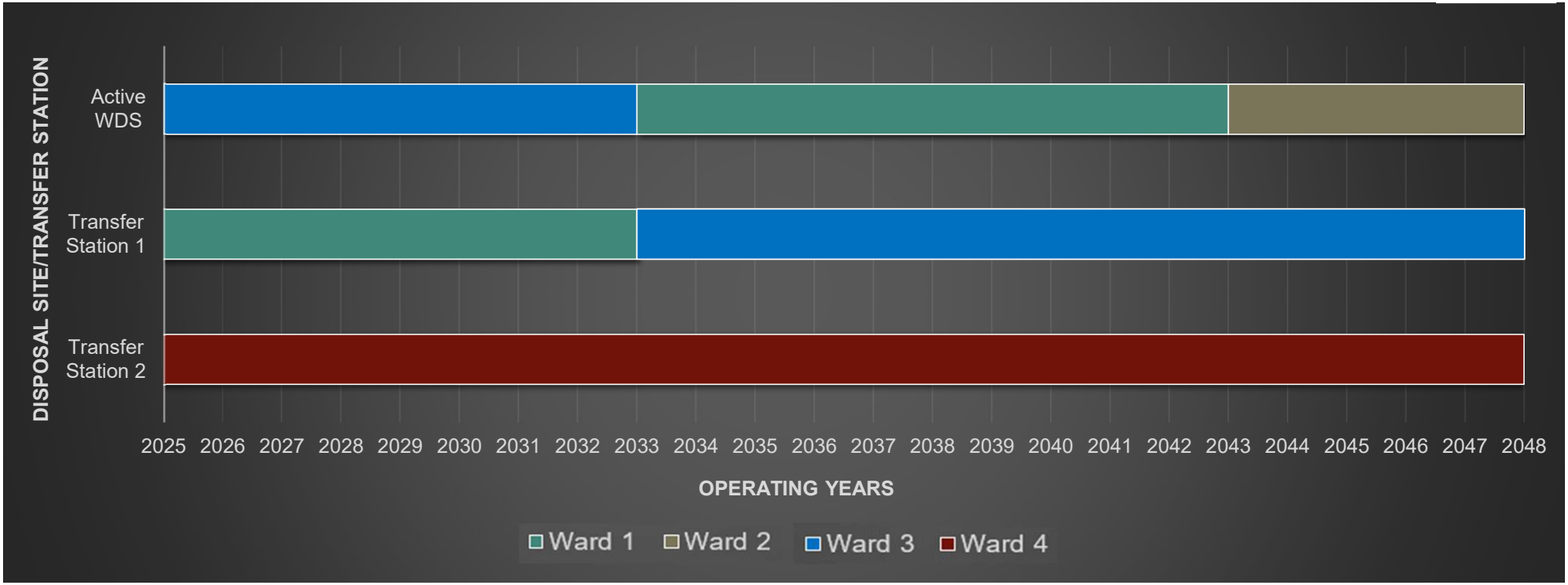
## Preliminary Preferred Waste Management Option

Based on the evaluation criteria scoring, the preliminary preferred waste management option is **Option 4 – One Waste Disposal Site and Two Transfer Stations**:

- More flexibility for users to dispose of weekly regular bagged household waste at three sites (one operating waste disposal site and two transfer stations).
- No impact to travel distances for users of three sites for weekly regular household waste disposal.
- Less impact to the natural environment with active waste disposal activities at one landfill site only.
- Improved overall site maintenance with only one active waste disposal site to manage.
- Improved litter sprawl mitigation and less waste disposal footprint air space consumed with waste collection vehicle compaction of transfer station waste.
- Less cover material required.
- Less need to attract and retain labour resources (i.e. site attendants).
- More labour and equipment resources available to be utilized elsewhere within the Municipality.
- Lower overall lifecycle cost with fewer labour resources.

