Draft Socio-Economic Environment Effects Assessment Report

Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment

WM Canada

Watford, Ontario

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Executive Summary

HDR Corporation was contracted by WM Canada (WM) to prepare this Draft Socio-Economic Environment Effects Assessment Report as part of the Twin Creeks Environmental Centre (TCEC) Landfill Optimization Project Environmental Assessment (EA). The EA is being carried out in accordance with the requirements of the *Ontario Environmental Assessment Act* (*OEAA*) and the EA Terms of Reference (ToR), which was approved by the Ministry of Environment, Conservation and Parks (MECP) on December 13, 2022. The Socio-Economic Environment considers: effects on the local community through changes in number of residents and residences, number and type of local businesses, nuisance effects (litter, dust, noise, odour, traffic, visual), use and enjoyment of property, level of satisfaction with living/working in the community, and confidence in TCEC operations; and economic effects on the local community through changes in employment at site, contributions to the host community, and opportunities for the provision and procurement of products and/or services.

The purpose of this Effects Assessment Report is to present the:

- potential environmental effects of the alternative methods on the Socio-Economic Environment;
- comparison of the net effects of each alternative method;
- selection of a preferred alternative;
- assessment of the environmental effects of the preferred alternative; and
- commitments and monitoring.

There are approximately 8 years of approved landfill airspace capacity remaining at the TCEC (i.e., capacity will be reached in approximately 2031). The proposed optimization would provide additional airspace of approximately 14 million cubic metres (m^3), which could extend the site life by approximately 12 years (from 2031 to 2043), and may be achieved through alternative landfill configurations (alternative methods) within the existing 301-hectare TCEC site area. No changes are proposed to the size of the TCEC site area, approved service area, or annual fill rate.

Three alternative methods for carrying out the optimization were developed to a preliminary conceptual design level in the Conceptual Design Report (CDR). Alternative Method 1 includes the increase of final landfill side slopes from 4H:1V to 3H:1V between the original grade and elevation 320 metres above sea level (masl), transitioning to a 20H:1V upper slope and peaking at elevation 324.5 masl within the Expansion Landfill footprint, to be developed in five stages. Alternative Method 2 includes the increase of final landfill side slopes from 4H:1V to 2.5H:1V between 250 masl and 310 masl, transitioning to a 20H:1V upper slope and peaking at elevation 319 masl within the Expansion Landfill footprint, to be developed in four stages.

Alternative Method 3 includes the increase of final landfill side slopes from 4H:1V to 2.5H:1V between 260 masl and 360 masl, peaking at elevation 360 masl within the Expansion Landfill footprint, to be developed in five stages.

There are no operational changes anticipated for the landfill optimization and the landfill will operate consistent with current conditions with the same annual tonnage limits. There is no proposed change to the effective catchment area for the facility, the origin-destination patterns of vehicles travelling to or from the TCEC (i.e., haul routes), or the maximum daily trips generated. Landfill-related traffic volumes are anticipated to remain the same as those for current operations.

WM employs a variety of proactive measures to minimize nuisance effects related to odour, litter, dust, noise, and birds on the surrounding environment, which are expected to continue at the TCEC until landfill closure.

The study areas for the Socio-Economic Environment are as follows:

- On-site Study Area: the existing TCEC;
- Social Off-site Study Area: the lands within the vicinity of the TCEC extending approximately 1 km out from the On-site Study Area and extended to include the village of Watford; and
- Economic Off-site Study Area: the Township of Warwick.

A net effects assessment was carried out for the three alternative methods following the methods outlined in the approved ToR incorporating the information contained in the CDR, and the Socio-Economic Environment Existing Conditions Report. The results of the net effects assessment were used in a comparative evaluation of the three alternative methods.

Alternative Method 2 is preferred over Alternative Methods 1 and 3 for the Social Environment. Alternative Method 2 will result in an overall lower visual combined effect value (CEV) than Alternative Methods 1 and 3, and minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.

There is no substantial difference between the alternative methods for the Economic Environment. Each alternative method will result in an additional 12 years of stable employment for 33 WM employees, host community payments of approximately $49M, continued contributions to community projects, an estimated $27M contributed to the local economy during operations, and generation of renewable natural gas (RNG) from the RNG Facility.

Overall, Alternative Method 2 is the Preferred Alternative as it will result in an overall lower visual combined effect value (CEV) than Alternative Methods 1 and 3, and minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.

The Preferred Alternative has the following advantages over the 'Do Nothing' Alternative:

- No changes to local businesses for an additional 12 years.
- 17 fewer 'high' effect visual receptors and 16 additional 'moderate' effect receptors.
- The continuation of 33 stable employment positions for an additional 12 years.
- Continued host community payments, which make up approximately 39% of the Township of Warwick's annual budget, for an additional 12 years, amounting to approximately $49M.
- Continued contributions to community projects for an additional 12 years.
- An estimated $27M in contributions to the local economy over 12 years.

Disadvantages of the Preferred Alternative include an increase in odour at discrete receptor locations, continued dust emissions, litter, noise, birds, and traffic during operations for an additional 12 years, minor changes to the use and enjoyment of property due to increased odour at recreational areas located south of the landfill, and minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.

The commitments associated with the Socio-Economic Environment relate to nuisance effects and are as follows:

- WM will continue to implement the odour Best Management Practices Plan (BMPP) to address odour emissions, the dust BMPP to address dust emissions, the litter BMPP to effectively control blowing litter, and bird control protocols.
- WM will continue to provide prompt attention to nuisance complaints to mitigate adverse effects to the surrounding community.

No monitoring is proposed for the Socio-Economic Environment.

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Acronyms, Units and Glossary

Acronyms

Acronym	Definition
ASR	Automobile Shredder Residue
BMPP	Best Management Practices Plan
CAGR	Compounded Annual Growth Rate
CDR	Conceptual Design Report
CEV	Combined Effect Value
D&O	Design and Operations
EA	Environmental Assessment
ECA	Environmental Compliance Approval
GHG	Greenhouse Gas
H	Horizontal
HDR	HDR Corporation
LFG	Landfill Gas
M	Million
MECP	Ministry of Environment, Conservation and Parks
OEAA	*Ontario Environmental Assessment Act*
POR	Point of Reception
PVP	Property Value Protection
R	Receptor
RNG	Renewable Natural Gas
SLEP	Sarnia-Lambton Economic Partnership
TCEC	Twin Creeks Environmental Centre
ToR	Terms of Reference
TRT	Technical Review Team
TSP	Total Suspended Particulate
V	Vertical
VACF	Visual Absorption Capacity Factor
WM	WM Canada
WPLC	Warwick Public Liaison Committee

Units

Unit	Definition
ha	hectare
km	kilometre
m	metre
m^2	square metres
m^3	cubic metres
masl	metres above sea level
mm	millimetre
Ou/m^3	odour units per cubic metre

Glossary

Term	Definition
Approval	Permission granted by an authorized individual or organization for an undertaking to proceed. This may be in the form of program approval, certificate of approval or provisional certificate of approval.
Capacity (Disposal Volume)	The total volume of air space available for disposal of waste at a landfill site for a particular design (typically in m^3); includes both waste and daily cover materials, but excludes the final cover.
Composting	The controlled microbial decomposition of organic matter, such as food and yard wastes, in the presence of oxygen, into finished compost (humus), a soil-like material. Humus can be used in vegetable and flower gardens, hedges, etc.
Composting facility	A facility designed to compost organic matter either in the presence of oxygen (aerobic) or absence of oxygen (anaerobic).
Environment	As defined by the Environmental Assessment Act, environment means: • air, land or water; • plant and animal life, including human life; • the social, economic and cultural conditions that influence the life of humans or a community; • any building, structure, machine or other device or thing made by humans; • any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities; or • any part or combination of the foregoing and the interrelationships between any two or more of them (ecosystem approach).
Environmental Assessment (EA)	A systematic planning process that is conducted in accordance with applicable laws or regulations aimed at assessing the effects of a proposed undertaking on the environment.
Expansion Landfill	The 75.4 ha approved landfill within the TCEC.
Evaluation criteria	Evaluation criteria are considerations or factors taken into account in assessing the advantages and disadvantages of various alternatives being considered.
Greenhouse gas (GHG)	Any of the gases whose absorption of solar radiation is responsible for the greenhouse effect, including carbon dioxide, methane, ozone, and the fluorocarbons.
Indicators	Indicators are specific characteristics of the evaluation criteria that can be measured or determined in some way, as opposed to the actual criteria, which are fairly general.

Glossary

Term	Definition
Landfill gas (LFG)	The gases produced from the wastes disposed in a landfill; the main constituents are typically carbon dioxide and methane, with small amounts of other organic and odour-causing compounds.
Landfill site	An approved engineered site/facility used for the final disposal of waste. Landfills are waste disposal sites where waste is spread in layers, compacted to the smallest practical volume, and typically covered by soil.
Leachate	Liquid that drains from solid waste in a landfill and which contains dissolved, suspended and/or microbial contaminants from the breakdown of this waste.
Mitigation	Measures taken to reduce adverse impacts on the environment.
Proponent	A person who: • carries out or proposes to carry out an undertaking; or • is the owner or person having charge, management or control of an undertaking.
Receptor	The person, plant or wildlife species that may be affected due to exposure to a contaminant.
Terms of Reference (ToR)	A terms of reference is a document that sets out detailed requirements for the preparation of an Environmental Assessment.
Undertaking	Is defined in the Environmental Assessment Act as follows: • An enterprise or activity or a proposal, plan or program in respect of an enterprise or activity by or on behalf of Her Majesty in right of Ontario, by a public body or public bodies or by a municipality or municipalities; • A major commercial or business enterprise or activity or a proposal, plan or program in respect of a major commercial or business enterprise or activity of a person or persons other than a person or persons referred to in clause (1) that is designated by the regulations; or • An enterprise or activity or a proposal, plan or program in respect of an enterprise or activity of a person or persons, other than a person or persons referred to in clause (a), if an agreement is entered into under section 3.0.1 in respect of the enterprise, activity, proposal, plan or program ("enterprise").
Waste	Refuse from places of human or animal habitation; unwanted materials left over from a manufacturing process.

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Contents

Tables

Figures

1 Introduction

HDR Corporation (HDR) was contracted by WM Canada (WM) to prepare this Draft Socio-Economic Environment Effects Assessment Report as part of the Twin Creeks Environmental Centre (TCEC) Landfill Optimization Project Environmental Assessment (EA). The EA is being carried out in accordance with the requirements of the *Ontario Environmental Assessment Act* (*OEAA*) and the EA Terms of Reference (ToR), which was approved by the Ministry of Environment, Conservation and Parks (MECP) on December 13, 2022.

The *OEAA* defines the environment in a broad, general sense that comprises physical, biological, and human considerations. In this EA, the environment has been separated broadly into the natural, socio-economic, cultural, and built aspects, with environmental components and evaluation criteria identified within each aspect as listed in **Table 1-1**, consistent with the approved ToR. The organization of the Effects Assessment Reports is also provided in **Table 1-1**.

Table 1-1. Environmental Aspects, Components, and Evaluation Criteria

Environmental Aspect	Environmental Component	Evaluation Criteria	Effects Assessment Reports
Natural Environment	Atmospheric Environment	• Air Quality – Dust • Air Quality – Landfill Gas and Combustion By-Products • Air Quality – Blowing Litter • Odour • Noise	• Air Quality
			• Noise
	Hydrogeology	• Groundwater Quality • Groundwater Quantity	• Hydrogeology
	Surface Water Environment	• Surface Water Quality • Surface Water Quantity	• Surface Water Quality
			• Surface Water Quantity
	Ecological Environment	• Terrestrial Ecosystems • Aquatic Ecosystems	• Ecological Environment
Socio-Economic Environment	Social Environment	• Human Health • Effects on Local Community	• Human Health
			• Socio-Economic Environment
	Economic Environment	• Economic Effects on Local Community	
	Visual Landscape	• Visual Impact of Facility	• Visual Landscape
Cultural Environment	Cultural Environment	• Cultural Heritage Resources • Archaeological Resources	• Cultural Heritage Resources
			• Archaeological Resources
Built Environment	Transportation	• Traffic Operations	• Transportation
	Current and Planned Future Land Use	• Effects on Current and Future Land Uses	• Land Use

The Socio-Economic Environment considers both the Social and Economic components of the environment. The purpose of this Effects Assessment Report is to present the potential environmental effects of the alternative methods on the Socio-Economic Environment, a comparison of the net effects of each alternative method, the selection of a preferred alternative, the assessment of the environmental effects of the preferred alternative, and commitments and monitoring. The effects of the Project on the Visual Landscape are assessed in a separate report.

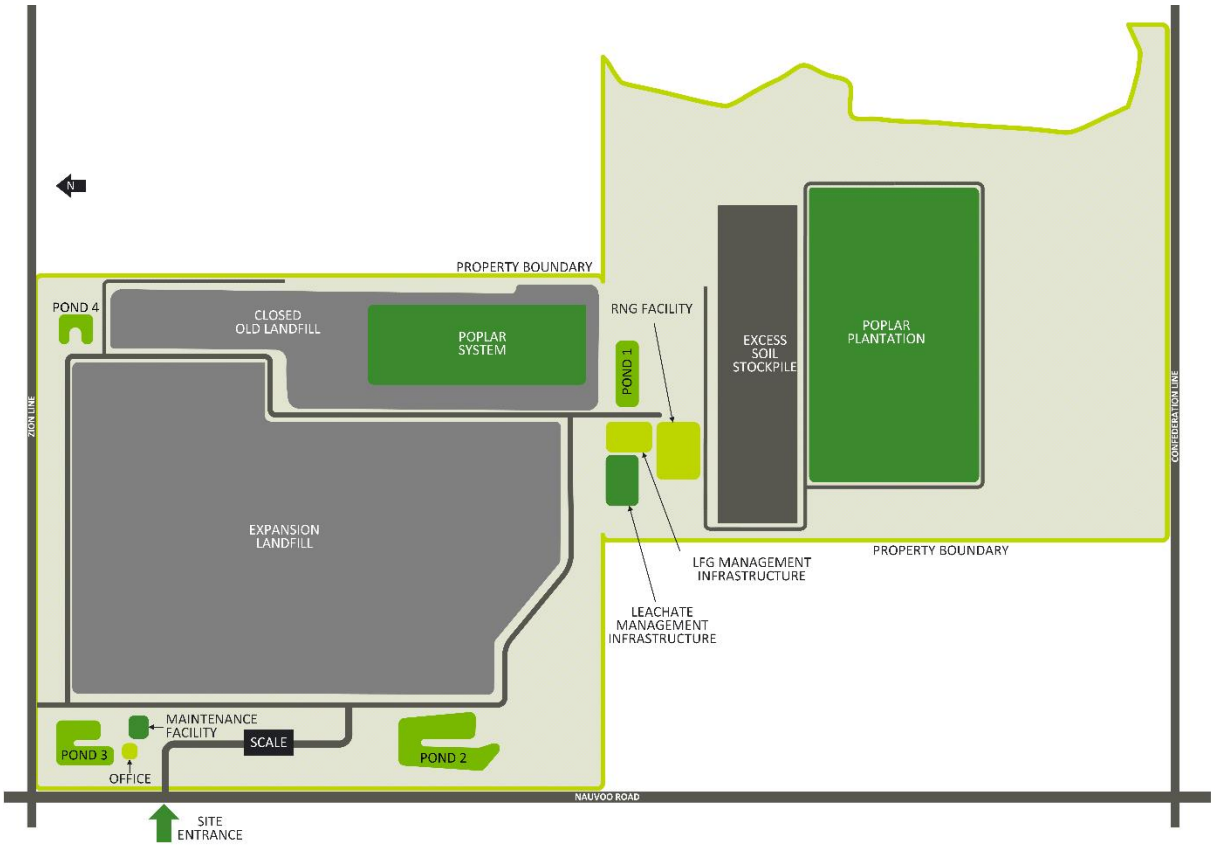
This Socio-Economic Environment Effects Assessment Report is one component of the EA. The EA Study Report will incorporate the information presented herein as appropriate, and this report will be included with the EA Study Report as a supporting document.

1.1 Project and Alternative Methods

There are approximately 8 years of approved landfill airspace capacity remaining at the TCEC (i.e., capacity will be reached in approximately 2031). The proposed landfill optimization would provide additional airspace of approximately 14 million cubic metres (m^3), which could extend the site life by approximately 12 years (from 2031 to 2043) and may be achieved through alternative landfill configurations (alternative methods) within the existing 301-hectare TCEC site area. No changes are proposed to the size of the TCEC site area, approved service area, haul route, or annual fill rate.

Three alternative methods for carrying out the landfill optimization were developed to a preliminary conceptual design level in the Conceptual Design Report (CDR) (WSP, 2024) and are described below as they are relevant to the Socio-Economic Environment. All three alternative methods involve vertical landfill expansions within the existing approved Expansion Landfill footprint shown on **Figure 1-1**.

Figure 1-1. Layout of the TCEC



1.1.1 Alternative Method 1

Alternative Method 1 includes the increase of final landfill side slopes from 4H:1V to 3H:1V between the original grade and elevation 320 metres above sea level (masl), transitioning to a 20H:1V upper slope and peaking at elevation 324.5 masl within the Expansion Landfill footprint. The proposed landfill expansion consists of five stages, shown in different colours on **Figure 1-2**. Each of these stages will be developed from west to east. Daily/interim cover will continue to be placed as part of the landfill operations as per current landfill operations.

The Expansion Landfill is fully engineered and has an approved peak elevation of 280 masl. Alternative Method 1 will provide an additional 14.3 million m^3 of landfill capacity within the existing approved waste disposal footprint area of the TCEC and will increase the maximum height of the landfill by 44.5 m, from 280 masl (the currently-approved elevation for the top of the Expansion Landfill) to 324.5 masl.

The TCEC is bounded to the north by Zion Line, to the east by the Twin Creeks Greenhouse and agricultural lands, to the south by lands owned by WM used for agricultural production and by Confederation Line, and to the west by Nauvoo Road. The setbacks from the Expansion Landfill footprint to the property boundaries are 101 m to the north, approximately 206 m to the east, 100 m to 256 m to the south, and 235 m to the west. Since Alternative Method 1 will not change the existing approved landfill limit of waste, the existing property boundaries and buffer width will remain the

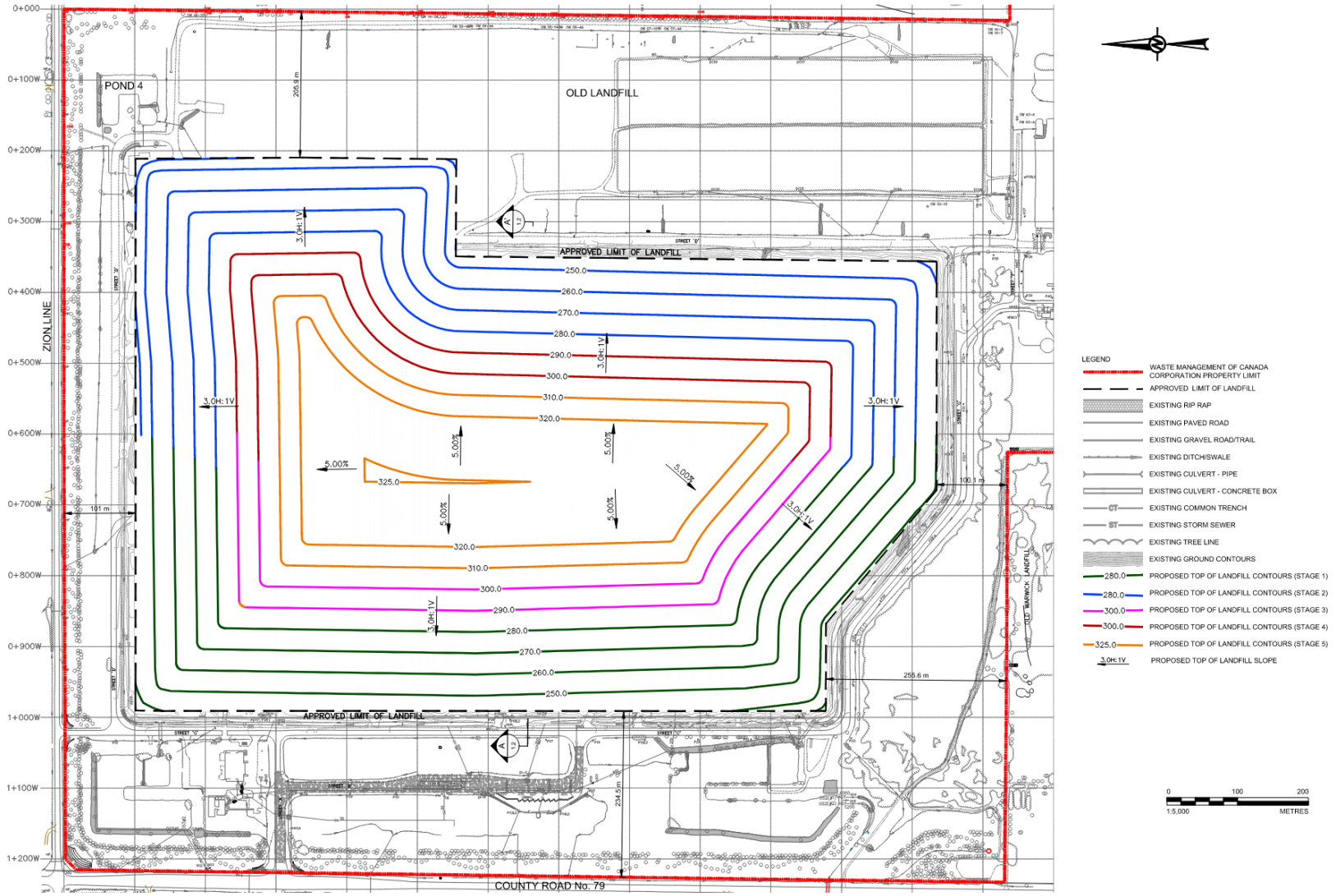
same after the vertical expansion. No changes to the existing visual screening berms located along the north and west perimeters of the TCEC are included in the design of the Alternative Method 1.

There are no operational changes anticipated for the landfill optimization and the landfill will operate consistent with current conditions with the same annual tonnage limits. There is no proposed change to the effective catchment area for the facility, the origin-destination patterns of vehicles travelling to or from the TCEC (i.e., haul routes), or the maximum daily trips generated. Landfill-related traffic volumes are anticipated to remain the same as those for current operations.

Waste receiving hours at the site are from 7:00 a.m. to 7:00 p.m. Monday to Saturday. On-site equipment used for daily operations can operate from 6:00 a.m. to 8:00 p.m. Monday to Saturday. No changes to the landfill operating hours are anticipated as a result of Alternative Method 1.

WM employs a variety of proactive measures to minimize nuisance effects related to odour, litter, dust, and noise on the surrounding environment. These established measures, detailed below, are expected to continue at the TCEC until landfill closure.

Figure 1-2. Alternative Method 1



Source: (WSP. 2024).

1.1.2 Alternative Method 2

Alternative Method 2 includes the increase of final landfill side slopes from 4H:1V to 2.5H:1V between 250 masl and 310 masl, transitioning to a 20H:1V upper slope and peaking at elevation 319 masl within the Expansion Landfill footprint. The proposed landfill expansion consists of four stages, shown in different colours on **Figure 1-3**. Each of these stages will be developed from west to east. Daily/interim cover will continue to be placed as part of the landfill operations as per current landfill operations.

The Expansion Landfill is fully engineered and has an approved peak elevation of 280 masl. Alternative Method 2 will provide an additional 14.3 million m^3 of landfill capacity within the existing approved waste disposal footprint area of the TCEC and will increase the maximum height of the landfill by 39 m, from 280 masl (the currently-approved elevation for the top of the Expansion Landfill) to 319 masl.

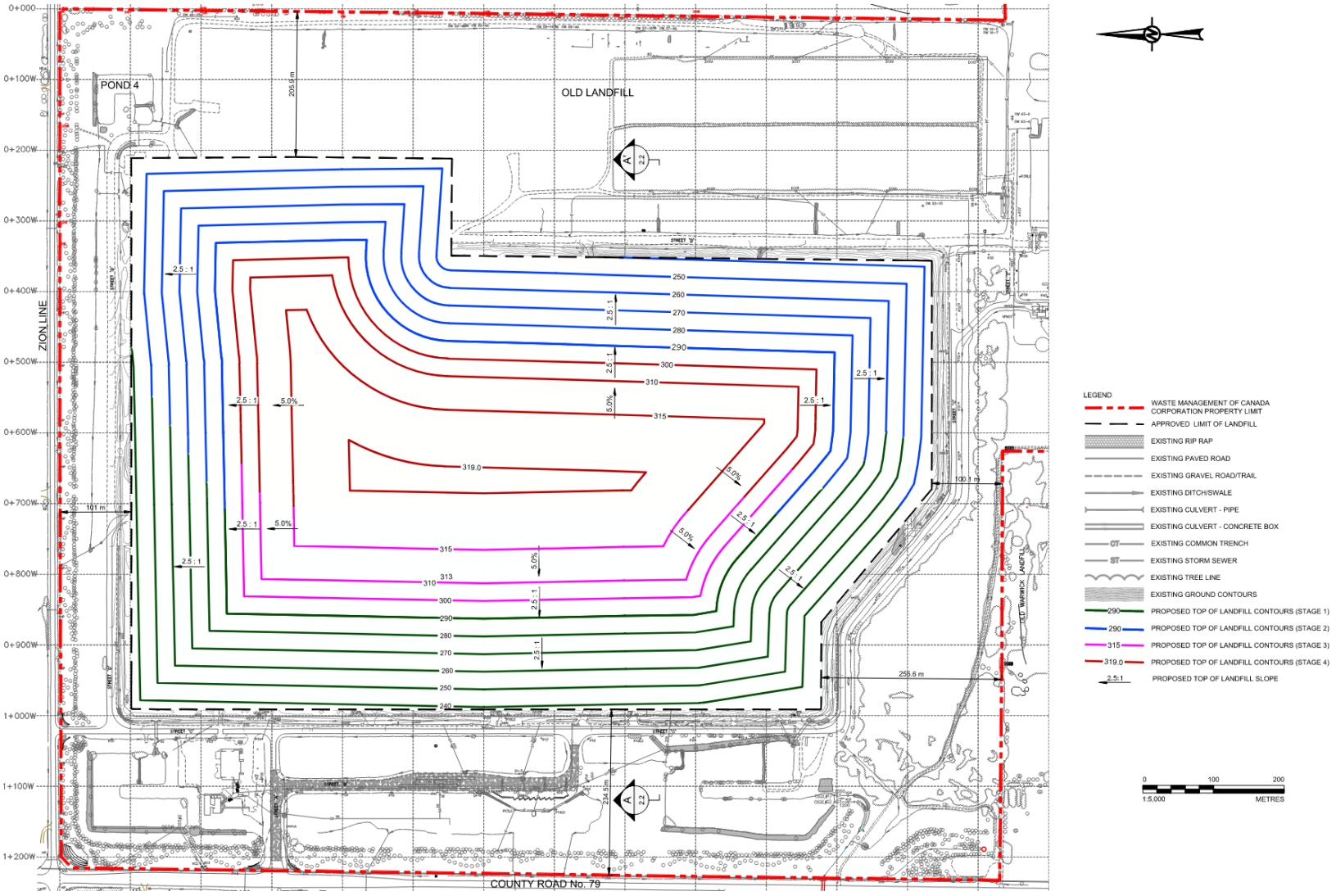
The setbacks from the Expansion Landfill footprint to the property boundaries are 101 m to the north, approximately 206 m to the east, 100 m to 256 m to the south, and 235 m to the west. Since Alternative Method 2 will not change the existing approved landfill limit of waste, the existing property boundaries and buffer width will remain the same after the vertical expansion. No changes to the existing visual screening berms located along the north and west perimeters of the TCEC are included in the design of the Alternative Method 2.

There are no operational changes anticipated for the landfill optimization and the landfill will operate consistent with current conditions with the same annual tonnage limits. There is no proposed change to the effective catchment area for the facility, the origin-destination patterns of vehicles travelling to or from the TCEC (i.e., haul routes), or the maximum daily trips generated. Landfill-related traffic volumes are anticipated to remain the same as those for current operations.

Waste receiving hours at the site are from 7:00 a.m. to 7:00 p.m. Monday to Saturday. On-site equipment used for daily operations can operate from 6:00 a.m. to 8:00 p.m. Monday to Saturday. No changes to the landfill operating hours are anticipated as a result of Alternative Method 2.

WM employs a variety of proactive measures to minimize nuisance effects related to odour, litter, dust, and noise on the surrounding environment. These established measures, detailed below, are expected to continue at the TCEC until landfill closure.

Figure 1-3. Alternative Method 2



Source: (WSP. 2024).

1.1.3 Alternative Method 3

Alternative Method 3 includes the increase of final landfill side slopes from 4H:1V to 2.5H:1V between 260 masl and 360 masl, peaking at elevation 360 masl within the Expansion Landfill footprint. The proposed landfill expansion consists of five stages, shown in different colours on **Figure 1-4**. Each of these stages will be developed from west to east. Daily/interim cover will continue to be placed as part of the landfill operations as per current landfill operations.

The Expansion Landfill is fully engineered and has an approved peak elevation of 280 masl. Alternative Method 3 will provide an additional 14.3 million m^3 of landfill capacity within the existing approved waste disposal footprint area of the TCEC and will increase the maximum height of the landfill by 80 m, from 280 masl (the currently-approved elevation for the top of the Expansion Landfill) to 360 masl.

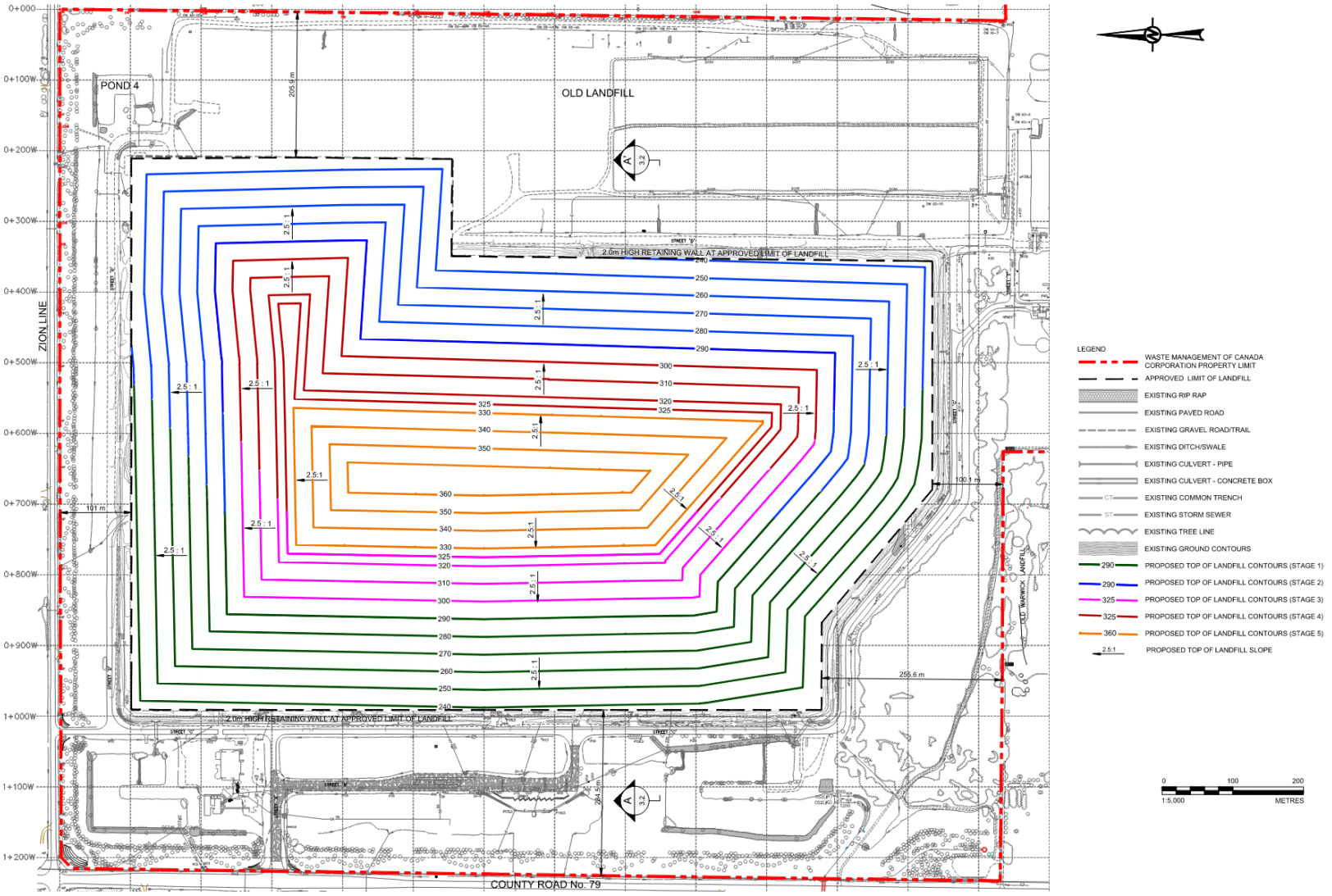
The setbacks from the Expansion Landfill footprint to the property boundaries are 101 m to the north, approximately 206 m to the east, 100 m to 256 m to the south, and 235 m to the west. Since Alternative Method 3 will not change the existing approved landfill limit of waste, the existing property boundaries and buffer width will remain the same after the vertical expansion. No changes to the existing visual screening berms located along the north and west perimeters of the TCEC are included in the design of the Alternative Method 3.

There are no operational changes anticipated for the landfill optimization and the landfill will operate consistent with current conditions with the same annual tonnage limits. There is no proposed change to the effective catchment area for the facility, the origin-destination patterns of vehicles travelling to or from the TCEC (i.e., haul routes), or the maximum daily trips generated. Landfill-related traffic volumes are anticipated to remain the same as those for current operations.

Waste receiving hours at the site are from 7:00 a.m. to 7:00 p.m. Monday to Saturday. On-site equipment used for daily operations can operate from 6:00 a.m. to 8:00 p.m. Monday to Saturday. No changes to the landfill operating hours are anticipated as a result of Alternative Method 3.

WM employs a variety of proactive measures to minimize nuisance effects related to odour, litter, dust, and noise on the surrounding environment. These established measures, detailed below, are expected to continue at the TCEC until landfill closure.

Figure 1-4. Alternative Method 3



Source: (WSP. 2024).

2 Effects Assessment Methods

Using the evaluation criteria, indicators, rationale and data sources from the approved ToR and the existing conditions from the Socio-Economic Environment Existing Conditions Report, the effects assessment is carried out as follows:

- predict the potential environmental effects for each alternative method (Section 2.1);
- identify the preferred alternative based on a comparative evaluation of the potential environmental effects of each alternative method (Section 2.2);
- conduct an effects assessment on the preferred alternative, including the identification of mitigation measures and monitoring programs (Section 2.3); and
- compare the effects of the preferred alternative to those of the 'do nothing' alternative (i.e., the Expansion Landfill as approved) (Section 2.4).

2.1 Predict Potential Environmental Effects for Alternative Methods

The potential environmental effects for each alternative method are identified within the study areas based on the application of the evaluation criteria, indicators and data sources in the approved ToR and based on the maximum allowable waste receipt level for the TCEC landfill. The potential effects can be positive or negative, direct or indirect, and short- or long-term. Mitigation measures are identified to minimize or mitigate the potential effects and then the net effects are evaluated taking into consideration the application of mitigation measures. The study areas, evaluation criteria, indicators, data source, and key design considerations and assumptions for the Socio-Economic Environment are provided below.

2.1.1 Study Areas

The TCEC landfill is located within the Township of Warwick, in the County of Lambton, approximately 1 km north of the Village of Watford. The TCEC is situated south of Highway 402 and southeast of the intersection of Nauvoo Road and Zion Line. The municipal street address of the TCEC is 5768 Nauvoo Road, Watford, Ontario. The area being considered for the landfill optimization is the approved Expansion Landfill footprint located within the northern portion of the 301 ha TCEC site.

The study areas include the existing TCEC site as well as the potentially-affected surrounding areas. The general On-site and Off-site Study Areas identified for the EA in the approved ToR are as follows:

- On-site Study Area: the existing TCEC;
- Off-site Study Area: the lands within the vicinity of the TCEC extending approximately 1 km out from the On-site Study Area.

For the Social Environment component of the Socio-Economic Environment effects assessment, the general Off-site Study Area has been modified and extended to include the village of Watford (**Figure 2-1**).

For the Economic Environment component of the Socio-Economic Environment effects assessment, the general Off-site Study Area has been modified and extended to include the Township of Warwick (**Figure 2-2**).

Figure 2-1. Study Areas for the Social Component of the Socio-Economic Environment

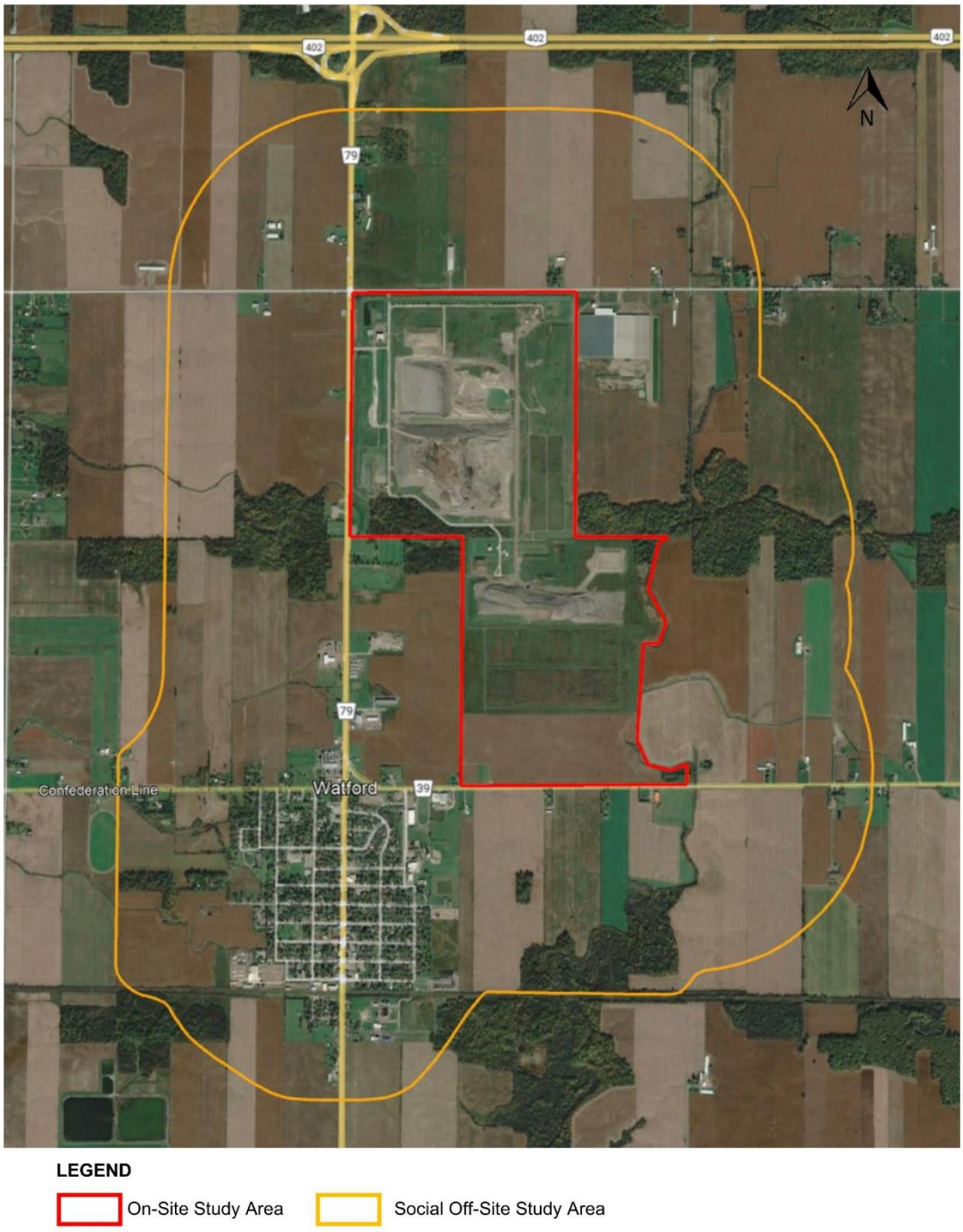
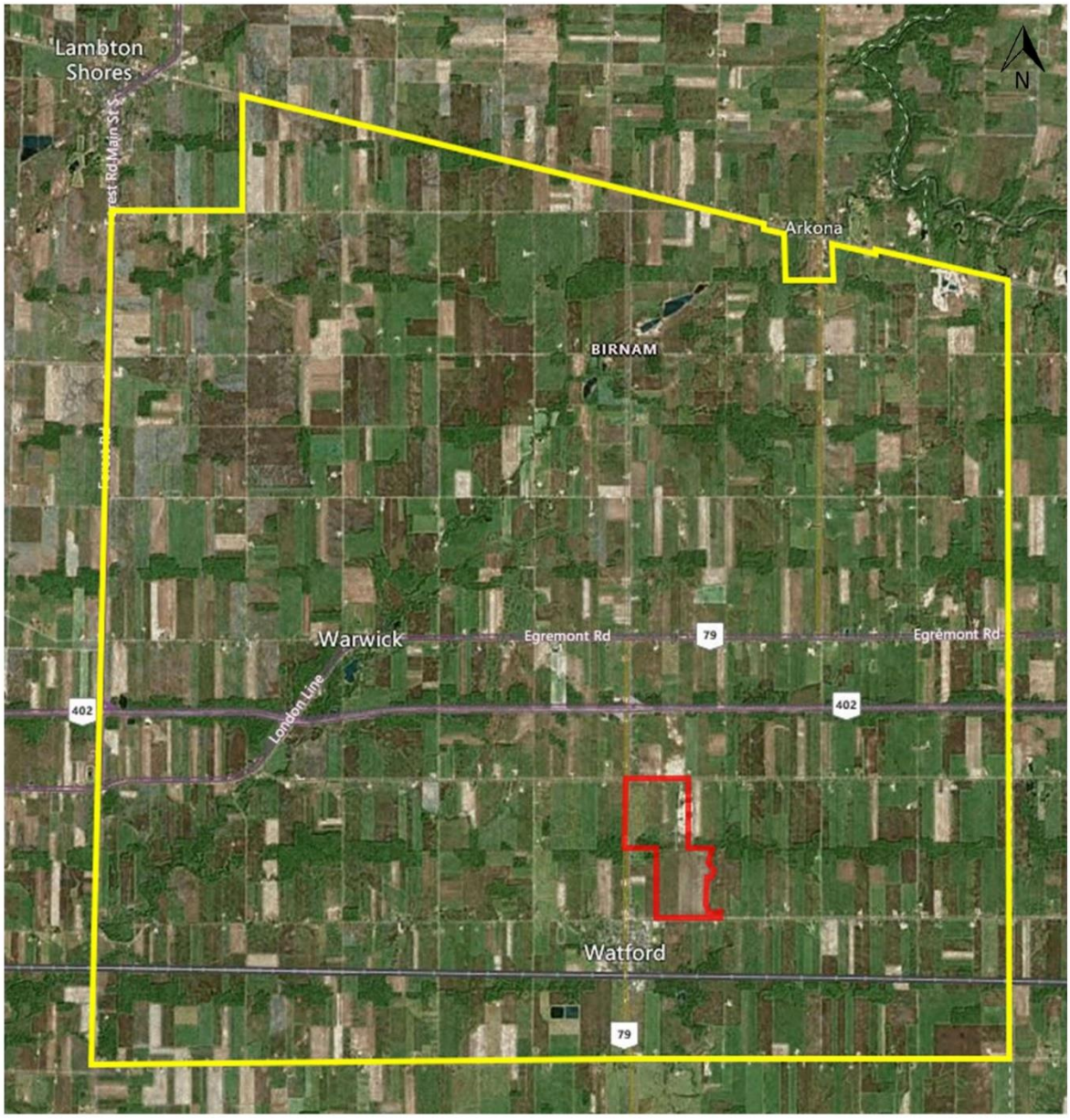


Figure 2-2. Study Areas for the Economic Component of the Socio-Economic Environment



2.1.2 Evaluation Criteria, Indicators, and Data Sources

The evaluation criteria, rationale, indicators, and data sources used for the Socio-Economic Environment as per the approved ToR are provided in **Table 2-2**.

Table 2-2. Evaluation Criteria, Indicators, and Data Sources for the Socio-Economic Environment

Evaluation Criteria	Rationale	Indicators	Data Sources
Social Environment			
Effects on Local Community	Waste disposal facilities can potentially affect local residents and businesses in the vicinity of the site.	• Number of residents and residences (e.g., receptors) • Number and type of local businesses • Nuisance effects (litter, dust, noise, odour, traffic, visual) • Predicted changes to use and enjoyment of property • Level of satisfaction with living/working in the community • Confidence in TCEC operations	• Mapping and field reconnaissance • Census information and municipal data for Village of Watford and Township of Warwick • Number and nature of nuisance complaints received related to the TCEC (e.g., odour, litter, noise, dust) • Community survey(s) • Proposed facility characteristics • Results of other discipline assessments
Economic Environment			
Economic Effects on Local Community	The continued operation of the landfill could have economic effects on and/or provide economic benefits to the local community.	• Employment at site (number, type, and duration) • Contributions to the host community • Opportunities for the provision and procurement of products and/or services	• Census and municipal data for Village of Watford and Township of Warwick • Municipal tax information / sources of municipal revenues • WM data on host community fee contributions • WM site employment data • WM data on types and values of goods and services procured • WM data on types and values of goods and services provided • Proposed facility characteristics • Results of other discipline assessments

2.1.3 Key Considerations and Assumptions

The key existing conditions elements, design considerations, and assumptions for the Socio-Economic Environment effects assessment are described below.

2.1.3.1 Key Elements of Existing Conditions

A brief summary of existing conditions as they relate to the criteria and indicators presented in **Table 2-2** is provided for context below. The existing conditions

information provided is extracted and summarized from the Socio-Economic Existing Conditions Report (HDR, 2024) unless otherwise stated.

Social Environment

The characterization of Existing Social conditions included the characterization of population and residences, local businesses, existing nuisance-related effects, use and enjoyment of property, level of satisfaction with living and working in the community, and confidence in TCEC operations.