# Option 4 Possible Operating Sequence




Notes:

1. First year for implementation of the Option is 2025.
2. Active WDS – Ward 3 until 2033, Ward 1 until 2043, Ward 2 for the remainder of the planning period.
3. Transfer Station 1 – Ward 1 until 2033, Ward 3 for the remainder of the planning period.
4. Transfer Station 2 – Ward 4 for the entirety of the planning period.
5. Timelines estimated based on theoretical waste volumes at each site and transition dates may change.

## Next Steps

- Review and document public and First Nation input received from Public Open House – December 2023.
- Incorporate public and First Nation input into the waste management options evaluation – December 2023.
- Update the evaluation and select the final preferred waste management option with Municipal staff – December 2023.
- Document the study process and summarize the study results in a report – January 2024.
- Issue Draft Report for Municipal review – January 2024.
- Incorporate Municipal comments and issue Final Report – January 2024.

MUNICIPALITY OF HURON SHORES

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# Thank you.

Please provide any questions/comments through Zoom or forward directly to tara.abernot@aecom.com and please remember to include your name, address and telephone number.

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# Appendix D

## Public and First Nations Consultation Comments Summary

**MUNICIPALITY OF HURON SHORES**
**LONG-TERM WASTE MANGEMENT PLAN**
**Public Information Session – December 6, 2023**

**Summary of Comments/Suggestions/Questions**

| Name | Comments/Suggestions/Questions | AECOM/Municipality Response |
|---|---|---|
| Chris Kirby | • Suggests that the two-waste site and two transfer station model (Option 2) be considered as the preferred option in order to minimize impacts to all users.<br>• The cost of an unattended transfer site may not offset the loss of that location for users. | AECOM:<br>Waste management Option 2 (two active WDS and two transfer stations) received the third highest score out of 5 options based on the evaluation criteria scoring as there were more significant environmental impacts, operations and maintenance resource impacts, and a higher estimated lifecycle cost compared to Option 4 (one active WDS and two transfer stations) and Option 5 (one active WDS and no transfer stations).<br><br>Preliminary preferred Option 4 includes a form of waste disposal at three of the four current waste disposal sites (i.e, either disposal of all waste types – active site or disposal of bagged household waste only – transfer stations) which limits convenience impacts for municipal residents. However, based on public input, an additional option, Option 6, has been added to the evaluation which includes one active waste disposal site and three transfer stations. This option ensures a form of waste disposal is available at all current waste disposal site locations to minimize convenience impacts for all users. Option 6 is also being considered as the final preferred waste management option. |
| Mark Pinskse,<br>Laird Signs | • Would an attendant still be required at transfer sites?<br>• What are the costs to decommission a site and is that required before a location becomes a transfer site?<br>• Could a transfer site be in another location or is it required to be at the old dump locations?<br>• What would be the best location for long-term use and environmentally best if there is only one active landfill site. | Municipality:<br>Site attendants will be required at least for the foreseeable future to enforce appropriate use of the transfer stations.<br><br>I can ask about the costs of decommissioning, I know they were quite high.<br><br>It is not required to use the site as a transfer station with the waste site somewhat left open – in that the bins are |

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| | | dumped at the site. The site is just not accessible for the general public. At this time there has not been a consideration of a different site for a transfer station though an interesting thought. Do you have an area(s) you would suggest?<br><br>In terms of best location if reduced to one site, I believe they would have to consider the site with the most longevity and room for additional capacity at this time. I can find out which those would be for you as well.<br><br>There is information online and all slides as laid out at the open house, have a look and please follow up with any feedback - https://huronshores.ca/residents/about-huron-shores/stayinformed/<br><br>AECOM:<br>As noted, there is a preference to staff the transfer sites at least initially to provide appropriate public education and ensure appropriate use of the sites.<br><br>It is recommended under the preliminary preferred waste management option (Option 4 – one active WDS and two transfer stations) that interim closure be implemented at any current waste disposal site that is being proposed as a transfer station rather than implementing final closure. This will allow the Municipality to resume waste disposal activities at a future date when an active site reaches capacity.<br><br>Interim closure costs can vary greatly depending on site size, site maintenance and environmental monitoring requirements. Interim closure costs generally include sourcing and placing interim cover over all current waste disposal areas, site maintenance and environmental monitoring and reporting.<br><br>Under the preliminary preferred option (Option 4), only one waste disposal site would be active at a time. Currently there is adequate combined residual capacity at the Municipality's four landfill sites to |