Number of Residents and Residences

Watford has a population of 1,563 residents, which comprises approximately 43% of the population of the Township of Warwick (3,641 residents). Watford has experienced a minor population growth of 1.8% since 2016, while the Township of Warwick has experienced a minor population decline of 1.4% (Statistics Canada, 2023). There are no residences located within the On-site Study Area. Within the Social Off-site Study Area, there are 648 residences located within Watford and approximately 33 residences located outside of Watford. Three planned residential developments and other identified residential lands in Watford will allow for a population increase in the area.

Number and Type of Local Businesses

The Sarnia-Lambton Economic Partnership (SLEP) manages a list of businesses within Watford and the Township of Warwick in cooperation with the Township. The SLEP currently lists 87 businesses with an address in Watford and 9 businesses with an address in the Township of Warwick, for a total of 96 businesses. Based on the addresses in the SLEP database, one business (WM) is located within the On-site Study Area, 57 businesses are located within the Social Off-site Study Area, 34 businesses are located within the Township of Warwick outside of the Social Off-site Study Area within the Economic Off-site Study Area (the Township), and four (4) businesses are physically located outside of the Township.

A large industrial park, the Warwick Industrial Park, is planned to the west of the southern portion of the TCEC site, and the Township of Warwick Official Plan identifies currently vacant lands, including the Warwick Industrial Park, for commercial and industrial use to the north, south, and east of Watford. Together, the identified lands in Watford will allow for commercial and industrial growth in the area.

Nuisance Effects

Various nuisance-related effects are typically associated with landfills (e.g., odour, dust, litter, and noise) and mitigation measures are in place to address these issues at the TCEC. Based on the results of the Community Survey, residents are most concerned about odour (70%), and are least concerned about noise (28%). Based on the results of the Economic Survey, businesses are most concerned about odour, air quality, groundwater quality (40% each), and are least concerned about noise and dust (20% each).

From 2009 through the end of 2023 a total of 222 odour-related complaints were received. Sources of some complaints were the result of upset conditions (e.g., power outages, upgrades to the gas collection system), some were determined to not be landfill-related (e.g., wind direction not consistent with complaint location, observations of manure odours), and some were determined to be related to landfill operations. Landfill areas under interim and final cover and operations at the active face are the greatest contributors of odour under normal operations. WM has a Best Management Practices Plan (BMPP) for odour to address odour issues.

A total of 16 litter-related complaints were received from 2009 through the end of 2023. Generally, there are only a few litter complaints each year. In accordance with TCEC's wind-blown litter BMPP, WM responded immediately to each complaint and applied the necessary corrective action.

A total of 10 dust and track-out related complaints were received from 2009 through the end of 2023. Typically, no more than one complaint is received per year; however, there were 6 complaints received in 2021 when Automobile Shredder Residue (ASR) material was used as daily cover material. These dust-related complaints were associated with track out (roadway debris). WM implemented a new ASR material abatement plan to control ASR material track out in 2021 and the following year (2022) only received one complaint regarding track out, suggesting the abatement plan was successful in decreasing ASR material track out.

WM documents public complaints related to noise at the TCEC and a record of complaints is provided in the annual monitoring reports, which are posted on the TCEC website. Records show that there have not been any noise complaints for the TCEC since 2012.

Regarding traffic, the primary haul routes are to and from Highway 402, with approximately 80% of site truck traffic going north from the TCEC to access Highway 402 and the remainder of site traffic heading to the south towards Watford. The surrounding Off-site Study Area study intersections are currently operating within acceptable thresholds.

The topography throughout the Off-site Study Area is relatively flat and the landscape is predominantly rural, with the exception of the Village of Watford. There are several Significant Woodlands within the Off-site Study Area that obstruct views to the TCEC from the lands further east, west, and southeast. The site is visible from just south of the intersection of Hwy 402 and Nauvoo Road (County Road 79). Existing buildings do not afford a direct view of the TCEC from the Watford village centre.

The design of the existing TCEC incorporated visual impact mitigation measures, including berms and trees that have matured over time. The existing TCEC is framed on its west and north sides by 7 m and 6 m high earthen berms, respectively. The berms are vegetated with coniferous and deciduous trees that provide visual screening in addition to the height of the berms, effectively screening landfill operations from both Zion Line and Nauvoo Road. These vegetated berms are visually dominant within the local landscape but are planted with a variety of trees to make them aesthetically pleasing.

Use and Enjoyment of Property

There are various community amenities within the Social Off-site Study Area including elementary schools, churches, retirement homes, parks, trails, and a community centre. Based on the 136 responses received to the Community Survey conducted to characterize existing socio-economic conditions, the most used facilities in the Township of Warwick are the East Lambton Community Complex, and the baseball diamonds and running track at Centennial Park, and the least used facilities by the residents that responded to the survey are the horseshoe pits and BMX park at Centennial Park, Bluebird Parkette, and Nauvoo Park. Overall, survey respondents indicated that they do not use the Township's recreational facilities often.

Level of Satisfaction with Living/Working in the Community

A Community Survey and an Economic Survey were distributed to all residents and businesses, respectively, in the Township of Warwick in September 2023 to aid in the characterization of existing socio-economic conditions. A total of 136 responses were received to the Community Survey, and 6 responses were received to the Economic Survey. The survey results are documented in reports that are appended to the Socio-Economic Environment Existing Conditions Report.

Overall, residents are satisfied with living in the Township of Warwick and are likely to stay and retire within the Township, and recommend the Township to others as a place to live. Based on survey results, the likelihood of younger residents staying in the community will be dependent upon the availability of employment opportunities and housing in the area. Watford was the most common shopping location for residents in the Township according to the Community Survey. Businesses are somewhat satisfied with conducting business in the Township of Warwick. Based on survey results, satisfaction appears to be tied to proximity to home, access to surrounding cities, and low development charges.

Confidence in TCEC operations

As part of the Community Survey, residents were asked about their level of confidence in current landfill operations at the TCEC. Based on the results of the Community Survey, 30% of residents responded that they are confident or somewhat confident in current landfill operations, while 33% are neither confident nor unconfident, and 37% are somewhat unconfident or unconfident. A key reason for being confident or somewhat confident was knowledge of the landfill being tightly monitored by several agencies. Key reasons provided for being unconfident or somewhat unconfident included concern regarding the long-term ramifications on the residents of Watford, suggestion for more testing and monitoring and more communication, feelings that the landfill has a lack of benefit to the community, and concerns about environmental impacts and odour management.

Based on the results of the Economic Survey, 60% of businesses responded that they are confident in current landfill operations, while 20% are neither confident nor unconfident, and 20% are somewhat unconfident. Reasons provided for being somewhat unconfident included odour, birds, traffic, and low host community fees.

Economic Environment

The characterization of Existing Economic conditions included the characterization of labour force, host community contributions, and provision and procurement of goods and services.

Employment at Site

The TCEC provides economic benefits to the local community through primary and secondary employment and the future development will likely provide further work opportunities for the local community. The unemployment rates for Watford and the Township of Warwick increased from 2016 to 2021. These increased unemployment rates are likely resulting from the effects associated with COVID-19 starting in 2020. The local unemployment rates are higher than that for Ontario.

The proximity of Watford and the Township of Warwick to major employment centres such as Sarnia and London makes it relatively easy for residents in the Township to commute to other locations for work. According to the 2021 Census, 67% of employed residents in Watford commute outside of the Township of Warwick for work, while 72% of employed residents in the Township do the same.

The top three industry sectors in the Township of Warwick are: 1) agriculture, forestry, fishing and hunting; 2) construction; and 3) manufacturing; providing 40.9% of the total employment. Waste management is included within the administrative and support, waste management and remediation services industry, which comprises approximately 1.8% of employment within the Township. The top three industry sectors in Watford are: 1) construction; 2) manufacturing; and 3) health care and social assistance; providing 35.5% of the total employment. Administrative and support, waste management and remediation services industry comprise approximately 1.4% of employment within Watford.

According to the 2021 Census, 26.8% of the labour force in Watford works in trades, transport and equipment operators and related occupations, followed by sales and service occupations at 24.6%. Based on information available from the Sarnia-Lambton Economic Partnership, the top three major employers in Watford, with 100+ employees each, are McCann Redi-Mix, Watford Roof Truss Limited, and Schouten (an excavation, demolition, and abatement company). The TCEC is not a significant source of employment in the Off-site Study Area due to the scale of its operations and its proximity of the Township of Warwick to other major urban centres. The TCEC provides stable employment for 33 staff, the majority of which are equipment operators.

Contributions to the Host Community

WM entered into a Host Community Agreement with the Township of Warwick, which helps alleviate tax burdens to local residents, reduces the Township's reliance on residential tax assessment, and offsets net increases in the Township's operating costs associated with residential development. From 2009 through the end of 2023, WM has contributed over $36.9M in host community fees to the Township. The

Community Survey and Economic Survey contained questions regarding WM's host community fee contributions. The majority of respondents indicated that they are aware that WM pays host community fees to the Township; however, less than 20% were aware of the amount of the fees.

Municipal taxes levied on the TCEC form a portion of the tax base for the Township of Warwick, thus alleviating tax burden on the local residents and reducing the Township's reliance on residential tax assessment. Through annual host community payments, WM has contributed, on average, approximately 39% of the Township of Warwick's total annual revenue.

Over the past 10 years, WM has provided additional support for community projects such as walking trails, soccer fields, arena upgrades, dog park, yard waste and recycling depots, and local festivals and events. From 2009 through the end of 2023, WM has contributed over $800,000 to important projects across the County of Lambton.

Provision and Procurement of Products and/or Services

WM endeavours to utilize local businesses and services in support of its operation to the extent possible. WM relies on a variety of vendors to maintain its operations at the TCEC, contributing between approximately $1.7M and $10.8M annually (2019-2023) to the local economy (Watford and Township of Warwick) through the procurement of local goods and services.

2.1.3.2 Key Design Considerations

The alternative methods for carrying out the landfill optimization are described in detail in the CDR (WSP, 2024). The key design considerations as they relate to the Socio-Economic Environment are provided below. Key design considerations for the Socio-Economic Environment include construction or operation activities that could affect the local community from an economic or social perspective or the visual character of the landscape.

The construction and operation of Alternative Methods 1, 2, and 3 will take place within the existing Expansion Landfill footprint at the TCEC site. All three alternative methods will continue to use established operating procedures currently in place at the TCEC (e.g., operating hours, nuisance control measures, etc.). There are no operational changes anticipated to result from the landfill optimization and it will operate consistent with current conditions with the same 1.4 million tonnes annual fill rate. Landfilling of waste will continue to occur in phases.

Waste receiving hours at the site are from 7:00 a.m. to 7:00 p.m. Monday to Saturday. On-site equipment used for daily operations can operate from 6:00 a.m. to 8:00 p.m. Monday to Saturday. No changes to the landfill operating hours are anticipated as a result of the landfill optimization.

The type and number of landfill equipment used at the Expansion Landfill will continue to be used for the landfill optimization. The landfill optimization is not expected to increase its average daily tonnage received; therefore, traffic conditions are expected

to remain the same as they are today. There is no proposed change to the effective catchment area for the facility, the origin-destination patterns of vehicles travelling to or from the TCEC, or the maximum daily trips generated. Accordingly, there should be little to no impact to the surrounding road network or along the haul routes within the greater context. Traffic related to landfill construction is not anticipated (e.g., landfill cell preparation in advance of waste placement) as the landfill liner will be fully constructed prior to vertical expansion of the landfill.

WM employs a variety of proactive measures to minimize nuisance effects related to odour, litter, dust, noise, and visual effects on the surrounding environment. These established measures, detailed below, are expected to continue at the TCEC until landfill closure.

Odour Control

Odour has been managed at the site in accordance with the odour BMPP. This BMPP will be applicable for any of the alternative methods.

Walkabout surveys are completed in the spring and the early fall to identify landfill cap integrity and the results, including any remedial actions are noted in the site odour log. Routine visual inspections of the landfill cap integrity occur monthly to identify possible problem areas. In addition, during the site survey and during regular inspection periods, detectable odours from the site are recorded including a description of the odour, time of day (to correspond with wind conditions) and if possible, an indication of the main sources contributing to the odour.

The odour control measures relate largely to on-going monitoring and maintenance identified in the BMPP; however, there are a number of specific measures including the following:

- Progressively expand and activate the landfill gas collection and flaring system (two installed and two flares proposed) to minimize the amount of odourous landfill gas that escapes through the mound. The systems should be constructed in a manner to ensure that a minimum of 70% collection efficiency is achieved on a regular basis.
- Regular repairs to the covered landfill areas (existing and future landfill areas) based on identifying any fissures, cracks or erosion of the soil cover that would allow for unmitigated landfill gas to escape directly to the atmosphere. These areas will be identified in the “walkabout” survey as described above. The areas requiring repair should be covered with clay, compacted, and then covered with topsoil.
- Routinely monitor the size of the active working face of the landfill. The size of the working face will be minimized, accounting for traffic at the working face.
- Regular inspection and monitoring of temperature and moisture of the compost windrows. If waste from the diversion area becomes unacceptable for composting or overly odourous, the material should be removed from this area and landfilled.
- Cap completed cells as quickly as possible with final cover to minimize odourous emissions.

Litter Management

WM has a BMPP for litter that is implemented at the site and will be in effect for each alternative method. Litter has been retrieved from the external access roads, on site, adjacent properties, and on more remote properties, if required. WM personnel (waste hauler drivers) are instructed to stop and retrieve any litter observed along the access route. On-site litter is controlled by the use of good operating practices such as prompt compaction of loose waste at the active face, daily cover application, interim cover (300 mm) of areas sitting dormant, final capping and vegetation of completed portions of the landfill, gull control, landfilling at a lower elevation during high wind events, high litter barrier fence on the downgradient side of high winds, moveable litter barriers near the active face that can be moved to the downwind side of the compaction and landfilling operation, prompt retrieval of blown litter both off and on site, and tree plantings on property lines to catch any loose litter before it reaches neighbouring properties.

A series of portable litter barriers is used to shield the downwind side of the active face from escaping litter. These barriers are skid-mounted and can be towed into place. Labourers are engaged to pick litter regularly, both on and off WM property.

Dust Control

WM has a BMPP for dust that is implemented at the site and will be in effect for each alternative method. The intent of the mitigation measures and the dust BMPP is to limit the number of total solid particles (TSP) exceedances during the periods of heavy construction and beyond.

Currently, particulate emission mitigation measures are in place at the TCEC and consist of watering on-site roadways and construction sites as well as a number of other practices as outlined in the dust BMPP. The practices do not occur if precipitation events cause these activities to become redundant or if the ground is sufficiently wet from previous precipitation events.

As part of the dust control strategy, the shift supervisor is responsible to see that a record of roadway sweeping and watering is maintained. The control measure will be initiated whenever a visible plume behind vehicles is longer than ¼ the length of the vehicle. Logs will be kept on-site.

Noise Control

As outlined in the 2008 Design and Operations (D&O) Report, all landfill perimeter berms, road berms, and fills have been constructed to provide visual barriers, noise barriers, and dust barriers along the landfill and TCEC perimeter. The operational berms have significantly reduced noise from the facility. Additionally, in accordance with the Noise Impact Assessment conducted in 2007, the operation of the dozer(s) for applying daily cover in the evening or removing it in the morning outside of daytime hours has been restricted.

The TCEC has a Noise Management Plan (NMP) to mitigate noise from operations. Monitoring of the facility noise levels are completed quarterly at four (4) monitoring sites around the perimeter of the TCEC.

The following acoustic devices has been used for bird management at the TCEC:

- Whistling and/or Pyrotechnic Pistol Cartridges;
- Shots fired from a starter pistol or other type of gun;
- Propane canons (“bird bangers”); and
- Electronic distress calls.

The above devices produce impulsive noise which is less than the MECP Landfill sound level limit of 70 dBAI, for all receptors, regardless of the position of firing within the TCEC.

Traffic Management

It is assumed that the TCEC will continue to operate as it does today with no changes to traffic generated or the origins and destinations of site traffic. There may be general background growth associated with traffic passing through the Off-site Study Area, or growth associated with nearby developments. The daily, seasonal, and hourly vehicle arrival patterns will remain unchanged.

No changes to the approved service area, annual fill rate, haul routes, origins/destinations of site traffic, employee traffic volumes, or operational hours are anticipated from the Project.

No changes or alternatives are being proposed for the current haul route as part of the landfill optimization. Intersections at the interchanges with Kerwood Road and Forest Road were not included since facility-related traffic traveling through these interchanges will be free-flow and will not exit or enter Highway 402 via the interchanges.

Unrelated to the Project, there are planned improvements to the intersection of Nauvoo Road and Confederation Road as part of the Township of Warwick and County of Lambton works, which will provide exclusive left-turn lanes for all approaches and will remove the westbound right-turn channelization. There will be no other changes to the existing driveway or surrounding road network within the Off-site Study Area.

Visual Impact Management

As outlined in the 2008 D&O Report, all landfill perimeter berms, road berms, and fills have been constructed to provide visual barriers along the landfill and TCEC perimeter. The design of the existing TCEC incorporated visual impact mitigation measures, including berms and plantings that have matured over time. The existing TCEC is framed on its west and north sides by 7 m and 6 m high berms, respectively, that are vegetated with coniferous and deciduous trees, effectively screening the landfill operation from both Zion Line and Nauvoo Road. These vegetated berms are visually dominant within the local landscape but are aesthetically pleasing.

The existing vegetated screening berms are not proposed to be altered; however, the existing trees will continue to grow and will increase in height.

A Property Value Protection (PVP) plan is provided by WM to ensure that impacted property owners will not suffer financially from the Expansion Landfill. Eligible properties, both residential and non-residential, were those that were within the predicted significant visual impact zone in any year of the Expansion Landfill operation.

Key components of WM's PVP include:

- Eligible owners have the option of accessing PVP when they want to sell their property.
- The fair market value of the subject property will be determined based on a comparable property not located beside a landfill site.
- An appraisal will be conducted at WM's expense. If a disagreement occurs, a second appraisal will be conducted, and the average taken of the two.
- The subject property will be put up for sale for a period of 12 months.
- WM will have the option to buy the property at fair market value or to 'top up' the difference between the highest offer received and the identified fair market value.
- Only current property owners are eligible to access PVP. Subsequent owners, who have purchased property at market value considering the presence of the expanded landfill, are not eligible for the PVP.

2.1.3.3 Key Assumptions

The following key assumptions are used in the Socio-Economic effects assessment:

- No additional employment positions will be created as a result of the future development beyond the current number of positions.
- The TCEC will continue to require goods and services from local businesses and provide services as required for operations.
- Host fees will continue at current rates.

2.2 Comparative Evaluation and Identification of the Preferred Alternative

The three alternative methods are comparatively assessed and evaluated using the criteria and indicators to determine the preferred alternative. The differences in the potential environmental effects remaining following the implementation of potential mitigation/management measures (i.e., net effects) are used to identify and compare each alternative method.

The net environmental effects are used to compare the three alternative methods to one another at the criteria and indicator level for each discipline. The following two step methodology was applied to carry out the comparative evaluation for the Socio-Economic Environment:

1. Identify the predicted net effect(s) associated with each alternative method for each indicator and assign a preference rating (i.e., Preferred, Not Preferred, No Substantial Difference); and
2. Rate each alternative method at the criteria level (i.e., Preferred, Not Preferred, No Substantial Difference) based on the identified preference rating for each indicator and provide a rationale.

2.3 Effects Assessment of the Preferred Alternative

An assessment of the environmental effects of the Preferred Alternative is carried out considering the same criteria, indicators, and data sources specified in **Table 2-2**, considering potential mitigation/management measures and cumulative effects. The effects assessment of the Preferred Alternative will be compiled and presented in the EA Study Report.

2.4 Comparison of the Preferred Alternative against the 'Do Nothing' Alternative

The effects of the Preferred Alternative are compared against the predicted effects of the currently approved Expansion Landfill based on similar environmental criteria and indicators, with the understanding that the criteria and indicators used in the current effects assessment may differ from those used for the effects assessment of the Expansion Landfill. The effects are compared against each other in terms of magnitude, extent, and duration. The advantages and disadvantages of the Preferred Alternative compared to the 'Do Nothing' Alternative are identified. The comparison of the effects of the Preferred Alternative against the 'Do Nothing' Alternative will be compiled and presented in the EA Study Report.

3 Net Effects Assessment

To identify the potential effects of the Project on the Socio-Economic Environment, the conceptual design of each alternative method for the landfill optimization is examined to determine if it will have an effect on:

- the local community through changes in number of residents and residences (e.g., receptors), number and type of local businesses, nuisance effects (litter, dust, noise, odour, traffic, visual), predicted changes to use and enjoyment of property, level of satisfaction with living/working in the community, and confidence in TCEC operations; and
- local community economics through changes in employment at site (number, type, and duration), contributions to the host community, and opportunities for the provision and procurement of products and/or services.

The results of the net effects assessment for each alternative method are provided in Sections 3.2 through 3.4, below.

3.1 Future Baseline Conditions

The future baseline conditions are those that will exist when the Project begins in approximately 2031. The future baseline conditions for each of the evaluation criteria and indicators listed in **Table 2-2** are described below.

3.1.1 Social Environment

The future baseline conditions for the social environment are described below.

3.1.1.1 Effects on Local Community

Number of Residents and Residences

As presented in Section 2.1.3.1, Watford has a population of 1,563 residents and has experienced a minor population growth of 1.8% since 2016. There are currently 648 residences located within Watford and approximately 33 residences located outside of Watford within the Social Off-site Study Area (**Figure 3-1**).

Three planned residential developments in Watford will allow for a population increase in the area, which has not been experienced in at least two decades. The planned developments, shown on **Figure 3-2**, include:

1. Ontario Street Subdivision (Final Approved Plan – File #38T-20002), consisting of nineteen (19) lots for single-detached dwellings;
2. Watford Quality Care (Final Approved Plan – Plan 655), consisting of thirty-three (33) lots for single-detached dwellings; and
3. Castell Homes Subdivision (Draft Plan Approved – File #38T-21001) proposing fifty (50) lots for single and semi-detached dwellings.

Assuming these planned developments are constructed by 2031, this would add 102 additional households to the Social Off-site Study Area for a total of 750 households under future baseline conditions. Based on the average household size of 2.4 persons per household (Statistics Canada, 2023), these developments would bring an additional 245 people to the Social Off-site Study Area, resulting in an overall population of 1,808 people in Watford.

Figure 3-1. Residences Located Outside of Watford within the Social Off-site Study Area

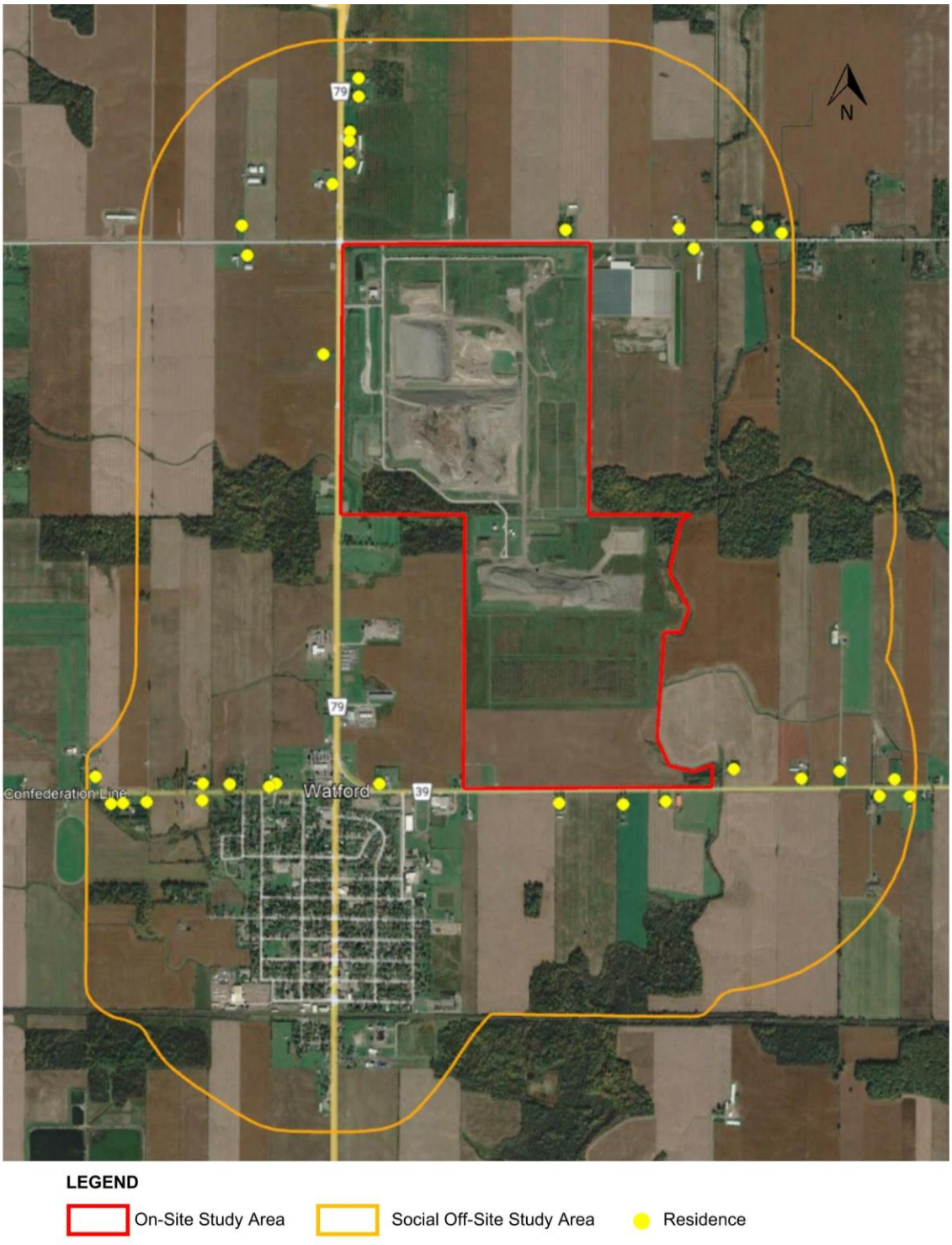
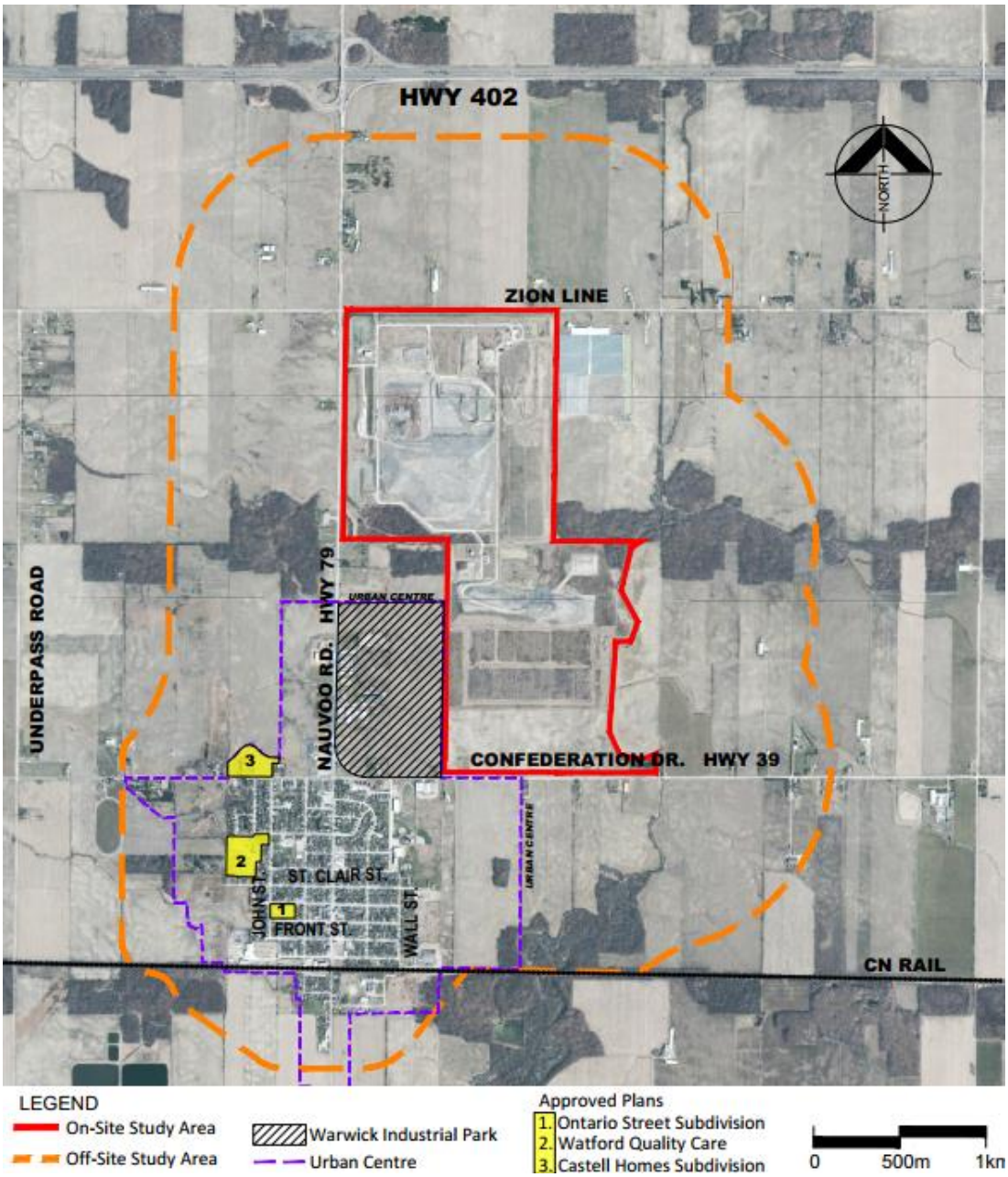


Figure 3-2. Planned Residential Developments within the Social Off-site Study Area



Source: MBPC, 2024.

Number and Type of Local Businesses

As summarized in Section 2.1.3.1, the SLEP currently lists 87 businesses with an address in Watford and 9 businesses with an address in the Township of Warwick, for a total of 96 businesses. Based on the addresses in the SLEP database, one business (WM) is located within the On-site Study Area and 57 businesses are located within the Social Off-site Study Area.

A large industrial park, the Warwick Industrial Park, is planned to the west of the southern portion of the TCEC site within the Social Off-site Study Area (**Figure 3-2**),

and currently vacant lands are identified for commercial and industrial use to the north, south, and east of Watford. Given that no development plans have been submitted for the Watford Industrial Park or the vacant commercial and industrial lands at this time, and a 30.35 ha section of the Warwick Industrial Park lands are listed for sale, it is assumed for the purposes of this effects assessment that no additional industrial development will occur within the Social Off-site Study Area before the Project begins in 2031.

Nuisance Effects

Nuisance effects from the Expansion Landfill under future baseline conditions can include disturbance from noise, dust, odour, litter, traffic, and changes to the visual landscape. The assessment of nuisance effects for future baseline conditions is provided below by type of effect.

Information regarding future baseline conditions was sourced from the following reports:

- Odour, litter, and dust: Air Quality Effects Assessment Report (RWDI, 2024a).
- Noise: Noise Effects Assessment Report (RWDI, 2024b).
- Traffic: Transportation Effects Assessment Report (HDR, 2024).
- Visual impact: Visual Landscape Effects Assessment Report (Schollen, 2024).

Odour

Odour associated with landfill operations has the potential for nuisance effects at sensitive off-site receptors. Sources of odour from landfill operations considered in the future baseline assessment are:

- Landfill gas and waste odours from the landfill and waste acceptance activities: active face, interim cover areas;
- Leachate odours from the leachate collection, storage, and treatment system; and
- Hydrocarbon odours from contaminated soils.

According to the Community Survey, 69% of respondents were very concerned about odour from landfill operations at the TCEC.

Odour was assessed at identified odour sensitive receptors using dispersion modelling in odour units per cubic metre (OU/m^3). Odour does not have any applicable standards or guidelines; however, MECP guidance indicates that odour concentrations that are greater than 1 OU/m^3 are considered acceptable at sensitive receptor locations, as long as the frequency of exceedance is less than 0.5% of the time.

An odour unit is defined as the quantity of odourous substance that, when dispersed in 1 m^3 of odour free air, becomes just detectable by a “normal” human observer whose sensitivity to the odorant represents the mean of the population. The average odour detection threshold is 1 OU/m^3, although odours at this level are not necessarily a

nuisance. Odour concentrations that may cause a complaint due to their ability to annoy typically range from 3 to 5 OU/m³.

Air Quality receptor locations are shown on **Figure 3-3**. The maximum predicted concentrations at all receptors exceed the MECP odour guideline objective of 1 OU/m³ with exceedances at a frequency greater than 0.5% of the time at all receptors except for R11, R14, and STR1. The highest overall frequency of exceedance of 1 OU/m³ is 3% which is predicted at R7. Exceedances of 3 OU/m³ were predicted at six receptors, R2, R3, R4, R5, R17, and STR1, with a frequency of less than 0.5%. The highest overall frequency of exceedance of 3 OU/m³ is 0.24% which is predicted at R4. No exceedances of 5 OU/m³ were predicted at any of the receptors.

As noted in Section 2.1.3.1, a total of 222 odour-related complaints were received from 2009 through the end of 2023. Landfill areas under interim and final cover and operations at the active face are the greatest contributors of odour under normal operations. WM has a BMPP for odour to address odour issues as outlined in Section 2.1.3.2.

Litter

A potential nuisance created by the landfill is wind-blown litter, which typically consists of loose, lightweight materials that can be picked up by the wind such as paper products, empty plastic bags, and cardboard. These materials are commonly found at the active face where freshly deposited waste is exposed to the wind.

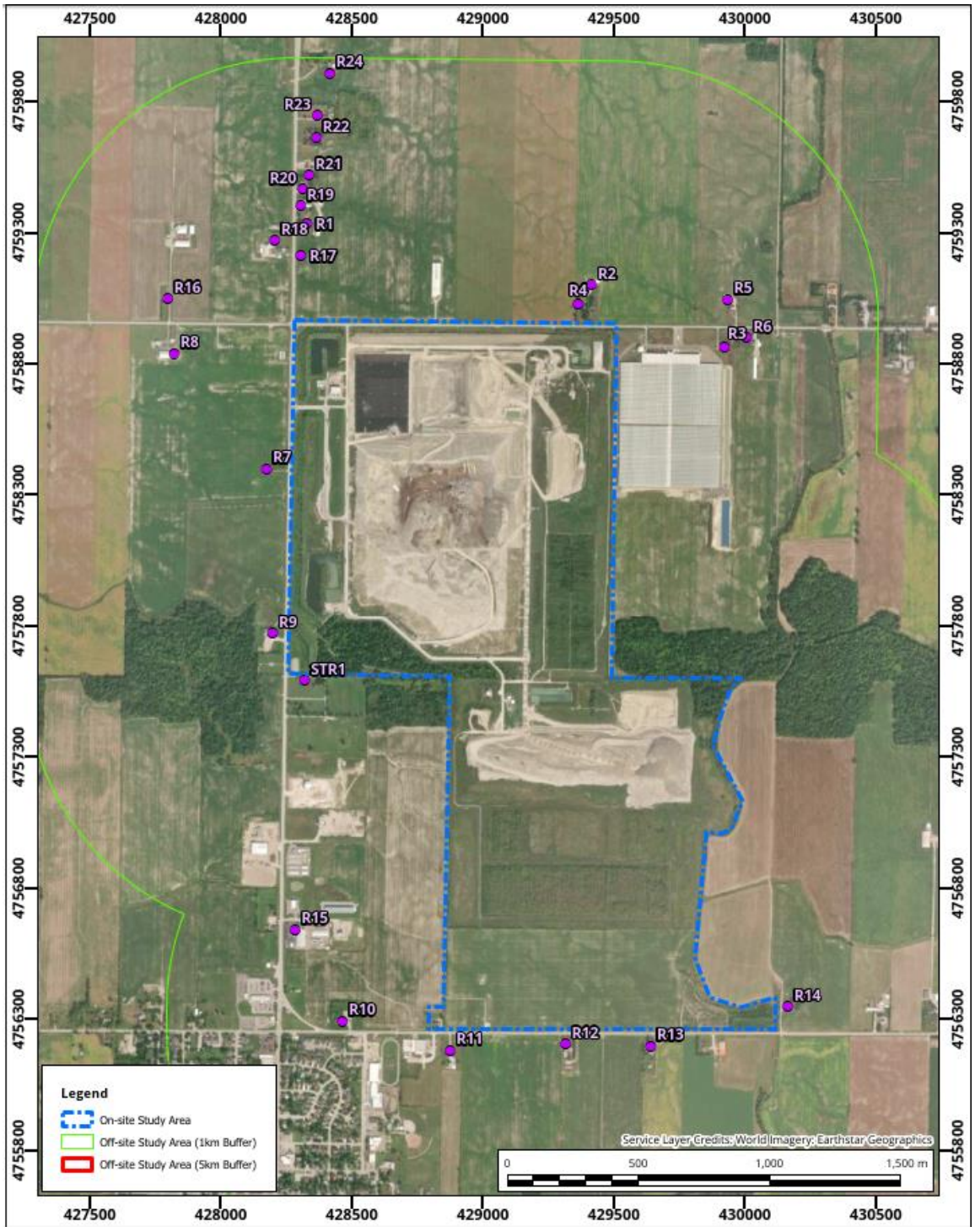
Litter may be transported off-site during events with above average wind speeds. Non-active waste filling areas are covered by daily, interim, or final cover to minimize potential for windblown litter. Control of wind-blown litter is managed using the Litter BMPP.

Background data indicated that potential blowing litter impacts are expected to occur within 500 m of the landfill and to a lesser degree limited to within 1 km of the landfill.

Within this 500 m zone, there are five rural residences and a cemetery. High winds that could carry litter toward these areas are expected to occur infrequently, less than 2% of the time. Although some residences are in the predominant wind direction, the likelihood of winds exceeding litter thresholds is only about 5%. To further reduce litter, permanent and portable wind fences have been installed.

Between 500 m and 1,000 m from the landfill, there are 12 discrete receptors, however only R3, R5, and R6 (**Figure 3-3**) are located in the predominant wind direction, leading to low potential for litter impacts. Residences beyond 1 km are unlikely to experience significant litter impacts.

Figure 3-3. Air Quality Receptor Locations



Source: RWDI, 2024a

Even with litter controls in place, litter events do occur from time to time. In order to ensure a thorough and rapid response, the Litter BMPP includes a protocol to dispatch a site crew to the impacted zone for cleanup. This protocol extends to adjacent

properties as well as main roadways and is expected to sufficiently manage the potential for blowing litter.

As noted in Section 2.1.3.1, a total of 16 litter-related complaints were received from 2009 through the end of 2023. In accordance with TCEC's Litter BMPP outlined in Section 2.1.3.2, WM responds immediately to each complaint and completes the necessary corrective action.

Dust

Based on the responses to the Community Survey, 22% of respondents were very concerned about dust from existing operations.

The evaluation of dust is dependent primarily on the location of the internal haul routes and the quantity of on-site traffic. Since the landfill waste filling rate will be maintained at its current permitted tonnage of 1.4 million tonnes per year, the quantity of haul traffic is expected to remain consistent with baseline conditions.

There are typically three contaminants of interest related to the dust emissions from landfills: total suspended particulate matter (TSP), inhalable particulate matter (PM_{10}), and respirable particulate matter ($PM_{2.5}$). Modelled concentrations for TSP, PM_{10}, and $PM_{2.5}$ at identified receptors were compared against their applicable criteria. The receptor locations are shown on **Figure 3-3**.

Overall, predicted concentrations for future baseline conditions were below their respective criteria for annual TSP, annual $PM_{2.5}$, and 24-hour $PM_{2.5}$ at all receptor locations. Predicted concentrations of 24-hour TSP exceeded applicable criteria at receptors R2 to R7 and R9, with the maximum frequency of exceedance being 1.6% at R4. Similarly, predicted concentrations of 24-hour PM_{10} exceeded applicable criteria at receptors R2, R3, R4, R7, and R9, with the maximum frequency of exceedance being 0.9% at R4.

A total of 10 dust and track-out related complaints received from 2009 through the end of 2023. WM employs a variety of proactive measures to minimized nuisance effects related to dust as outlined in Section 2.1.3.2.

Noise

Based on the results of the Community Survey, 31% of respondents were not concerned about noise from existing operations.

The acoustic environment is significantly influenced by road traffic noise, which elevates the background sound levels. These background sound levels were calculated using the ORNAMENT algorithms, which includes only the contribution of vehicles from non-landfilling activities, excluding haul route traffic. The modeling considered various factors such as road traffic parameters (traffic volume and speed limits) and source-receptor characteristics (heights, distances and ground type). The road segments modelled include: Nauvoo Road from Highway 402 to Confederation Line, Zion Line east and west of Nauvoo Road, and Confederation Line east of Nauvoo

Road. Only daytime hours were considered in the modelling, as future landfilling activities will occur during the day.

The modelled sound levels during the quietest 1-hour periods of daytime traffic noise were calculated. Result ranges for all receptors were between 37 to 57 dBA for Current, 37 to 58 dBA for 2032, and 38 to 59 dBA for 2043.

When background ambient sounds are elevated due to sources such as road traffic, higher limits that match the elevated background sound levels can be used. The quietest hours of background ambient sound level unrelated to landfilling or ancillary sources were modelled. Applicable daytime landfilling sound level limits were 55 to 57 dBA for Current, 55 to 59 dBA for 2032 and 55 to 60 dBA for 2043. The applicable daytime ancillary facility sound level limits were 50 to 57 dBA for Current, 50 to 58 dBA for 2032 and 50 to 59 dBA for 2043.

Future baseline noise conditions will include contributions from ancillary sources at the landfill, such as the RNG Facility and existing flares used to control landfill gases from existing waste.

The predicted cumulative sound levels, which are the logarithmic addition of the predicted future sound levels and contributions from existing and approved ancillary sources, meet all guidelines for landfilling and stationary source noise. Future daytime cumulative sound level due to traffic and TCEC ancillary sources were between 37 to 57 dBA for Current, 37 to 58 dBA for 2032 and 38 to 59 dBA for 2043.

The TCEC has a NMP to mitigate noise from operations. There have not been any noise complaints for the TCEC since 2012.

The following acoustic devices will continue to be used to scare away gulls and other bird scavengers from the landfill:

- Whistling and/or Pyrotechnic Pistol Cartridges;
- Shots fired from a starter pistol or other type of gun;
- Propane canons (“bird bangers”); and
- Electronic distress calls.

The devices listed above produce impulsive noise which is less than the MECP landfill sound level limit of 70 dBAI, for all receptors, regardless of the position of firing within the TCEC.

Traffic

Based on the results of the Community Survey, 45% of respondents were very concerned about traffic from existing operations. The transportation network in the study area will remain unchanged for the 2032 and 2043 future conditions, with background traffic growth applied. Historical traffic growth from 2015 to 2022 was calculated using automatic traffic recorder counts, and conservative growth rates were used for forecasting. North-south volumes on Nauvoo Road are expected to grow at a 2% compounded annual growth rate (CAGR), while side streets are projected to grow

at 1% CAGR. Site traffic volumes are assumed to remain the same as current levels for both 2032 and 2043, with no change in inbound weigh scale processing time.

Visual Impact

According to the results of the Community Survey, 32% of respondents are very concerned about the visual impact of the existing Expansion Landfill.

Future baseline conditions align with the completion of Year 26, Phase 11 of the approved Expansion Landfill described in the 2005 Visual Impact Assessment. The existing screening berms will remain unchanged, and the trees on these berms are expected to grow to a height of around 22 m. The maximum landfill elevation will be 280 m above sea level (approximately 39 m above the current ground level).

Vehicle access is provided through a single entrance off County Road 79. The landfill side slopes will be approximately 4H:1V from the existing grade to about 271.5 masl, after which the slopes will transition to a 5% gradient up to the highest point.

The site includes a maintenance building, a landfill office, and facilities for leachate and landfill gas treatment. The landfill scale and recycling transfer area will be situated within the buffer lands.

Buffer strips have been established along the northern, eastern, and southern edges of the existing Expansion Landfill. Screening berms, 7 m high, are present along County Road 79, while 6m high berms are located along Zion Line and the northern end of the eastern property line. A poplar forest occupies the middle section of the southern property, and all stockpiles are contained within the site boundaries.

Use and Enjoyment of Property

Existing sensitive land uses within the Social Off-site Study Area will continue to operate as they currently do. The Settlement Area limits of the Village of Watford are expected to remain as approved by the Council unless a review of the County or Local Official Plan is deemed necessary. If a review occurs, the Settlement Area limits may be expanded, potentially allowing for new sensitive land use designation such as Residential and Open Space. Any new land uses within 500 m of the landfill area will require consultation with the Province before receiving *Planning Act* approval to mitigate potential land use incompatibility issues (MBPC, 2024).

Additionally, the landfill is expected to remain consistent with the Provincial Planning Statement, provincial land use and resource management plans, and municipal land use policies, plans, and zoning by-laws, including municipal setbacks. Some planned residential developments within Watford, which have already received draft or site plan approval, may begin or complete construction before the Project starts. These developments include Ontario Street Subdivision, Watford Quality Care, and Castell Homes Subdivision. These projects are anticipated to proceed as planned, regardless of the landfill (MBPC, 2024).

As per Section 2.1.3.1, various community amenities exist within the Social Off-site Study Area including elementary schools, churches, retirement homes, parks, trails,

and a community centre. The most used facilities in the Township of Warwick are the East Lambton Community Complex, and the baseball diamonds and running track at Centennial Park, and the least used facilities by the residents that responded to the survey are the horseshoe pits and BMX park at Centennial Park, Bluebird Parkette, and Nauvoo Park. There may be improvements to community recreational facilities in the future; however, no plans are currently identified. Consequently, the use and enjoyment of property under future baseline conditions is not expected to change from existing conditions.

Level of Satisfaction with Living/Working in the Community

Based on the results of the Community and Economic Surveys conducted for the EA in September 2023, residents are overall satisfied with living in the Township of Warwick and are likely to stay and retire within the Township, and recommend the Township to others as a place to live. Based on survey results, the likelihood of younger residents staying in the community will be dependent upon the availability of employment opportunities and housing in the area.

Based on survey results, satisfaction appears to be tied to proximity to home, access to surrounding cities, and low development charges. These factors are not likely to change from existing conditions; therefore, the level of satisfaction with living/working in the community is expected to be the same under future baseline conditions.