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| | | accommodate the municipal waste generated over the entire 25-year planning period. Once the active site reaches capacity, one of the other existing sites with remaining waste disposal capacity would be opened to receive waste.<br><br>Transfer station locations do not have to be limited to the current waste disposal site locations. Preferred transfer station locations would be at the Municipality's discretion. The existing waste disposal sites offer the following advantages:<br>• These sites are already licensed to accept waste and transitioning to a transfer station would be more cost effective relative to establishing a new site.<br>• Residents are already using these sites and changes could lead to concerns or debates on best locations.<br>• There will continue to be some maintenance/monitoring required at existing sites and hence fewer overall sites is preferred.<br><br>Based on public input an additional option, Option 6, has been added to the evaluation which includes one active waste disposal site and three transfer stations. This option ensures a form of waste disposal is available at all current waste disposal site locations to minimize convenience impacts for all users. Option 6 is also being considered as the final preferred waste management option. |
| Ray and Cindy Lipinski | • It is not clear if the transfer stations have recycling?<br>• Battery recycling is not obvious at Ward 4 dump.<br>• Where do we dispose of LED lights with mercury? We could advertise hazardous waste disposal activities (unless we have missed them). | Municipality:<br>Until 2026 the recycling will remain the same at the waste sites as it is now. In 2026 we are unsure as to the way recycling will be carried out and change across Ontario. It would make the most sense to keep recycling with the proposed transfer station/waste sites though we are unsure at this time. There is more information at the bottom of the Stay Informed page - www.huronshores.ca/stayinformed.<br><br>Ward 4 WDS accepts batteries, we will have to do more to make that known. |

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| | | There are hazardous waste days that we participate in through Blind River where we pay towards items being received at their waste site.<br><br>We just started a new program that receives lightbulbs at Red Rock (Ward 3) and Hwy. 129 (Ward 1), fluorescents, etc. |
| Tim Armstrong | • The pit at the Iron Bridge site was pushed back but the drive area was covered with a muck style topping and found most people couldn't back up to the pit without getting stuck, hence the garbage is dumped far from the pit . We need to get some pit run gravel that will support vehicles in the wet seasons.<br>• The unload area should be designed to put all the waste into a grinder and a machine should be used to flatten and manage the waste. All waste will be handled the same and no one can put it in the wrong area since burning is no longer allowed on most items.<br>• Ditching materials from the wards could be used to cover the waste on an ongoing basis and controlled by public works staff in an organized fashion. This would save costs in hiring outside machinery to dig holes and push back the waste weekly. The budgeting would change and may be costly to start the system but it would decrease use of costly engineering firms that offer suggestions but never any real answers to correct the issues.<br>• We need to stop looking to government guidelines for answers and start looking at things logically to create our own answers that the residents can afford. More regulations and tipping fees are just filling the back roads with more junk dumped in the bush with no policing unless someone complains about it and then nothing seems to get done about it leaving it up to the landowner to clean things up or it just stays there. | <u>Municipality:</u><br>Your comments and feedback are very much appreciated. We continue to work on best times and locations for the public to attend the various sessions. I am glad you took the time to write in despite the timing not being as convenient in this case. Thank you for your comments. I am going to forward your feedback to our Consultant (AECOM) for this long-term planning project. That being said, I do recognize your mention that the government guidelines can be a hinderance and certainly waste sites require a lot of environmental compliance. Despite this, you have a number of ideas here that could be reviewed by Public Works on a more local level for streamlining alongside this long-term planning.<br><br><u>AECOM:</u><br>Your comment related to the on-site road condition will be reviewed by Municipal operations staff and steps will be taken as appropriate to ensure an appropriate driving surface is maintained.<br><br>Waste shredding/grinding is an interesting idea and is typically undertaken as a preprocessing step with refuse derived fuels and is typically undertaken in an indoor environment.<br><br>Ditching materials are currently being used and will continue to be used for cover at the Huron Shores waste sites where available.<br><br>Illegal dumping can be challenging, and it is a combined responsibility to mitigate impacts. The Municipality is obligated to meet provincial regulatory requirements |