Confidence in TCEC Operations

As noted in Section 2.1.3.1, 30% of respondents to the Community Survey stated that they are confident or somewhat confident in current landfill operations, while 33% are neither confident nor unconfident. Reasons provided for being confident or somewhat confident included knowledge of the landfill being tightly monitored by several agencies, while reasons provided for being unconfident or somewhat unconfident included concern regarding the long-term ramifications on the residents of Watford, suggestion for more testing and monitoring and more communication, feelings that the landfill has a lack of benefit to the community, and concerns about environmental impacts and odour management.

Based on the results of the Economic Survey, 60% of businesses responded that they are confident in current landfill operations, while 20% are somewhat unconfident. Reasons provided for being somewhat unconfident included odour, birds, traffic, and low host community fees.

Under future baseline conditions, the Expansion Landfill will continue to operate as per existing conditions; therefore, confidence in TCEC operations is unlikely to change from existing conditions.

3.1.2 Economic Environment

The future baseline conditions for the economic environment are described below.

3.1.2.1 Economic Effects on Local Community

Employment at Site

As noted in Section 2.1.3.1, the top three major employers in Watford, with 100+ employees each, are McCann's Redi-Mix, Watford Roof Truss Limited, and Schouten (an excavation, demolition, and abatement company). The TCEC is not a significant source of employment in the Economic Off-site Study Area due to the scale of its operations and the proximity of the Township of Warwick to other major urban centres. The TCEC provides stable employment for 33 staff, the majority of which are equipment operators.

Employment at the TCEC is not expected to increase significantly from existing conditions; rather, it is assumed that the same number of employment positions will continue to 2031 under future baseline conditions.

Contributions to the Host Community

WM has a Host Community Agreement with the Township of Warwick and has contributed over $36.9M in host community fees to the Township since 2009 (2009 through 2023). Through annual host community payments, WM has contributed, on average, approximately 39% of the Township's total annual revenue. Over the past 10 years, WM has also provided additional support for community projects, contributing over $800,000 to important projects across the County of Lambton.

It is expected that WM will continue its host community contributions and community support under future existing conditions. Based on the average annual contributions (estimated at approximately $4.1M), host community payments are estimated to total $65.8M by 2031. Community support contributions depend upon the availability of community projects, so the dollar amount of future contributions cannot be estimated in advance.

Provision and Procurement of Products and/or Services

As per Section 2.1.3.1, WM relies on a variety of local vendors to maintain its operations at the TCEC, contributing between approximately $1.7M and $10.8M annually to the local economy (Watford and Township of Warwick) through the procurement of local goods and services (2019-2023). These contributions are expected to continue under future baseline conditions. Based on an annual average of $2.2M in local expenditures, an estimated $15.7M will be contributed to the local economy by the start of the Project.

WM is currently constructing a Renewable Natural Gas (RNG) Facility at the TCEC that will convert landfill gas into renewable natural gas that will be supplied to the gas distribution network. The RNG Facility will be operational under future baseline conditions.

3.2 Alternative Method 1

3.2.1 Social Environment

The assessment of effects for Alternative Method 1 is described below for the environmental criteria and indicators of the Social Environment and is summarized in **Table 3-1**.

3.2.1.1 Effects on Local Community

Waste disposal facilities can potentially affect local residents and businesses in the vicinity of the site. Population can increase or decrease as a result of residential land acquisition and changes to employment. Residents and their use of property can be affected through disturbance from odour, litter, dust, noise, traffic, and changes to the visual landscape.

Number of Residents and Residences

Alternative Method 1 is not anticipated to result in any changes to the number of employment positions at the TCEC, and the development will occur within the approved Expansion Landfill footprint, so no residential land acquisition is required; consequently, no changes to population (number of residents and residences) are anticipated within the Social Off-site Study Area as a result of the Project.

Number and Type of Local Businesses

Alternative Method 1 is not expected to change the number and type of local businesses. Procurement and provision of products and services are expected to continue as per current operations, and no business activities will be displaced by Project activities.

Nuisance Effects

Nuisance effects from the Project can include disturbance from odour, litter, dust, noise, traffic, and changes to the visual landscape. The assessment of nuisance effects for Alternative Method 1 is provided below by type of effect.

Information regarding nuisance effects from Alternative Method 1 was sourced from the following reports:

- Odour, litter, and dust: Air Quality Effects Assessment Report (RWDI, 2024a).
- Noise: Noise Effects Assessment Report (RWDI, 2024b).
- Traffic: Transportation Effects Assessment Report (HDR, 2024).
- Visual impact: Visual Landscape Effects Assessment Report (Schollen, 2024).

Odour

According to the responses to the Community Survey, 72% of respondents are very concerned about odour resulting from the Project, and 69% of respondents are very concerned that an increase in landfill-related odour may impact them personally.

Odour emissions were determined using flux chamber sampling at the TCEC in 2023. Samples were taken from various locations, including the working face, freshly uncovered waste, leachate maintenance holes, contaminated soil pile, and both the final and interim cover areas. Under the Future Baseline Conditions, the working face and the southern access haul route would extend towards the northeast corner of the approved landfill area, as an approximation of where activity could occur towards the end of Expansion Landfill Phase 8 and 9. However, operations will shift throughout the landfill's lifespan, and the odour impact assessment considered the three operational scenarios to determine odour emissions over time as the landfill stages are developed. During these stages, the working face will be positioned closer to receptors in the west, northwest, and northeast at different times. Given that activities at the working face can generate odours, it is anticipated that off-site odour concentrations at specific receptors may increase compared to Future Baseline Conditions.

Alternative Method 1 has the potential to increase predicted concentrations of odour at discrete receptors; therefore, it is expected that the frequency of exceedance at discrete receptors may increase and the number of affected discrete receptors may increase compared to Future Baseline Conditions.

The Air Quality Effects Assessment Report did not identify additional mitigation measures to address changes in odour as a result of the Project. The in-design mitigation measures outlined in Section 2.1.3.2 will be undertaken and WM will continue to implement the BMPP for odour to address odour issues.

Litter

Based on the responses to the Community Survey, 52% of respondents are concerned that an increase in litter resulting from the Project may impact them directly.

Blowing litter zones were defined for Future Baseline Conditions based on their distance from the landfill's perimeter. Since the landfill footprint remains unchanged between Alternative Method 1 and Future Baseline Conditions, the zones at risk from blowing litter will also remain the same.

The meteorological data used to identify the number and location of off-site receptors potentially impacted by blowing litter is expected to remain consistent with Future Baseline Conditions for Alternative Method 1; however, the proposed height increase in Alternative Method 1 could lead to higher wind speeds at the landfill's working face, potentially raising the frequency of litter events. Despite this, the Litter BMPP (Section 2.1.3.2) are anticipated to effectively control blowing litter in Alternative Method 1. As a result, the number of affected receptors is expected to remain unchanged compared to Future Baseline Conditions.

Dust

According to the results of the Community Survey, 35% of respondents are concerned about dust from the Project, while 54% are concerned that an increase in Project-related air emissions, including dust, may impact them directly.

Alternative Method 1 will maintain the same waste filling rate as Future Baseline Conditions. Consequently, the traffic from waste delivery vehicles and most on-site haul routes are anticipated to remain similar to these baseline conditions. Under Future Baseline Conditions, the working face and the southern access haul route would extend towards the northeast corner of the approved landfill area, indicating potential activity towards the end of Expansion Landfill Phase 8 and 9. However, operations will shift around the landfill site throughout its lifespan, and the air quality impact assessment considered three operational scenarios to determine dust emissions over time as the landfill stages are developed.

The relocation of the working face and access routes in each scenario is expected to alter predicted dust concentrations at nearby receptors. Generally, when the working face is near the northeastern or northwestern edges of the landfill, off-site dust concentrations are likely to rise for receptors to the west and northwest, and to a lesser extent, the northeast. While the size of the working face and the volume of material for daily and final cover will remain unchanged, the proximity to receptors will drive the increase in predicted dust concentrations. This will affect dust emissions from haul route traffic, daily cover handling, and wind erosion of exposed materials at the working face and cap construction.

Overall, Alternative Method 1 may lead to higher off-site dust concentrations at specific receptors to the west and northwest, and somewhat to the northeast, as these receptors become closer to the working face and related infrastructure over the landfill's operational life.

Alternative Method 1 has the potential to increase predicted concentrations of dust at discrete receptors at some points during site operation; therefore, it is expected that the frequency of exceedance at discrete receptors may increase and the number of affected discrete receptors may increase compared to Future Baseline Conditions.

The dust control measures outlined in Section 2.1.3.2 will continue to be implemented to address dust emissions from landfill operations.

Noise

Based on the results of the Community Survey, 26% of respondents are very concerned about noise from the Project, and 31% are very concerned that Project-related noise may impact them directly.

The most significant potential change in off-site noise levels arise from the reintroduction of landfilling equipment along the perimeter of the approved landfill extents. This could lead to noise levels at Points of Reception (PORs) exceeding daytime landfilling guidelines, particularly along the west and north portions of the landfill when equipment is closest.

Alternative Method 1 has the greatest potential for increased offsite noise due to modifications extending to the landfill limits. The CDR indicates that the new slope will require adjustments up to the existing landfill boundary, which will require the use of construction equipment such as dozers and compactors. This will reduce separation distance to PORs, potentially increasing off-site sound levels.

To mitigate these effects, two primary strategies have been proposed. The first strategy is to construct temporary operational berms. The operational berms in the original EA were recommended to be 4 m in height and used when working along the landfill perimeter. Similar berm mitigations would be required for Alternative Method 1 to result in no net effects by meeting daytime landfilling guideline limits. Another mitigation strategy is to limit equipment near the perimeter; reducing the number of equipment, such as compactors and dozers operating near the landfill perimeter, which would help meet daytime landfilling noise guidelines.

Traffic

According to the Community Survey, 47% of respondents were very concerned about Project-related traffic.

Alternative Method 1 is expected to have minimal impact on traffic. The transportation network will remain unchanged, with background traffic growth being the primary factor influencing future traffic volumes. The facility's catchment area, vehicle origin-destination patterns, and hourly/daily trips will not change, ensuring that traffic conditions remain similar to current levels.

There will be no increase in the average daily tonnage, which means that the overall volume of vehicles entering and exiting the facility will not change significantly, maintaining the current traffic flow.

Intersection performance is also expected to remain stable. Most intersections will maintain their current levels of service, with only minor increases in volume capacity ratios. These slight increases are within acceptable thresholds, ensuring that intersections will continue to operate efficiently without significant delays or congestion.

Future queues at the facility are projected to be nearly identical to current conditions; however, there may be some excess queueing at the inbound weigh scale during peak hours. This excess is expected to be minimal and will not significantly impact the overall traffic flow or cause major disruptions.

In terms of road safety, collision rates are not expected to change. There is no identified link between the facility's truck traffic and collisions within the study area. Therefore, the optimization of the waste facility should not contribute to an increase in accidents or safety concerns on the surrounding roads.

Sightlines at the Nauvoo Road entrance will remain adequate, ensuring that drivers have clear visibility when entering and exiting the facility. This will maintain safe driving conditions and reduce the risk of accidents at the site entrance.

Overall, the further development and operations of the waste facility is expected to have minimal impacts on traffic operations, maintaining current conditions and ensuring the continued safety and efficiency of the transportation network.

Visual Impact

According to the results of the Community Survey, 39% of respondents were very concerned about the visual effects of the Project, and 44% are very concerned about changes to their rural views.

The magnitude of change in views is determined based on the following criteria in the Visual Landscape Effects Assessment Report (Schollen, 2024):

1. Visible landfill area
2. Distance to the Landfill Optimization site
3. Horizontal angle of view
4. Visual Absorption Capacity Factor (VACF)

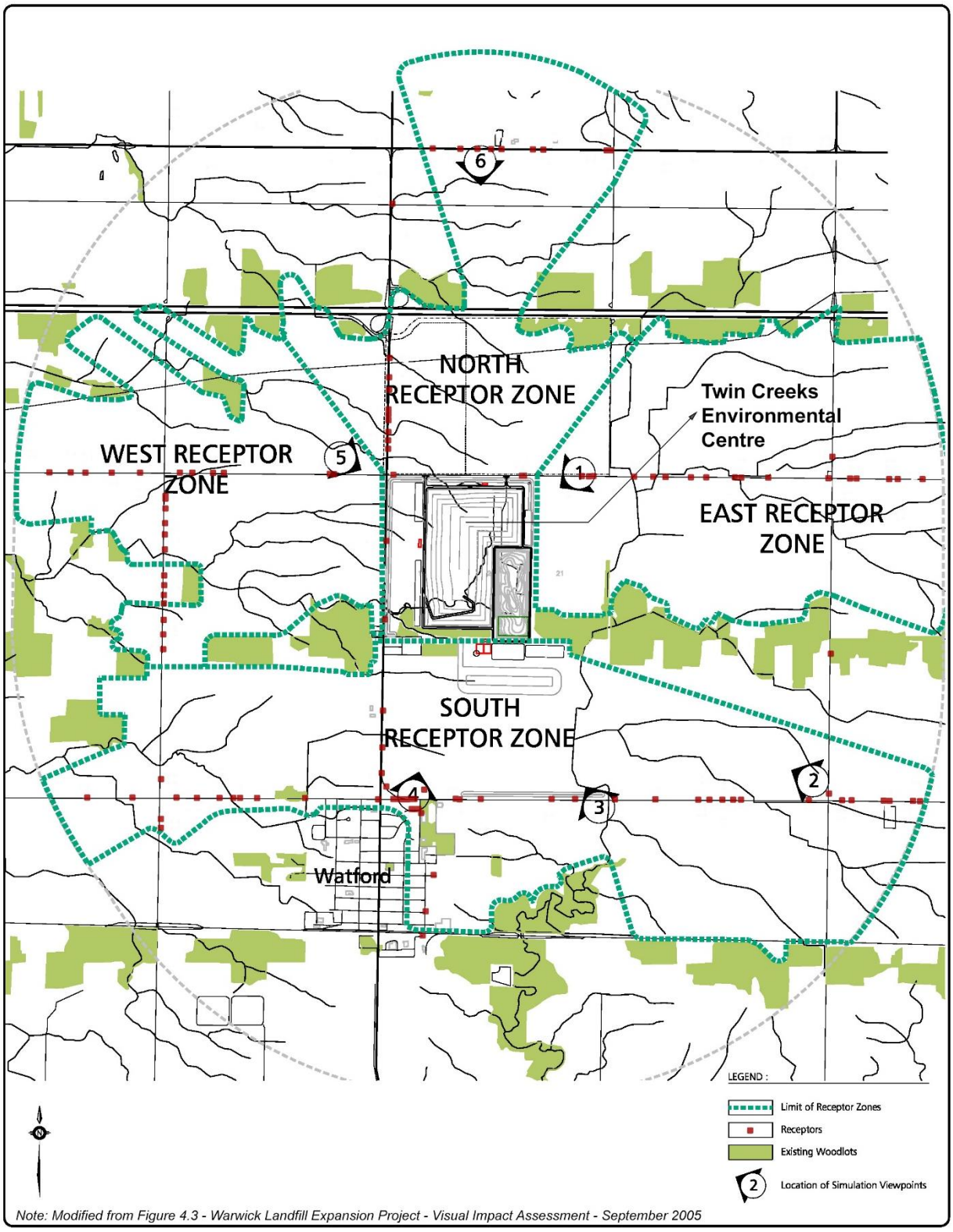
Receptors are locations where views to the TCEC are available where there is a potential for a change in the visual landscape as a result of the implementation and/or operation of the Project. Candidate receptors include residences, businesses, public amenities (such as parks and recreational facilities, cemeteries and other land uses that may be sensitive to changes in the visual environment). Viewpoints are the locations from which the visual simulations were generated and represent the typical view from each of the six Receptor Zones as illustrated by **Figure 3-4**.

Based upon the values related to each of the above criteria determined for each receptor and each viewpoint utilizing a scale ranging from 1 to 5, a combined effect evaluation was calculated to determine the Combined Effect Value (CEV) for each receptor and viewpoint. The CEV defines the magnitude of the visual effect related to each receptor and viewpoint.

Figure 3-5 and **Figure 3-6** illustrate the simulated views of Alternative Method 1 from the six viewpoints. The total CEV for Alternative Method 1 is 78. Viewpoints 1, 3, and 5 are considered high CEV. Viewpoints 2 and 4 are considered moderate CEV, and viewpoint 6 is considered low CEV.

Since the existing vegetated screening berms are not proposed to be altered, they will continue to grow and increase in height from the present day to the completion of Phase 5. The increase in the size and density of the trees will enhance the visual screening function of the vegetated berms.

Figure 3-4. Viewpoint Locations for Visual Effects Assessment



Source: (Schollen, 2024)

Figure 3-5. Alternative Method 1 from Viewpoints 1 to 3

		
Viewpoint 1 – Alternative Method 1	***Viewpoint 2 – Alternative Method 1***	***Viewpoint 3 – Alternative Method 1***
This viewpoint is located east of the facility in the East Receptor Zone. The landfill area visible is 41,688 m² and the perceived area index is 59.6; the visible landfill area effect value is 5. The angle of exposed views is 40°; the horizontal angle of view effect value is 3. The distance to the visible landfill including the stockpile is 700 m; the distance from site effect value is 4. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 17, which is considered high.	This viewpoint is located south-east of the facility in the South Receptor Zone. The landfill area visible is 40,413 m² and the perceived area index is 13.6; the visible landfill area effect value is 3. The angle of exposed views is 15°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 2,972 m; the distance from site effect value is 1. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 10, which is considered moderate.	This viewpoint is located south of the facility in the South Receptor Zone. The landfill area visible is 41,215 m² and the perceived area index is 25.4; the visible landfill area effect value is 5. The angle of exposed views is 20°; the horizontal angle of view effect value is 2. The distance to the visible landfill including the stockpile is 1,621 m; the distance from site effect value is 2. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 14, which is considered high.

Source: (Schollen, 2024)

Figure 3-6. Alternative Method 1 from Viewpoints 4 to 6

		
Viewpoint 4 – Alternative Method 1	***Viewpoint 5 – Alternative Method 1***	***Viewpoint 6 – Alternative Method 1***
This viewpoint is located at the north-east corner of the Township of Watford, in the South Receptor Zone. The landfill area visible is 20,949 m² and the perceived area index is 15.1; the visible landfill area effect value is 3. The angle of exposed views is 14°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 1,387 m; the distance from site effect value is 3. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 12, which is considered moderate.	This viewpoint is located west of the facility in the West Receptor Zone. The landfill area visible is 39,471 m² and the perceived area index is 55.8; the visible landfill area effect value is 5. The angle of exposed views is 40°; the horizontal angle of view effect value is 3. The distance to the visible landfill including the stockpile is 707 m; the distance from site effect value is 4. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 17, which is considered high.	This viewpoint is located north of the facility in the North Receptor Zone. The landfill area visible is 19,259 m² and the perceived area index is 6.8; the visible landfill area effect value is 1. The angle of exposed views is 11°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 2,820 m; the distance from site effect value is 1. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 8, which is considered low.

Source: (Schollen, 2024)

Use and Enjoyment of Property

Since Alternative Method 1 involves a vertical expansion, it is not anticipated to significantly impact existing land uses. The separation distance between the landfill and the Village of Watford, along with pre-existing buffer zones, is expected to mitigate potential impacts such as noise and air quality issues, provided that appropriate mitigation measures and nuisance controls are maintained or enhanced.

For planned land uses, the existing approved waste disposal footprint will remain unchanged, ensuring that setback distances between the landfill and any planned developments are maintained. This means that future land uses near the landfill, particularly industrial uses, are expected to be compatible.

Regarding off-site recreational resources, there are several parks and a community center within the Social Off-site Study Area including Bluebird Parkette, Centennial Park, Sunken Gardens, Watford Memorial Park, and the East Lambton Community Centre. The Project is not expected to affect the setback distances to these recreational areas.

Sensitive land uses, such as schools, daycares, healthcare facilities, and cemeteries, are also present in Watford. The existing separation distance and buffer zones are anticipated to mitigate potential impacts on these sensitive uses, assuming that current mitigation measures are upheld.

Agricultural operations, which dominate the area surrounding the TCEC, are expected to experience minimal impact from the Project. The existing waste disposal footprint will not change.

In the Community Survey, residents were asked how likely it would be that they would decrease their use of outdoor recreational facilities as a result of the Project. Forty-nine percent (49%) of residents said it was likely or somewhat likely.

Residents who answered likely or somewhat likely said that:

- Odour being emitted from the landfill is impacting residents' enjoyment of outdoor exercise and activities, which ultimately deters them from engaging in such programs;
- Odour has impacted residents' confidence in registering for outdoor programs, as they are unsure whether they can consistently attend due to the odour issues;
- The landfill expansion may negatively impact residents' enjoyment of existing local parks and trails, which could result in their discontinuation of use; and
- Unpleasant odours regularly hinders the enjoyment of being in residents' own yards.

Based on the results of the odour effects assessment, recreational resources to the south of the TCEC site, such as the adjacent trail, may experience an increase in odour at the start of landfilling; however, the extent of the odour exceedance decreases as the landfill is developed since the working face will move from west to east. The Odour BMPP will continue to be implemented.

Although Alternative Method 1 could result in a minor increase in odour concentrations at off-site recreational resources to the south of the landfill footprint (e.g., the trail), the increased concentrations are unlikely to result in an overall change in use of property.

Consequently, changes to use and enjoyment of property are anticipated to be minor.

Level of Satisfaction with Living/Working in the Community

In the Community Survey, residents were asked how satisfied they are with the Township of Warwick as a place to live; 84% of respondents indicated that they were satisfied or somewhat satisfied with the Township as a place to live. When residents were asked about the likelihood that the Project would decrease level of satisfaction within living/working in the Township of Warwick, 62% of residents said it was likely or somewhat likely.

Residents who answered likely or somewhat likely expressed concern that the expansion of the landfill size would significantly decrease their level of satisfaction living in the Township; the odours being emitted from the landfill negatively impact the enjoyment of being outdoors; more effective odour reduction measures need to be placed; and questioned whether there were any tangible benefits to the community, that the landfill's operation prioritizes business interests over well-being and feelings of the residents.

Alternative Method 1 has the potential to increase predicted concentrations of odour at discrete receptors, the majority of which are located north and west of the TCEC; therefore, it is expected that the frequency of exceedance at these discrete receptors may increase and the number of affected discrete receptors may increase. Since most of the population in the Social Off-site Study Area is located south of the TCEC, it is unlikely the majority of residents will experience changes in odour. The Air Quality Effects Assessment Report did not identify additional mitigation measures to address changes in odour as a result of the Project. The in-design mitigation measures outlined in Section 2.1.3.2 will be undertaken and WM will continue to implement the BMPP for odour to address odour issues.

The Visual Landscape Effects Assessment simulated views of Alternative Method 1 from six viewpoints as illustrated in **Figure 3-5** and **Figure 3-6**. The total CEV for Alternative Method 1 is 78. Viewpoints 1, 3, and 5 are considered high CEV. Viewpoint 2 and viewpoint 4 (representative of north Watford) are considered moderate CEV, and viewpoint 6 is considered low CEV. Since the existing vegetated screening berms are not proposed to be altered, they will continue to grow and increase in height from the present day to the completion of Phase 5. The increase in the size and density of the trees will enhance the visual screening function of the vegetated berms.