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| | | and consider guidelines in planning, designing and operating its landfill sites. |
| Bonnie and Gord Campbell | • Noted study left out of expanding this WDS to area set aside for expansion if EA undertaken at Ward 4.<br>• Noted study is listed to have non-domestic garbage hauled to Ward 3 WDS by ratepayer vs transfer site accumulating and hauling same to WDS. As an example, Ward 2 and 4 ratepayers would be hauling this at their cost while 3 and 1 ratepayers due to closer proximity would be at lower cost due to closer distance. Solution: everything from transfer sites [domestic and non-domestic garbage] to be hauled by transfer contractor and expense shared by all ratepayers to be fair. Failure to do this will result in a revolt of ratepayers in Ward 4. | <u>AECOM:</u><br>This study examines waste management options for the Municipality over the next 25 years. Currently there is adequate combined residual capacity at the Municipality's four landfill sites to accommodate the municipal waste generated over the entire planning period. As the Municipality approaches the collective capacity of its current sites they will need to explore waste disposal alternatives such as a site expansion. However, technology and waste disposal techniques and approaches can change over time and there may be new alternatives in future years.<br><br>Longer travel distances for site users for the disposal of all waste types was taken into consideration in the study options. Large bulky waste items (i.e, furniture, mattresses, etc.) and segregated items (i.e., metals, white goods, electronics, etc.) are typically brought to the landfill by users infrequently which was given less of a weighting for longer travel distances than users being required to haul regular bagged household waste on a weekly basis to a further landfill site.<br><br>Preliminary preferred Option 4 includes a form of waste disposal at three of the four current waste disposal sites (i.e, either disposal of all waste types – active site or disposal of bagged household waste only – transfer stations) which provides limited convenience impacts for municipal residents. However based on public input, an additional option, Option 6, has been added to the evaluation which includes one active waste disposal site and three transfer stations. This option ensures a form of waste disposal is available at all current waste disposal site locations to minimize convenience impacts for all users. Option 6 is being considered along side Option 4 as the final preferred waste management option. |

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| James Cada, Director of Operations<br>Mississauga First Nation | • Supportive of Option 4 (one active WDS and two transfer stations) as maintaining four landfill sites is costly.<br>• Believes an option of two transfer stations at existing sites and a transfer station at the active site could be considered. | AECOM:<br>Utilizing waste transfer bins at an active landfill site is beneficial for a number of reasons including waste compaction, litter sprawl mitigation, and convenience for site users to dispose of regular bagged household waste in bins. Preliminary preferred Option 4 (one active site and two transfer stations) does not include a transfer station at the proposed active site as maintaining a transfer station is costly and users still have the means of disposing of waste directly at the landfill working face.<br><br>The Municipality is currently piloting a transfer station at one of their active landfill sites and could consider utilizing waste transfer bins in the future with other active landfill site(s).<br><br>Based on public input an additional option, Option 6, has been added to the evaluation which includes one active waste disposal site and three transfer stations. This option ensures a form of waste disposal is available at all current waste disposal site locations to minimize convenience impacts for all users. Option 6 is also being considered as the final preferred waste management option. |