The nuisance level of odour from Alternative Method 1 is not likely to reach the population centre of Watford but rather will be experienced to the north and west of the landfill, mostly at the beginning of operations when the equipment will be working at the landfill perimeter. Views of the landfill from Watford (Viewpoint 4) are predicted to be moderate, and trees planted on the screening berms will continue to grow.

Consequently, changes in the level of satisfaction with living and working in the community are predicted to be minor.

Confidence in TCEC Operations

In the Community Survey, 31% of respondents indicated that they are aware that the Township of Warwick employs a Technical Review Team (TRT) to review operations and compliance monitoring, and 33% responded that they are aware that the MECP currently inspects the TCEC landfill weekly. Almost half (47%) of respondents said that knowing about the Warwick Public Liaison Committee (WPLC), TRT, and MECP activities increases their confidence in TCEC landfill operations.

Residents asked about their level of confidence that WM can properly manage a landfill expansion. Thirty percent (30%) of respondents said their level of confidence in TCEC operations would not change as a result of the Project, while 27% said it was likely that their opinion of TCEC operations would decrease and 23% said it was somewhat likely.

Reasons for confidence in the Project included the ability to work with WM to stay informed about the Project and confidence that WM can manage the Project. Reasons for lack of confidence included:

- Doubts about the company's commitment to addressing community concerns;
- Existing issues related to the landfill, including odour problems, traffic disruptions, and waste mismanagement;
- Feelings that community input is not adequately considered based on efforts to oppose projects at the TCEC in the past, identifying that there has been a long-standing preference against any landfill expansion in the community.

Some residents have expressed distrust in the environmental assessment process and are uncertain whether the landfill expansion has been adequately assessed.

Operations at the TCEC will continue with no changes to operating hours, haul routes, or equipment. The WPLC, TRT, and MECP will continue their activities regarding the site as noted above. WM will continue to provide prompt attention to nuisance complaints to mitigate any adverse effects to the surrounding community as outlined in Section 2.1.3.2. Consequently, no changes to confidence in TCEC operations are anticipated.

3.2.1.2 Summary

A summary of the effects assessment of Alternative Method 1 on the Social Environment is presented below in **Table 3-1**.

Table 3-1. Net Effects Assessment – Alternative Method 1: Social Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Social Environment					
Effects on Local Community	Number of residents and residences (e.g., receptors)	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to number of employment positions at the TCEC.	• No changes to number of residents and residences.	• None required	• No net effects
	Number and type of local businesses	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • Procurement and provision of products and services will continue as per current operations.	• No changes to number and type of local businesses. • No displacement of business activities.	• None required	• No net effects
	Nuisance effects (odour, litter, dust, noise, birds, traffic, visual)	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to haul routes. • No changes to operating hours. • No changes to catchment area, vehicle origin-destination patterns, and hourly/daily trips. • No increase in the average daily tonnage. • Existing nuisance effect control and management measures will continue.	• Potential increase in predicted concentrations of odour at discrete receptors, frequency of exceedance at discrete receptors, and number of affected discrete receptors. • The proposed height increase could lead to higher wind speeds at the landfill's working face, potentially raising the frequency of litter events. • Potential increase in predicted concentrations of dust at discrete receptors, frequency of exceedance at discrete receptors, and number of affected discrete receptors. • Potential increase in off-site sound levels at receptors due to decreased separation distance from the working face. • The continued use of the landfill beyond the approved design will prolong the attractiveness of the area for gulls and other avifaunal (bird) scavengers.	• WM will continue to implement the odour BMPP to address odour emissions. • The litter BMPP are anticipated to effectively control blowing litter. • WM will continue to implement the dust BMPP to address dust emissions. • Construction of temporary operational berms when working along the landfill perimeter, and reduction in the number of equipment operating near the landfill perimeter. • Avifaunal (bird) scavengers will continue to be managed	• Predicted odour concentrations may exceed criteria at discrete receptor locations and the frequency of odour levels above defined odour benchmarks may increase. • Visual CEV of 78, with 3 high CEV viewpoints, two moderate CEV viewpoints, and one low CEV viewpoint.

Table 3-1. Net Effects Assessment – Alternative Method 1: Social Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
			• No changes to the overall volume of vehicles entering and exiting the TCEC. • Visual CEV of 78, with 3 high CEV viewpoints, two moderate CEV viewpoints, and one low CEV viewpoint.	following current protocols using deterrents. • Existing vegetated screening berms will continue to grow and increase in height.	• No net effects from litter, dust, noise, birds, and traffic.
	Predicted changes to use and enjoyment of property	• Existing nuisance effect control and management measures will continue.	• Potential changes to use and enjoyment of property resulting from increases in odour at recreational areas located south of the landfill.	• WM will continue to implement the odour BMPP to address odour emissions.	• Minor changes to use and enjoyment of property are anticipated due to increased odour at recreational areas located south of the landfill.
	Level of satisfaction with living/working in the community	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to haul routes. • No changes to operating hours. • No changes to catchment area, vehicle origin-destination patterns, and hourly/daily trips. • No increase in the average daily tonnage. • Existing nuisance effect control and management measures will continue.	• Potential changes to the level of satisfaction with living and working in the community resulting from increases in odour and changes to the visual landscape.	• WM will continue to implement the odour BMPP to address odour emissions. • Existing vegetated screening berms will continue to grow and increase in height.	• Minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.
	Confidence in TCEC operations	• Operations at the TCEC will continue with no changes to operating hours, haul routes, or equipment. • The WPLC, TRT, and MECP will continue their activities regarding the site (review, inspections).	• Potential changes to confidence in TCEC operations.	• WM will continue to provide prompt attention to nuisance complaints to mitigate any adverse effects to the surrounding community.	• No net effects.

3.2.2 Economic Environment

The assessment of effects for Alternative Method 1 is described below for the environmental criteria and indicators of the Economic Environment and is summarized in **Table 3-2**.

3.2.2.1 Economic Effects on Local Community

WM has successfully operated the TCEC since 2009 and it has become an important addition to the local community by creating employment opportunities, contributing financially to the Township of Warwick and supporting local initiatives within the community, and procuring and providing products and services to and from local businesses.

Employment at Site

The TCEC provides stable employment for 33 staff, the majority of which are equipment operators. Alternative Method 1 will not result in any changes to the number of employment positions; however, the existing 33 stable employment positions will continue for an additional 12 years.

Contributions to the Host Community

In the Community Survey, when asked whether knowing that the Project will result in WM's continued payment of host community fees to the Township of Warwick for an additional 12 years would increase their support for the Project, 48% of respondents said yes, while 52% said no. Respondents who answered no stated that the current level of payments by WM to the Township should be increased, especially if landfill capacity is being increased, were concerned about the long-term effects of the landfill, and wish for WM to continue paying host fees even after closure of the landfill.

As previously noted, WM has a Host Community Agreement with the Township of Warwick and has contributed over $36.9M in host community fees to the Township since 2009 (2009 through 2023). Through annual host community payments, WM has contributed, on average, approximately 39% of the Township's total annual revenue. Over the past 10 years, WM has also provided additional support for community projects, contributing over $800,000 to important projects across the County of Lambton.

It is expected that WM will continue its host community contributions and community support under Alternative Method 1. Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of Alternative Method 1 are estimated to amount to approximately $49M. Community support contributions depend upon the availability of community projects, so the dollar amount of future contributions cannot be estimated in advance; however, WM will continue to contribute to community projects.

Provision and Procurement of Products and/or Services

WM relies on a variety of local vendors to maintain its operations at the TCEC, contributing between approximately $1.7M and $10.8M annually to the local economy (Watford and Township of Warwick) through the procurement of local goods and services. These contributions are expected to continue under Alternative Method 1. Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 1.

The continued operation of the landfill will allow the TCEC to continue to provide landfill gas to the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network.

In the Economic Survey, 60% of businesses identified that continued operation would be important for their businesses; of these, 40% mentioned that continued landfill operation would be positive, potentially providing more work in the future. When asked to what extent their business would be affected if the TCEC landfill was to close, 60% of the businesses responded that they would be negatively affected. Those that would be negatively affected said that they would lose income, sales, and work, and their employees would be affected if the TCEC landfill closed.

3.2.2.2 Summary

A summary of the effects assessment of Alternative Method 1 on the Economic Environment is presented below in **Table 3-2**.

Table 3-2. Net Effects Assessment – Alternative Method 1: Economic Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Economic Environment					
Economic Effects on Local Community	Employment at site (number, type, and duration)	• No additional employment positions will be created as a result of the future development beyond the current number of positions.	• Existing 33 stable employment positions will continue for an additional 12 years during operation of Alternative Method 1.	• None required.	• Existing 33 stable employment positions will continue for an additional 12 years during operation of Alternative Method 1.
	Contributions to the host community	• Municipal contributions will continue as per current operations.	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of Alternative Method 1 are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operation of Alternative Method 1.	• None required.	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of Alternative Method 1 are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operation of Alternative Method 1.
	Opportunities for the provision and procurement of products and/or services	• The TCEC will continue to require goods and services from local businesses and provide services at the same rates as required for current operations.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 1. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operation of Alternative Method 1.	• None required.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 1. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operation of Alternative Method 1.

3.3 Alternative Method 2

3.3.1 Social Environment

The assessment of effects for Alternative Method 2 is described below for the environmental criteria and indicators of the Social Environment and is summarized in **Table 3-3**.

3.3.1.1 Effects on Local Community

Waste disposal facilities can potentially affect local residents and businesses in the vicinity of the site. Population can increase or decrease as a result of residential land acquisition and changes to employment. Residents and their use of property can be affected through disturbance from odour, litter, dust, noise, traffic, and changes to the visual landscape.

Number of Residents and Residences

Alternative Method 2 is not anticipated to result in any changes to the number of employment positions at the TCEC, and the development will occur within the approved Expansion Landfill footprint, so no residential land acquisition is required; consequently, no changes to population (number of residents and residences) are anticipated within the Social Off-site Study Area as a result of the Project.

Number and Type of Local Businesses

Alternative Method 2 is not expected to change the number and type of local businesses. Procurement and provision of products and services are expected to continue as per current operations, and no business activities will be displaced by Project activities.

Nuisance Effects

The assessment of nuisance effects for Alternative Method 2 is provided below by type of effect.

Information regarding nuisance effects from Alternative Method 2 was sourced from the following reports:

- Odour, litter, and dust: Air Quality Effects Assessment Report (RWDI, 2024a).
- Noise: Noise Effects Assessment Report (RWDI, 2024b).
- Traffic: Transportation Effects Assessment Report (HDR, 2024).
- Visual impact: Visual Landscape Effects Assessment Report (Schollen, 2024).

Odour

Under the Future Baseline Conditions, the working face and the southern access haul route would extend towards the northeast corner of the approved landfill area, as an

approximation of where activity could occur towards the end of Expansion Landfill Phase 8 and 9. However, operations will shift throughout the landfill's lifespan, and the odour impact assessment considered the three operational scenarios to determine odour emissions over time as the landfill stages are developed. During these stages, the working face will be positioned closer to receptors in the west, northwest, and northeast at different times. Given that activities at the working face can generate odours, it is anticipated that off-site odour concentrations at specific receptors may increase compared to Future Baseline Conditions.

Alternative Method 2 has the potential to increase predicted concentrations of odour at discrete receptors; therefore, it is expected that the frequency of exceedance at discrete receptors may increase and the number of affected discrete receptors may increase compared to Future Baseline Conditions.

The Air Quality Effects Assessment Report did not identify additional mitigation measures to address changes in odour as a result of the Project. The in-design mitigation measures outlined in Section 2.1.3.2 will be undertaken and WM will continue to implement the BMPP for odour to address odour issues.

Litter

Blowing litter zones were defined for Future Baseline Conditions based on their distance from the landfill's perimeter. Since the landfill footprint remains unchanged between Alternative Method 2 and Future Baseline Conditions, the zones at risk from blowing litter will also remain the same.

The meteorological data used to identify the number and location of off-site receptors potentially impacted by blowing litter is expected to remain consistent with Future Baseline Conditions for Alternative Method 2; however, the proposed height increase in Alternative Method 2 could lead to higher wind speeds at the landfill's working face, potentially raising the frequency of litter events. Despite this, the litter BMPP (Section 2.1.3.2) is anticipated to effectively control blowing litter in Alternative Method 2. As a result, the number of affected receptors is expected to remain unchanged compared to Future Baseline Conditions.

Dust

Alternative Method 2 will maintain the same waste filling rate as Future Baseline Conditions. Consequently, the traffic from waste delivery vehicles and most on-site haul routes are anticipated to remain similar to these baseline conditions. Under Future Baseline Conditions, the working face and the southern access haul route would extend towards the northeast corner of the approved landfill area, indicating potential activity towards the end of Expansion Landfill Phase 8 and 9. However, operations will shift around the landfill site throughout its lifespan, and the air quality impact assessment considered three operational scenarios to determine dust emissions over time as the landfill stages are developed.

The relocation of the working face and access routes in each scenario is expected to alter predicted dust concentrations at nearby receptors. Generally, when the working

face is near the northeastern or northwestern edges of the landfill, off-site dust concentrations are likely to rise for receptors to the west and northwest, and to a lesser extent, the northeast. While the size of the working face and the volume of material for daily and final cover will remain unchanged, the proximity to receptors will drive the increase in predicted dust concentrations. This will affect dust emissions from haul route traffic, daily cover handling, and wind erosion of exposed materials at the working face and cap construction.

Overall, Alternative Method 2 may lead to higher off-site dust concentrations at specific receptors to the west and northwest, and somewhat to the northeast, as these receptors become closer to the working face and related infrastructure over the landfill's operational life.

Alternative Method 2 has the potential to increase predicted dust concentrations of dust at discrete receptors at some points during site operation; therefore, it is expected that the frequency of exceedance at discrete receptors may increase and the number of affected discrete receptors may increase compared to Future Baseline Conditions.

The dust control measures outlined in Section 2.1.3.2 will continue to be implemented to address dust emissions from landfill operations.

Noise

The most significant potential change in off-site noise levels arise from the reintroduction of landfilling equipment along the perimeter of the approved landfill extents. This could lead to noise levels at PORs exceeding daytime landfilling guidelines, particularly along the west and north portions of the landfill when equipment is closest.

Alternative Method 2 has the potential for increased offsite noise due to modifications extending to the landfill limits. The CDR indicates that the new slope will require adjustments up to the existing landfill boundary, which will require the use of construction equipment such as dozers and compactors. This will reduce separation distance to PORs, potentially increasing off-site sound levels.

Mitigation measures are to either construct temporary working berms or limit the amount of equipment near the perimeter of the landfill. Another mitigation strategy is to limit equipment near the perimeter; reducing the number of equipment, such as compactors and dozers operating near the landfill perimeter, which would help meet daytime landfilling noise guidelines.

Traffic

Alternative Method 2 is expected to have minimal impact on traffic. The transportation network will remain unchanged, with background traffic growth being the primary factor influencing future traffic volumes. The facility's catchment area, vehicle origin-destination patterns, and hourly/daily trips will not change, ensuring that traffic conditions remain similar to current levels.

There will be no increase in the average daily tonnage, which means that the overall volume of vehicles entering and exiting the facility will not change significantly, maintaining the current traffic flow.

Intersection performance is also expected to remain stable. Most intersections will maintain their current levels of service, with only minor increases in volume capacity ratios. These slight increases are within acceptable thresholds, ensuring that intersections will continue to operate efficiently without significant delays or congestion.

Future queues at the facility are projected to be nearly identical to current conditions; however, there may be some excess queueing at the inbound weigh scale during peak hours. This excess is expected to be minimal and will not significantly impact the overall traffic flow or cause major disruptions.

In terms of road safety, collision rates are not expected to change. There is no identified link between the facility's truck traffic and collisions within the study area. Therefore, the optimization of the waste facility should not contribute to an increase in accidents or safety concerns on the surrounding roads.

Sightlines at the Nauvoo Road entrance will remain adequate, ensuring that drivers have clear visibility when entering and exiting the facility. This will maintain safe driving conditions and reduce the risk of accidents at the site entrance.

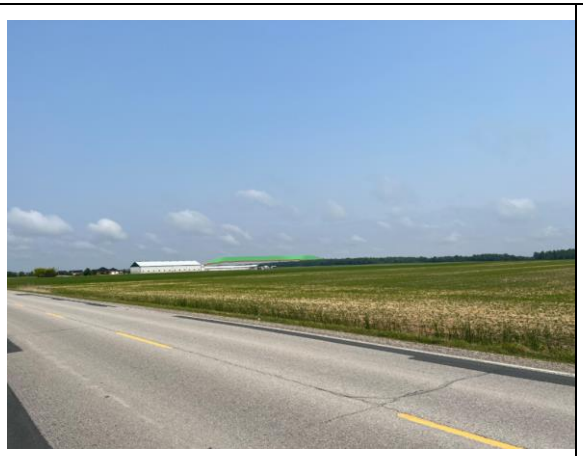
Overall, the further development and operations of the waste facility is expected to have minimal impacts on traffic operations, maintaining current conditions and ensuring the continued safety and efficiency of the transportation network.

Visual Impact

Figure 3-7 and **Figure 3-8** illustrate the simulated views of Alternative Method 2 from the six viewpoints. The total CEV for Alternative Method 2 is 77. Viewpoints 1, 3, and 5 are considered high CEV. Viewpoints 2 and 4 are considered moderate CEV and viewpoint 6 is considered low CEV.

Since the existing vegetated screening berms are not proposed to be altered, they will continue to grow and increase in height from the present day to the completion of Phase 5. The increase in the size and density of the trees will enhance the visual screening function of the vegetated berms.

Figure 3-7. Alternative Method 2 from Viewpoints 1 to 3

		
Viewpoint 1 – Alternative Method 2	***Viewpoint 2 – Alternative Method 2***	***Viewpoint 3 – Alternative Method 2***
This viewpoint is located east of the facility in the East Receptor Zone. The landfill area visible is 41,722 m² and the perceived area index is 59.6; the visible landfill area effect value is 5. The angle of exposed views is 41°; the horizontal angle of view effect value is 3. The distance to the visible landfill including the stockpile is 700 m; the distance from site effect value is 4. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 17, which is considered high.	This viewpoint is located south-east of the facility in the South Receptor Zone. The landfill area visible is 37,097 m² and the perceived area index is 12.5; the visible landfill area effect value is 2. The angle of exposed views is 15°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 2972 m; the distance from site effect value is 1. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 9, which is considered moderate.	This viewpoint is located south of the facility in the South Receptor Zone. The landfill area visible is 40,586 m² and the perceived area index is 25.0; the visible landfill area effect value is 5. The angle of exposed views is 21°; the horizontal angle of view effect value is 2. The distance to the visible landfill including the stockpile is 1621 m; the distance from site effect value is 2. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 14, which is considered high.

Source: (Schollen, 2024)

Figure 3-8. Alternative Method 2 from Viewpoints 4 to 6

		
Viewpoint 4 – Alternative Method 2	***Viewpoint 5 – Alternative Method 2***	***Viewpoint 6 – Alternative Method 2***
This viewpoint is located at the north-east corner of the Township of Watford, in the South Receptor Zone. The landfill area visible is 21,000 m² and the perceived area index is 15.1; the visible landfill area effect value is 3. The angle of exposed views is 15°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 1387 m; the distance from site effect value is 3. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 12, which is considered moderate.	This viewpoint is located west of the facility in the West Receptor Zone. The landfill area visible is 40,051 m² and the perceived area index is 56.6; the visible landfill area effect value is 5. The angle of exposed views is 41°; the horizontal angle of view effect value is 3. The distance to the visible landfill including the stockpile is 707 m; the distance from site effect value is 4. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 17, which is considered high.	This viewpoint is located north of the facility in the North Receptor Zone. The landfill area visible is 19,228 m² and the perceived area index is 6.8; the visible landfill area effect value is 1. The angle of exposed views is 11°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 2820 m; the distance from site effect value is 1. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 8, which is considered low.

Source: (Schollen, 2024)

Use and Enjoyment of Property

Since Alternative Method 2 involves a vertical expansion, it is not anticipated to significantly impact existing land uses. The separation distance between the landfill and the Village of Watford, along with pre-existing buffer zones, is expected to mitigate potential impacts such as noise and air quality issues, provided that appropriate mitigation measures and nuisance controls are maintained or enhanced.

For planned land uses, the existing approved waste disposal footprint will remain unchanged, ensuring that setback distances between the landfill and any planned developments are maintained. This means that future land uses near the landfill, particularly industrial uses, are expected to be compatible.

Regarding off-site recreational resources, there are several parks and a community center within the Social Off-site Study Area including Bluebird Parkette, Centennial Park, Sunken Gardens, Watford Memorial Park, and the East Lambton Community Centre. The Project is not expected to affect the setback distances to these recreational areas.

Sensitive land uses, such as schools, daycares, healthcare facilities, and cemeteries, are also present in Watford. The existing separation distance and buffer zones are anticipated to mitigate potential impacts on these sensitive uses, assuming that current mitigation measures are upheld.

Agricultural operations, which dominate the area surrounding the TCEC, are expected to experience minimal impact from the Project. The existing waste disposal footprint will not change.

Based on the results of the odour effects assessment, recreational resources to the south of the TCEC site, such as the adjacent trail, may experience an increase in odour at the start of landfilling; however, the extent of the odour exceedance decreases as the landfill is developed since the working face will move from west to east. The odour BMPP will continue to be implemented.

Although Alternative Method 2 could result in a minor increase in odour concentrations at off-site recreational resources to the south of the landfill footprint (e.g., the trail), the increased concentrations are unlikely to result in a change in use of property.

Consequently, changes to use and enjoyment of property are anticipated to be minor.

Level of Satisfaction with Living/Working in the Community

Alternative Method 2 has the potential to increase predicted concentrations of odour at discrete receptors, the majority of which are located north and west of the TCEC; therefore, it is expected that the frequency of exceedance at these discrete receptors may increase and the number of affected discrete receptors may increase. Since most of the population in the Social Off-site Study Area is located south of the TCEC, it is unlikely the majority of residents will experience changes in odour. The Air Quality Effects Assessment Report did not identify additional mitigation measures to address changes in odour as a result of the Project. The in-design mitigation measures outlined

in Section 2.1.3.2 will be undertaken and WM will continue to implement the BMPP for odour to address odour issues.

The Visual Landscape Effects Assessment simulated views of Alternative Method 2 from six viewpoints as illustrated in **Figure 3-7** and **Figure 3-8**. The total CEV for Alternative Method 2 is 78. Viewpoints 1, 3, and 5 are considered high CEV. Viewpoint 2 and viewpoint 4 (representative of north Watford) are considered moderate CEV, and viewpoint 6 is considered low CEV. Since the existing vegetated screening berms are not proposed to be altered, they will continue to grow and increase in height from the present day to the completion of Phase 5. The increase in the size and density of the trees will enhance the visual screening function of the vegetated berms.

The nuisance level of odour from Alternative Method 2 is not likely to reach the population centre of Watford but rather will be experienced to the north and west of the landfill, mostly at the beginning of operations when the equipment will be working at the landfill perimeter. Views of the landfill from Watford (viewpoint 4) are predicted to be moderate, and trees planted on the screening berms will continue to grow.

Consequently, changes in the level of satisfaction with living and working in the community are predicted to be minor.

Confidence in TCEC Operations

Operations at the TCEC will continue with no changes to operating hours, haul routes, or equipment. The WPLC, TRT, and MECP will continue their activities regarding the site as noted above. WM will continue to provide prompt attention to nuisance complaints to mitigate any adverse effects to the surrounding community as outlined in Section 2.1.3.2. Consequently, no changes to confidence in TCEC operations are anticipated.

3.3.1.2 Summary

A summary of the effects assessment of Alternative Method 2 for the Social Environment is presented below in **Table 3-3**.

Table 3-3. Net Effects Assessment – Alternative Method 2: Social Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Social Environment					
Effects on Local Community	Number of residents and residences (e.g., receptors)	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to number of employment positions at the TCEC.	• No changes to number of residents and residences.	• None required	• No net effects
	Number and type of local businesses	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • Procurement and provision of products and services will continue as per current operations.	• No changes to number and type of local businesses. • No displacement of business activities.	• None required	• No net effects
	Nuisance effects (litter, dust, noise, odour, traffic, visual)	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to haul routes. • No changes to operating hours. • No changes to catchment area, vehicle origin-destination patterns, and hourly/daily trips. • No increase in the average daily tonnage. • Existing nuisance effect control and management measures will continue.	• Potential increase in predicted concentrations of odour at discrete receptors, frequency of exceedance at discrete receptors, and number of affected discrete receptors. • The proposed height increase could lead to higher wind speeds at the landfill's working face, potentially raising the frequency of litter events. • Potential increase in predicted concentrations of dust at discrete receptors, frequency of exceedance at discrete receptors, and number of affected discrete receptors. • Potential increase in off-site sound levels at receptors due to decreased separation distance from the working face.	• WM will continue to implement the odour BMPP to address odour emissions. • The litter BMPP is anticipated to effectively control blowing litter. • WM will continue to implement the dust BMPP to address dust emissions. • Construction of temporary operational berms when working along the landfill perimeter, and reduction in the number of equipment	• Predicted odour concentrations may exceed criteria at discrete receptor locations and the frequency of odour levels above defined odour benchmarks may increase. • Visual CEV of 77, with 3 high CEV viewpoints, two moderate CEV viewpoints, and one low CEV viewpoint. • No net effects from litter, dust, noise, birds, and traffic.

Table 3-3. Net Effects Assessment – Alternative Method 2: Social Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
			• The continued use of the landfill beyond the approved design will prolong the attractiveness of the area for gulls and other avifaunal (bird) scavengers. • No changes to the overall volume of vehicles entering and exiting the TCEC. • Visual CEV of 77, with 3 high CEV viewpoints, two moderate CEV viewpoints, and one low CEV viewpoint.	operating near the landfill perimeter. • Avifaunal (bird) scavengers will continue to be managed following current protocols using deterrents. • Existing vegetated screening berms will continue to grow and increase in height.	
	Predicted changes to use and enjoyment of property	• Existing nuisance effect control and management measures will continue.	• Potential changes to use and enjoyment of property resulting from increases in odour at recreational areas located south of the landfill.	• WM will continue to implement the odour BMPP to address odour emissions.	• Minor changes to use and enjoyment of property are anticipated due to increased odour at recreational areas located south of the landfill.
	Level of satisfaction with living/working in the community	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to haul routes. • No changes to operating hours. • No changes to catchment area, vehicle origin-destination patterns, and hourly/daily trips. • No increase in the average daily tonnage. • Existing nuisance effect control and management measures will continue.	• Potential changes to the level of satisfaction with living and working in the community resulting from increases in odour and changes to the visual landscape.	• WM will continue to implement the odour BMPP to address odour emissions. • Existing vegetated screening berms will continue to grow and increase in height.	• Minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.

Table 3-3. Net Effects Assessment – Alternative Method 2: Social Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
	Confidence in TCEC operations	• Operations at the TCEC will continue with no changes to operating hours, haul routes, or equipment. • The WPLC, TRT, and MECP will continue their activities regarding the site (review, inspections).	• Potential changes to confidence in TCEC operations.	• WM will continue to provide prompt attention to nuisance complaints to mitigate any adverse effects to the surrounding community.	• No net effects.

3.3.2 Economic Environment

The assessment of effects for Alternative Method 2 is described below for the environmental criteria and indicators of the Economic Environment and is summarized in **Table 3-4**.

3.3.2.1 Economic Effects on Local Community

WM has successfully operated the TCEC since 2009 and it has become an important addition to the local community by creating employment opportunities, contributing financially to the Township of Warwick and supporting local initiatives within the community, and procuring and providing products and services to and from local businesses.

Employment at Site

The TCEC provides stable employment for 33 staff, the majority of which are equipment operators. Alternative Method 2 will not result in any changes to the number of employment positions; however, the existing 33 stable employment positions will continue for an additional 12 years.

Contributions to the Host Community

As previously noted, WM has a Host Community Agreement with the Township of Warwick and has contributed over $36.9M in host community fees to the Township since 2009 (2009 through 2023). Through annual host community payments, WM has contributed, on average, approximately 39% of the Township's total annual revenue. Over the past 10 years, WM has also provided additional support for community projects, contributing over $800,000 to important projects across the County of Lambton.

It is expected that WM will continue its host community contributions and community support under Alternative Method 2. Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of Alternative Method 2 are estimated to amount to approximately $49M. Community support contributions depend upon the availability of community projects, so the dollar amount of future contributions cannot be estimated in advance; however, WM will continue to contribute to community projects.

Provision and Procurement of Products and/or Services

WM relies on a variety of local vendors to maintain its operations at the TCEC, contributing between approximately $1.7M and $10.8M annually to the local economy (Watford and Township of Warwick) through the procurement of local goods and services. These contributions are expected to continue under Alternative Method 2. Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 2.

The continued operation of the landfill will allow the TCEC to continue to operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network.

3.3.2.2 Summary

A summary of the effects assessment of Alternative Method 2 on the Economic Environment is presented below in **Table 3-4**.

Table 3-4. Net Effects Assessment – Alternative Method 2: Economic Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Economic Environment					
Economic Effects on Local Community	Employment at site (number, type, and duration)	• No additional employment positions will be created as a result of the future development beyond the current number of positions.	• Existing 33 stable employment positions will continue for an additional 12 years during operation of Alternative Method 2.	• None required.	• Existing 33 stable employment positions will continue for an additional 12 years during operation of Alternative Method 2.
	Contributions to the host community	• Municipal contributions will continue as per current operations.	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of Alternative Method 2 are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operation of Alternative Method 2.	• None required.	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of Alternative Method 2 are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operation of Alternative Method 2.
	Opportunities for the provision and procurement of products and/or services	• The TCEC will continue to require goods and services from local businesses and provide services at the same rates as required for current operations.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 2. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operation of Alternative Method 2.	• None required.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 2. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operation of Alternative Method 2.

3.4 Alternative Method 3

3.4.1 Social Environment

The assessment of effects for Alternative Method 3 is described below for the environmental criteria and indicators of the Social Environment and is summarized in **Table 3-5**.

3.4.1.1 Effects on Local Community

Waste disposal facilities can potentially affect local residents and businesses in the vicinity of the site. Population can increase or decrease as a result of residential land acquisition and changes to employment. Residents and their use of property can be affected through disturbance from odour, litter, dust, noise, traffic, and changes to the visual landscape.

Number of Residents and Residences

Alternative Method 3 is not anticipated to result in any changes to the number of employment positions at the TCEC, and the development will occur within the approved Expansion Landfill footprint, so no residential land acquisition is required; consequently, no changes to population (number of residents and residences) are anticipated within the Social Off-site Study Area as a result of the Project.

Number and Type of Local Businesses

Alternative Method 3 is not expected to change the number and type of local businesses. Procurement and provision of products and services are expected to continue as per current operations, and no business activities will be displaced by Project activities.

Nuisance Effects

The assessment of nuisance effects for Alternative Method 3 is provided below by type of effect.

Information regarding future baseline conditions was sourced from the following reports:

- Odour, litter, and dust: Air Quality Effects Assessment Report (RWDI, 2024a).
- Noise: Noise Effects Assessment Report (RWDI, 2024b).
- Traffic: Transportation Effects Assessment Report (HDR, 2024).
- Visual impact: Visual Landscape Effects Assessment Report (Schollen, 2024).

Odour

Under the Future Baseline Conditions, the working face and the southern access haul route would extend towards the northeast corner of the approved landfill area, as an

approximation of where activity could occur towards the end of Expansion Landfill Phase 8 and 9. However, operations will shift throughout the landfill's lifespan, and the odour impact assessment considered the three operational scenarios to determine odour emissions over time as the landfill stages are developed. During these stages, the working face will be positioned closer to receptors in the west, northwest, and northeast at different times. Given that activities at the working face can generate odours, it is anticipated that off-site odour concentrations at specific receptors may increase compared to Future Baseline Conditions.

Alternative Method 3 has the potential to increase predicted concentrations of odour at discrete receptors; therefore, it is expected that the frequency of exceedance at discrete receptors may increase and the number of affected discrete receptors may increase compared to Future Baseline Conditions.

The Air Quality Effects Assessment Report did not identify additional mitigation measures to address changes in odour as a result of the Project. The in-design mitigation measures outlined in Section 2.1.3.2 will be undertaken and WM will continue to implement the BMPP for odour to address odour issues.

Litter

Blowing litter zones were defined for Future Baseline Conditions based on their distance from the landfill's perimeter. Since the landfill footprint remains unchanged between Alternative Method 3 and Future Baseline Conditions, the zones at risk from blowing litter will also remain the same.

The meteorological data used to identify the number and location of off-site receptors potentially impacted by blowing litter is expected to remain consistent with Future Baseline Conditions for Alternative Method 3; however, the proposed height increase in Alternative Method 3 could lead to higher wind speeds at the landfill's working face, potentially raising the frequency of litter events. Despite this, the litter BMPP (Section 2.1.3.2) is anticipated to effectively control blowing litter in Alternative Method 3. As a result, the number of affected receptors is expected to remain unchanged compared to Future Baseline Conditions.

Dust

Alternative Method 3 will maintain the same waste filling rate as Future Baseline Conditions. Consequently, the traffic from waste delivery vehicles and most on-site haul routes are anticipated to remain similar to these baseline conditions. Under Future Baseline Conditions, the working face and the southern access haul route would extend towards the northeast corner of the approved landfill area, indicating potential activity towards the end of Expansion Landfill Phase 8 and 9. However, operations will shift around the landfill site throughout its lifespan, and the air quality impact assessment considered three operational scenarios to determine dust emissions over time as the landfill stages are developed.

The relocation of the working face and access routes in each scenario is expected to alter predicted dust concentrations at nearby receptors. Generally, when the working

face is near the northeastern or northwestern edges of the landfill, off-site dust concentrations are likely to rise for receptors to the west and northwest, and to a lesser extent, the northeast. While the size of the working face and the volume of material for daily and final cover will remain unchanged, the proximity to receptors will drive the increase in predicted dust concentrations. This will affect dust emissions from haul route traffic, daily cover handling, and wind erosion of exposed materials at the working face and cap construction.

Overall, Alternative Method 3 may lead to higher off-site dust concentrations at specific receptors to the west and northwest, and somewhat to the northeast, as these receptors become closer to the working face and related infrastructure over the landfill's operational life.

Alternative Method 3 has the potential to increase predicted dust concentrations of dust at discrete receptors at some points during site operation; therefore, it is expected that the frequency of exceedance at discrete receptors may increase and the number of affected discrete receptors may increase compared to Future Baseline Conditions.

The dust control measures outlined in Section 2.1.3.2 will continue to be implemented to address dust emissions from landfill operations.

Noise

Similar to Alternative Method 1 & 2, this method is expected to impact off-site noise levels due to the reintroduction of landfilling equipment along the perimeter of the approved landfill extents.

They also share the same mitigation measures to either construct temporary working berms or limit the amount of equipment near the perimeter of the landfill.

Traffic

Alternative Method 3 is expected to have minimal impact on traffic. The transportation network will remain unchanged, with background traffic growth being the primary factor influencing future traffic volumes. The facility's catchment area, vehicle origin-destination patterns, and hourly/daily trips will not change, ensuring that traffic conditions remain similar to current levels.

There will be no increase in the average daily tonnage, which means that the overall volume of vehicles entering and exiting the facility will not change significantly, maintaining the current traffic flow.

Intersection performance is also expected to remain stable. Most intersections will maintain their current levels of service, with only minor increases in volume capacity ratios. These slight increases are within acceptable thresholds, ensuring that intersections will continue to operate efficiently without significant delays or congestion.

Future queues at the facility are projected to be nearly identical to current conditions; however, there may be some excess queueing at the inbound weigh scale during peak

hours. This excess is expected to be minimal and will not significantly impact the overall traffic flow or cause major disruptions.

In terms of road safety, collision rates are not expected to change. There is no identified link between the facility's truck traffic and collisions within the study area. Therefore, the optimization of the waste facility should not contribute to an increase in accidents or safety concerns on the surrounding roads.

Sightlines at the Nauvoo Road entrance will remain adequate, ensuring that drivers have clear visibility when entering and exiting the facility. This will maintain safe driving conditions and reduce the risk of accidents at the site entrance.

Overall, the further development and operations of the waste facility is expected to have minimal impacts on traffic operations, maintaining current conditions and ensuring the continued safety and efficiency of the transportation network.

Visual Impact

Figure 3-9 and **Figure 3-10** illustrate the simulated views of Alternative Method 3 from the six viewpoints. The total CEV for Alternative Method 3 is 81. Viewpoints 1, 3, 4 and 5 were considered high CEV. Viewpoints 2 and 6 were considered moderate CEV.

Since the existing vegetated screening berms are not proposed to be altered, they will continue to grow and increase in height from the present day to the completion of Phase 5. The increase in the size and density of the trees will enhance the visual screening function of the vegetated berms.

Figure 3-9. Alternative Method 3 from Viewpoints 1 to 3

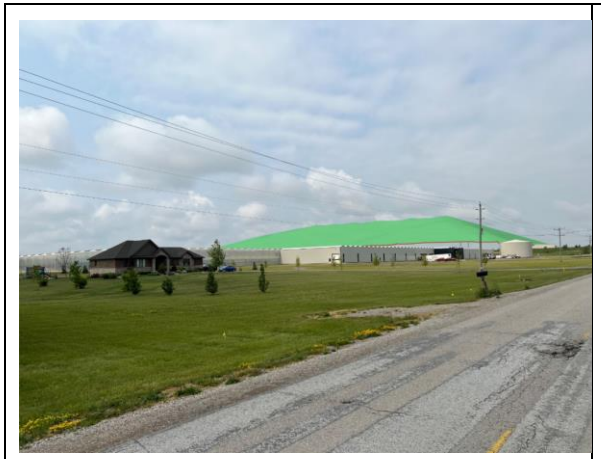
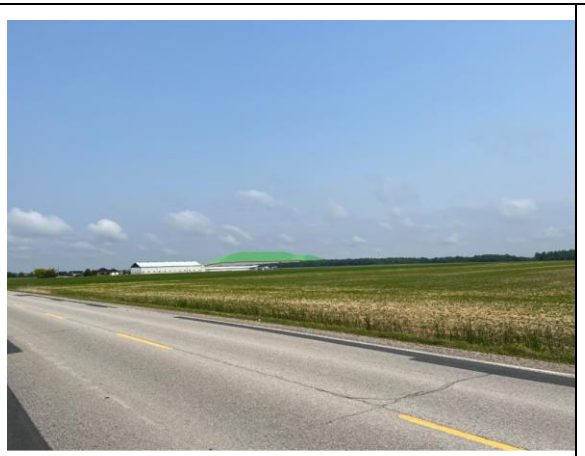
		
Viewpoint 1 – Alternative Method 3	***Viewpoint 2 – Alternative Method 3***	***Viewpoint 3 – Alternative Method 3***
This viewpoint is located east of the facility in the East Receptor Zone. The landfill area visible is 63,950 m² and the perceived area index is 91.4; the visible landfill area effect value is 5. The angle of exposed views is 41°; the horizontal angle of view effect value is 3. The distance to the visible landfill including the stockpile is 700 m; the distance from site effect value is 4. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 17, which is considered high.	This viewpoint is located south-east of the facility in the South Receptor Zone. The landfill area visible is 57,893 m² and the perceived area index is 19.5; the visible landfill area effect value is 4. The angle of exposed views is 15°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 2972 m; the distance from site effect value is 1. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 11, which is considered moderate.	This viewpoint is located south of the facility in the South Receptor Zone. The landfill area visible is 61,476 m² and the perceived area index is 37.9; the visible landfill area effect value is 5. The angle of exposed views is 21°; the horizontal angle of view effect value is 2. The distance to the visible landfill including the stockpile is 1621 m; the distance from site effect value is 2. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 14, which is considered high.

Figure 3-10. Alternative Method 3 from Viewpoints 4 to 6

		
Viewpoint 4 – Alternative Method 3	***Viewpoint 5 – Alternative Method***	***Viewpoint 6 – Alternative Method 3***
This viewpoint is located at the north-east corner of the Township of Watford, in the South Receptor Zone. The landfill area visible is 29,546 m² and the perceived area index is 21.3; the visible landfill area effect value is 4. The angle of exposed views is 15°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 1387 m; the distance from site effect value is 3. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 13, which is considered high.	This viewpoint is located west of the facility in the West Receptor Zone. The landfill area visible is 60,574 m² and the perceived area index is 85.7; the visible landfill area effect value is 5. The angle of exposed views is 41°; the horizontal angle of view effect value is 3. The distance to the visible landfill including the stockpile is 707 m; the distance from site effect value is 4. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 17, which is considered high.	This viewpoint is located north of the facility in the North Receptor Zone. The landfill area visible is 26,943 m² and the perceived area index is 9.6; the visible landfill area effect value is 2. The angle of exposed views is 11°; the horizontal angle of view effect value is 1. The distance to the visible landfill including the stockpile is 2820 m; the distance from site effect value is 1. The visual absorption capability factor (VACF) is 1 and has a VACF effect value of 5. The combined effect value is 9, which is considered moderate.

Use and Enjoyment of Property

Since Alternative Method 3 involves a vertical expansion, it is not anticipated to significantly impact existing land uses. The separation distance between the landfill and the Village of Watford, along with pre-existing buffer zones, is expected to mitigate potential impacts such as noise and air quality issues, provided that appropriate mitigation measures and nuisance controls are maintained or enhanced.

For planned land uses, the existing approved waste disposal footprint will remain unchanged, ensuring that setback distances between the landfill and any planned developments are maintained. This means that future land uses near the landfill, particularly industrial uses, are expected to be compatible.

Regarding off-site recreational resources, there are several parks and a community center within the Social Off-site Study Area including Bluebird Parkette, Centennial Park, Sunken Gardens, Watford Memorial Park, and the East Lambton Community Centre. The Project is not expected to affect the setback distances to these recreational areas.

Sensitive land uses, such as schools, daycares, healthcare facilities, and cemeteries, are also present in Watford. The existing separation distance and buffer zones are anticipated to mitigate potential impacts on these sensitive uses, assuming that current mitigation measures are upheld.

Agricultural operations, which dominate the area surrounding the TCEC, are expected to experience minimal impact from the Project. The existing waste disposal footprint will not change.

Based on the results of the odour effects assessment, recreational resources to the south of the TCEC site, such as the adjacent trail, may experience an increase in odour at the start of landfilling; however, the extent of the odour exceedance decreases as the landfill is developed since the working face will move from west to east. The odour BMPP will continue to be implemented.

Although Alternative Method 3 could result in a minor increase in odour concentrations at off-site recreational resources to the south of the landfill footprint (e.g., the trail), the increased concentrations are unlikely to result in a change in use of property.

Consequently, changes to use and enjoyment of property are anticipated to be minor.

Level of Satisfaction with Living/Working in the Community

Alternative Method 3 has the potential to increase predicted concentrations of odour at discrete receptors, the majority of which are located north and west of the TCEC; therefore, it is expected that the frequency of exceedance at these discrete receptors may increase and the number of affected discrete receptors may increase. Since most of the population in the Social Off-site Study Area is located south of the TCEC, it is unlikely the majority of residents will experience changes in odour. The Air Quality Effects Assessment Report did not identify additional mitigation measures to address changes in odour as a result of the Project. The in-design mitigation measures outlined

in Section 2.1.3.2 will be undertaken and WM will continue to implement the BMPP for odour to address odour issues.

The Visual Landscape Effects Assessment simulated views of Alternative Method 3 from six viewpoints as illustrated in **Figure 3-9** and **Figure 3-10**. The total CEV for Alternative Method 3 is 81. Viewpoints 1, 3, 4 (representative of north Watford), and 5 are considered high CEV. Viewpoints 2 and 6 are considered moderate CEV. Since the existing vegetated screening berms are not proposed to be altered, they will continue to grow and increase in height from the present day to the completion of Phase 5. The increase in the size and density of the trees will enhance the visual screening function of the vegetated berms.

The nuisance level of odour from Alternative Method 3 is not likely to reach the population centre of Watford but rather will be experienced to the north and west of the landfill, mostly at the beginning of operations when the equipment will be working at the landfill perimeter. Views of the landfill from Watford (viewpoint 4) are predicted to be high; however, trees planted on the screening berms will continue to grow.

Consequently, changes in the level of satisfaction with living and working in the community are predicted to be moderate.

Confidence in TCEC Operations

Operations at the TCEC will continue with no changes to operating hours, haul routes, or equipment. The WPLC, TRT, and MECP will continue their activities regarding the site as noted above. WM will continue to provide prompt attention to nuisance complaints to mitigate any adverse effects to the surrounding community as outlined in Section 2.1.3.2. Consequently, no changes to confidence in TCEC operations are anticipated.

3.4.1.2 Summary

A summary of the effects assessment of Alternative Method 3 on the Social Environment is presented below in **Table 3-5**.

Table 3-5. Net Effects Assessment – Alternative Method 3: Social Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Social Environment					
Effects on Local Community	Number of residents and residences (e.g., receptors)	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to number of employment positions at the TCEC.	• No changes to number of residents and residences.	• None required	• No net effects
	Number and type of local businesses	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • Procurement and provision of products and services will continue as per current operations.	• No changes to number and type of local businesses. • No displacement of business activities.	• None required	• No net effects
	Nuisance effects (litter, dust, noise, odour, birds, traffic, visual)	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to haul routes. • No changes to operating hours. • No changes to catchment area, vehicle origin-destination patterns, and hourly/daily trips. • No increase in the average daily tonnage. • Existing nuisance effect control and management measures will continue.	• Potential increase in predicted concentrations of odour at discrete receptors, frequency of exceedance at discrete receptors, and number of affected discrete receptors. • The proposed height increase could lead to higher wind speeds at the landfill's working face, potentially raising the frequency of litter events. • Potential increase in predicted concentrations of dust at discrete receptors, frequency of exceedance at	• WM will continue to implement the odour BMPP to address odour emissions. • The litter BMPP is anticipated to effectively control blowing litter. • WM will continue to implement the dust BMPP to address dust emissions. • Construction of temporary operational berms when working along the landfill perimeter, and reduction in the number of	• Predicted odour concentrations may exceed criteria at discrete receptor locations and the frequency of odour levels above defined odour benchmarks may increase. • Visual CEV of 81, with 3 high CEV viewpoints and three moderate CEV viewpoints. • No net effects from litter, dust, noise, birds, and traffic.

Table 3-5. Net Effects Assessment – Alternative Method 3: Social Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
			discrete receptors, and number of affected discrete receptors. • Potential increase in off-site sound levels at receptors due to decreased separation distance from the working face. • The continued use of the landfill beyond the approved design will prolong the attractiveness of the area for gulls and other avifaunal (bird) scavengers. • No changes to the overall volume of vehicles entering and exiting the TCEC. • Visual CEV of 81, with 3 high CEV viewpoints and three moderate CEV viewpoints.	equipment operating near the landfill perimeter. • Avifaunal (bird) scavengers will continue to be managed following current protocols using deterrents. • Existing vegetated screening berms will continue to grow and increase in height.	
	Predicted changes to use and enjoyment of property	• Existing nuisance effect control and management measures will continue.	• Potential changes to use and enjoyment of property resulting from increases in odour at recreational areas located south of the landfill.	• WM will continue to implement the odour BMPP to address odour emissions.	• Minor changes to use and enjoyment of property are anticipated due to increased odour at recreational areas located south of the landfill.
	Level of satisfaction with living/working in the community	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to haul routes. • No changes to operating hours.	• Potential changes to the level of satisfaction with living and working in the community resulting from increases in odour and changes to the visual landscape.	• WM will continue to implement the odour BMPP to address odour emissions. • Existing vegetated screening berms will continue to grow and increase in height.	• Moderate changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.

Table 3-5. Net Effects Assessment – Alternative Method 3: Social Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
		• No changes to catchment area, vehicle origin-destination patterns, and hourly/daily trips. • No increase in the average daily tonnage. • Existing nuisance effect control and management measures will continue.			
	Confidence in TCEC operations	• Operations at the TCEC will continue with no changes to operating hours, haul routes, or equipment. • The WPLC, TRT, and MECP will continue their activities regarding the site (review, inspections).	• Potential changes to confidence in TCEC operations.	• WM will continue to provide prompt attention to nuisance complaints to mitigate any adverse effects to the surrounding community.	• No net effects.

3.4.2 Economic Environment

The assessment of effects for Alternative Method 3 is described below for the environmental criteria and indicators of the Economic Environment and is summarized in **Table 3-6**.

3.4.2.1 Economic Effects on Local Community

WM has successfully operated the TCEC since 2009 and it has become an important addition to the local community by creating employment opportunities, contributing financially to the Township of Warwick and supporting local initiatives within the community, and procuring and providing products and services to and from local businesses.

Employment at Site

The TCEC provides stable employment for 33 staff, the majority of which are operators. Alternative Method 3 will not result in any changes to the number of employment positions; however, the existing 33 stable employment positions will continue for an additional 12 years.

Contributions to the Host Community

As previously noted, WM has a Host Community Agreement with the Township of Warwick and has contributed over $36.9M in host community fees to the Township since 2009 (2009 through 2023). Through annual host community payments, WM has contributed, on average, approximately 39% of the Township's total annual revenue. Over the past 10 years, WM has also provided additional support for community projects, contributing over $800,000 to important projects across the County of Lambton.

It is expected that WM will continue its host community contributions and community support under Alternative Method 3. Based on the average annual contributions (estimated at approximately $4.1M), host community payments for the duration of Alternative Method 3 are estimated to amount to approximately $49M. Community support contributions depend upon the availability of community projects, so the dollar amount of future contributions cannot be estimated in advance; however, WM will continue to contribute to community projects.

Provision and Procurement of Products and/or Services

WM relies on a variety of local vendors to maintain its operations at the TCEC, contributing between approximately $1.7M and $10.8M annually to the local economy (Watford and Township of Warwick) through the procurement of local goods and services. These contributions are expected to continue under Alternative Method 3. Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 3.

The continued operation of the landfill will allow the TCEC to continue to operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network.

3.4.2.2 Summary

A summary of the effects assessment of Alternative Method 3 on the Economic Environment is presented below in **Table 3-6**.

Table 3-6. Net Effects Assessment – Alternative Method 3: Economic Environment

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Economic Environment					
Economic Effects on Local Community	Employment at site (number, type, and duration)	• No additional employment positions will be created as a result of the future development beyond the current number of positions.	• Existing 33 stable employment positions will continue for an additional 12 years during operation of Alternative Method 3.	• None required.	• Existing 33 stable employment positions will continue for an additional 12 years during operation of Alternative Method 3.
	Contributions to the host community	• Municipal contributions will continue as per current operations.	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of Alternative Method 3 are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operation of Alternative Method 3.	• None required.	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of Alternative Method 3 are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operation of Alternative Method 3.
	Opportunities for the provision and procurement of products and/or services	• The TCEC will continue to require goods and services from local businesses and provide services at the same rates as required for current operations.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 3. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operation of Alternative Method 3.	• None required.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of Alternative Method 3. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operation of Alternative Method 3.

4 Comparative Evaluation of Net Effects and Identification of the Preferred Alternative

The comparative evaluation of the net effects of each alternative method and the identification of a Preferred Alternative are carried out in accordance with the methods described in Section 2.2. The three alternative methods are comparatively assessed and evaluated using the criteria and indicators to determine the Preferred Alternative. The differences in the potential environmental effects remaining following the implementation of potential mitigation/management measures (i.e., net effects) are used to identify and compare each alternative method. The comparative evaluation of the alternative methods for the Socio-Economic Environment is provided in **Table 4-1**, below.

Table 4-1. Comparative Evaluation of the Net Effects of the Alternative Methods for the Socio-Economic Environment

Evaluation Criteria	Indicator	Net Effects of Alternative Methods		
		Alternative Method 1	Alternative Method 2	Alternative Method 3
Social Environment				
Effects on Local Community	Number of residents and residences (e.g., receptors)	No net effects. **No Substantial Difference**	No net effects. **No Substantial Difference**	No net effects. **No Substantial Difference**
	Number and type of local businesses	No net effects **No Substantial Difference**	No net effects **No Substantial Difference**	No net effects **No Substantial Difference**
	Nuisance effects (litter, dust, noise, odour, traffic, visual)	• Predicted odour concentrations may exceed criteria at discrete receptor locations and the frequency of odour levels above defined odour benchmarks may increase. • Visual CEV of 78, with 3 high CEV viewpoints, two moderate CEV viewpoints, and one low CEV viewpoint. • No net effects from litter, dust, noise, birds, and traffic. **Not Preferred**	• Predicted odour concentrations may exceed criteria at discrete receptor locations and the frequency of odour levels above defined odour benchmarks may increase. • Visual CEV of 77, with 3 high CEV viewpoints, two moderate CEV viewpoints, and one low CEV viewpoint. • No net effects from litter, dust, noise, birds, and traffic. **Preferred**	• Predicted odour concentrations may exceed criteria at discrete receptor locations and the frequency of odour levels above defined odour benchmarks may increase. • Visual CEV of 81, with 3 high CEV viewpoints and three moderate CEV viewpoints. • No net effects from litter, dust, noise, birds, and traffic. **Not Preferred**
	Predicted changes to use and enjoyment of property	Minor changes to use and enjoyment of property are anticipated due to increased odour at recreational areas located south of the landfill. **No Substantial Difference**	Minor changes to use and enjoyment of property are anticipated due to increased odour at recreational areas located south of the landfill. **No Substantial Difference**	Minor changes to use and enjoyment of property are anticipated due to increased odour at recreational areas located south of the landfill. **No Substantial Difference**
	Level of satisfaction with living/working in the community	Minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape. **Preferred**	Minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape. **Preferred**	Moderate changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape. **Not Preferred**

Table 4-1. Comparative Evaluation of the Net Effects of the Alternative Methods for the Socio-Economic Environment

Evaluation Criteria	Indicator	Net Effects of Alternative Methods		
		Alternative Method 1	**Alternative Method 2**	**Alternative Method 3**
	Confidence in TCEC operations	No net effects. **No Substantial Difference**	No net effects. **No Substantial Difference**	No net effects. **No Substantial Difference**
	Criteria Rating & Rationale	***Alternative Method 2 is preferred over Alternative Methods 1 and 3 for the Social Environment.*** Alternative Method 2 will result in an overall lower visual combined effect value (CEV) than Alternative Methods 1 and 3, and minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.		
Economic Environment				
Economic Effects on Local Community	Employment at site (number, type, and duration)	Existing 33 stable employment positions will continue for an additional 12 years. **No Substantial Difference**	Existing 33 stable employment positions will continue for an additional 12 years. **No Substantial Difference**	Existing 33 stable employment positions will continue for an additional 12 years. **No Substantial Difference**
	Contributions to the host community	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operations. **No Substantial Difference**	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operations. **No Substantial Difference**	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operations. **No Substantial Difference**

Table 4-1. Comparative Evaluation of the Net Effects of the Alternative Methods for the Socio-Economic Environment

Evaluation Criteria	Indicator	Net Effects of Alternative Methods		
		Alternative Method 1	Alternative Method 2	Alternative Method 3
	Opportunities for the provision and procurement of products and/or services	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy during operations. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operations. **No Substantial Difference**	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy during operations. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operations. **No Substantial Difference**	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy during operations. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operations. **No Substantial Difference**
	Criteria Rating & Rationale	***There is no substantial difference between the alternative methods for the Economic Environment.*** Each alternative method will result in an additional 12 years of stable employment for 33 WM employees, host community payments of approximately $49M, continued contributions to community projects, an estimated $27M contributed to the local economy during operations, and the supply of renewable natural gas to the gas distribution network.		
Preferred Alternative: Alternative Method 2 is the Preferred Alternative as it will result in an overall lower visual combined effect value (CEV) than Alternative Methods 1 and 3, and minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.				

Alternative Method 2 is the Preferred Alternative as it will result in an overall lower visual combined effect value (CEV) than Alternative Methods 1 and 3, and minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.

5 Effects Assessment of the Preferred Alternative

Based on the comparative evaluation conducted in Section 4, Alternative Method 2 is the Preferred Alternative for the Socio-Economic Environment. The effects of the Preferred Alternative are presented below only for those criteria and indicators where effects are anticipated. There are no net effects predicted for the following Socio-Economic criteria and indicators:

- Social Environment
  - Effects on Local Community
    - Number of residents and residences (e.g., receptors)
    - Number and type of local businesses
    - Nuisance effects related to litter, dust, noise, birds, and traffic
    - Confidence in TCEC operations

5.1.1 Social Environment

The assessment of effects for Preferred Alternative is described below for the environmental criteria and indicators of the Social Environment and is summarized in **Table 5-1**.

5.1.1.1 Effects on Local Community

Waste disposal facilities can potentially affect local residents and businesses in the vicinity of the site. Population can increase or decrease as a result of residential land acquisition and changes to employment. Residents and their use of property can be affected through disturbance from odour, litter, dust, noise, traffic, and changes to the visual landscape.

Nuisance Effects

The assessment of nuisance effects for Preferred Alternative is provided below by type of effect.

Information regarding future baseline conditions regarding nuisance effects was sourced from the following reports:

- Odour, litter, and dust: Air Quality Effects Assessment Report (RWDI, 2024a).

- Noise: Noise Effects Assessment Report (RWDI, 2024b).
- Traffic: Transportation Effects Assessment Report (HDR, 2024).
- Visual impact: Visual Landscape Effects Assessment Report (Schollen, 2024).

Odour

Under the Future Baseline Conditions, the working face and the southern access haul route would extend towards the northeast corner of the approved landfill area, as an approximation of where activity could occur towards the end of Expansion Landfill Phase 8 and 9. However, operations will shift throughout the landfill's lifespan, and the odour impact assessment considered the three operational scenarios to determine odour emissions over time as the landfill stages are developed. During these stages, the working face will be positioned closer to receptors in the west, northwest, and northeast at different times. Given that activities at the working face can generate odours, it is anticipated that off-site odour concentrations at specific receptors may increase compared to Future Baseline Conditions.

Preferred Alternative has the potential to increase predicted concentrations of odour at discrete receptors; therefore, it is expected that the frequency of exceedance at discrete receptors may increase and the number of affected discrete receptors may increase compared to Future Baseline Conditions.

The Air Quality Effects Assessment Report did not identify additional mitigation measures to address changes in odour as a result of the Project. The in-design mitigation measures outlined in Section 2.1.3.2 will be undertaken and WM will continue to implement the BMPP for odour to address odour issues.

Visual Impact

Figure 3-7 and **Figure 3-8** illustrate the simulated views of Preferred Alternative from the six viewpoints. The total CEV for Preferred Alternative is 77. Viewpoints 1, 3, and 5 are considered high CEV. Viewpoints 2 and 4 are considered moderate CEV and viewpoint 6 is considered low CEV.

Since the existing vegetated screening berms are not proposed to be altered, they will continue to grow and increase in height from the present day to the completion of Phase 5. The increase in the size and density of the trees will enhance the visual screening function of the vegetated berms.

Use and Enjoyment of Property

Since the Preferred Alternative involves a vertical expansion, it is not anticipated to significantly impact existing land uses. The separation distance between the landfill and the Village of Watford, along with pre-existing buffer zones, is expected to mitigate potential impacts such as noise and air quality issues, provided that appropriate mitigation measures and nuisance controls are maintained or enhanced.

For planned land uses, the existing approved waste disposal footprint will remain unchanged, ensuring that setback distances between the landfill and any planned developments are maintained. This means that future land uses near the landfill, particularly industrial uses, are expected to be compatible.

Regarding off-site recreational resources, there are several parks and a community center within the Social Off-site Study Area including Bluebird Parkette, Centennial Park, Sunken Gardens, Watford Memorial Park, and the East Lambton Community Centre. The Project is not expected to affect the setback distances to these recreational areas.

Sensitive land uses, such as schools, daycares, healthcare facilities, and cemeteries, are also present in Watford. The existing separation distance and buffer zones are anticipated to mitigate potential impacts on these sensitive uses, assuming that current mitigation measures are upheld.

Agricultural operations, which dominate the area surrounding the TCEC, are expected to experience minimal impact from the Project. The existing waste disposal footprint will not change.

Based on the results of the odour effects assessment, recreational resources to the south of the TCEC site, such as the adjacent trail, may experience an increase in odour at the start of landfilling; however, the extent of the odour exceedance decreases as the landfill is developed since the working face will move from west to east. The odour BMPP will continue to be implemented.

Although the Preferred Alternative could result in a minor increase in odour concentrations at off-site recreational resources to the south of the landfill footprint (e.g., the trail), the increased concentrations are unlikely to result in a change in use of property.

Consequently, changes to use and enjoyment of property are anticipated to be minor.

Level of Satisfaction with Living/Working in the Community

The Preferred Alternative has the potential to increase predicted concentrations of odour at discrete receptors, the majority of which are located north and west of the TCEC; therefore, it is expected that the frequency of exceedance at these discrete receptors may increase and the number of affected discrete receptors may increase. Since most of the population in the Social Off-site Study Area is located south of the TCEC, it is unlikely the majority of residents will experience changes in odour. The Air Quality Effects Assessment Report did not identify additional mitigation measures to address changes in odour as a result of the Project. The in-design mitigation measures outlined in Section 2.1.3.2 will be undertaken and WM will continue to implement the BMPP for odour to address odour issues.

The Visual Landscape Effects Assessment simulated views of Preferred Alternative from six viewpoints as illustrated in **Figure 3-7** and **Figure 3-8**. The total CEV for Preferred Alternative is 78. Viewpoints 1, 3, and 5 are considered high CEV. Viewpoint

2 and viewpoint 4 (representative of north Watford) are considered moderate CEV, and viewpoint 6 is considered low CEV. Since the existing vegetated screening berms are not proposed to be altered, they will continue to grow and increase in height from the present day to the completion of Phase 5. The increase in the size and density of the trees will enhance the visual screening function of the vegetated berms.

The nuisance level of odour from the Preferred Alternative is not likely to reach the population centre of Watford but rather will be experienced to the north and west of the landfill, mostly at the beginning of operations when the equipment will be working at the landfill perimeter. Views of the landfill from Watford (viewpoint 4) are predicted to be moderate, and trees planted on the screening berms will continue to grow.

Consequently, changes in the level of satisfaction with living and working in the community are predicted to be minor.

5.1.2 Economic Environment

The assessment of effects for the Preferred Alternative is described below for the environmental criteria and indicators of the Economic Environment and is summarized in **Table 5-1**.

5.1.2.1 Economic Effects on Local Community

WM has successfully operated the TCEC since 2009 and it has become an important addition to the local community by creating employment opportunities, contributing financially to the Township of Warwick and supporting local initiatives within the community, and procuring and providing products and services to and from the local community.

Employment at Site

The TCEC provides stable employment for 33 staff, the majority of which are operators. The Preferred Alternative will not result in any changes to the number of employment positions; however, the existing 33 stable employment positions will continue for an additional 12 years.

Contributions to the Host Community

As previously noted, WM has a Host Community Agreement with the Township of Warwick and has contributed over $36.9M in host community fees to the Township since 2009 (2009 through 2023). Through annual host community payments, WM has contributed, on average, approximately 39% of the Township's total annual revenue. Over the past 10 years, WM has also provided additional support for community projects, contributing over $800,000 to important projects across the County of Lambton.

It is expected that WM will continue its host community contributions and community support under Preferred Alternative. Based on the average annual contributions,

estimated at approximately $4.1M, host community payments for the duration of the Preferred Alternative are estimated to amount to approximately $49M. Community support contributions depend upon the availability of community projects, so the dollar amount of future contributions cannot be estimated in advance; however, WM will continue to contribute to community projects.

Provision and Procurement of Products and/or Services

WM relies on a variety of local vendors to maintain its operations at the TCEC, contributing between approximately $1.7M and $10.8M annually to the local economy (Watford and Township of Warwick) through the procurement of local goods and services. These contributions are expected to continue under the Preferred Alternative. Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of the Preferred Alternative.

The continued operation of the landfill will also allow the TCEC to continue to operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network.

5.1.2.2 Summary

A summary of the effects assessment of the Preferred Alternative for the Socio-Economic Environment is presented below in **Table 5-1**.

Table 5-1. Net Effects Assessment – Preferred Alternative

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Social Environment					
Effects on Local Community	Number of residents and residences (e.g., receptors)	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to number of employment positions at the TCEC.	• No changes to number of residents and residences.	• None required	• No net effects
	Number and type of local businesses	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • Procurement and provision of products and services will continue as per current operations.	• No changes to number and type of local businesses. • No displacement of business activities.	• None required	• No net effects
	Nuisance effects (litter, dust, noise, odour, birds, traffic, visual)	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to haul routes. • No changes to operating hours. • No changes to catchment area, vehicle origin-destination patterns, and hourly/daily trips.	• Potential increase in predicted concentrations of odour at discrete receptors, frequency of exceedance at discrete receptors, and number of affected discrete receptors. • The proposed height increase could lead to higher wind speeds at the landfill's working face, potentially raising the frequency of litter events.	• WM will continue to implement the odour BMPP to address odour emissions. • The litter BMPP is anticipated to effectively control blowing litter. • WM will continue to implement the dust BMPP to address dust emissions. • Construction of temporary operational berms	• Predicted odour concentrations may exceed criteria at discrete receptor locations and the frequency of odour levels above defined odour benchmarks may increase. • Visual CEV of 77, with 3 high CEV viewpoints, two moderate CEV viewpoints, and one low CEV viewpoint.

Table 5-1. Net Effects Assessment – Preferred Alternative

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
		• No increase in the average daily tonnage. • Existing nuisance effect control and management measures will continue.	• Potential increase in predicted concentrations of dust at discrete receptors, frequency of exceedance at discrete receptors, and number of affected discrete receptors. • Potential increase in off-site sound levels at receptors due to decreased separation distance from the working face. • The continued use of the landfill beyond the approved design will prolong the attractiveness of the area for gulls and other avifaunal (bird) scavengers. • No changes to the overall volume of vehicles entering and exiting the TCEC. • Visual CEV of 77, with 3 high CEV viewpoints, two moderate CEV viewpoints, and one low CEV viewpoint.	when working along the landfill perimeter, and reduction in the number of equipment operating near the landfill perimeter. • Avifaunal (bird) scavengers will continue to be managed following current protocols using deterrents. • Existing vegetated screening berms will continue to grow and increase in height.	• No net effects from litter, dust, noise, birds, and traffic.
	Predicted changes to use and enjoyment of property	• Existing nuisance effect control and management measures will continue.	• Potential changes to use and enjoyment of property resulting from increases in odour at recreational areas	• WM will continue to implement the odour BMPP to address odour emissions.	• Minor changes to use and enjoyment of property are anticipated due to increased odour at recreational areas

Table 5-1. Net Effects Assessment – Preferred Alternative

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
			located south of the landfill.		located south of the landfill.
	Level of satisfaction with living/working in the community	• Development of landfill optimization will occur within the currently approved Expansion Landfill footprint. • No changes to haul routes. • No changes to operating hours. • No changes to catchment area, vehicle origin-destination patterns, and hourly/daily trips. • No increase in the average daily tonnage. • Existing nuisance effect control and management measures will continue.	• Potential changes to the level of satisfaction with living and working in the community resulting from increases in odour and changes to the visual landscape.	• WM will continue to implement the odour BMPP to address odour emissions. • Existing vegetated screening berms will continue to grow and increase in height.	• Minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.
	Confidence in TCEC operations	• Operations at the TCEC will continue with no changes to operating hours, haul routes, or equipment. • The WPLC, TRT, and MECP will continue their activities regarding the site (review, inspections).	• Potential changes to confidence in TCEC operations.	• WM will continue to provide prompt attention to nuisance complaints to mitigate any adverse effects to the surrounding community.	• No net effects.

Table 5-1. Net Effects Assessment – Preferred Alternative

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
Economic Environment					
Economic Effects on Local Community	Employment at site (number, type, and duration)	• No additional employment positions will be created as a result of the future development beyond the current number of positions.	• Existing 33 stable employment positions will continue for an additional 12 years during operation of the Preferred Alternative.	• None required.	• Existing 33 stable employment positions will continue for an additional 12 years during operation of the Preferred Alternative.
	Contributions to the host community	• Municipal contributions will continue as per current operations.	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of the Preferred Alternative are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operation of Preferred Alternative.	• None required.	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments for the duration of the Preferred Alternative are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operation of Preferred Alternative.
	Opportunities for the provision and procurement of products and/or services	• The TCEC will continue to require goods and services from local businesses and provide services at the same rates as required for current operations.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of the Preferred Alternative. • Operate the new RNG Facility at the TCEC to convert landfill gas into	• None required.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy over the duration of the Preferred Alternative. • Operate the new RNG Facility at the TCEC to convert landfill gas into

Table 5-1. Net Effects Assessment – Preferred Alternative

Evaluation Criteria	Indicator	Key Design Considerations and Assumptions	Potential Effects	Mitigation Measures	Net Effects
			renewable natural gas to be supplied to the gas distribution network during operation of the Preferred Alternative.		renewable natural gas to be supplied to the gas distribution network during operation of the Preferred Alternative.

6 Comparison of the Preferred Alternative against the 'Do Nothing' Alternative

The effects of the Preferred Alternative are compared against the predicted effects of the currently approved Expansion Landfill based on similar environmental criteria and indicators, with the understanding that the criteria and indicators used in the current effects assessment may differ from those used for the effects assessment of the Expansion Landfill. The effects are compared against each other in terms of magnitude, extent, and duration below. The advantages and disadvantages of the Preferred Alternative compared to the 'Do Nothing' alternative are identified.

6.1 Effects of the 'Do Nothing' Alternative

The 'Do Nothing' Alternative involves the construction of the approved Expansion Landfill to completion by 2031 followed by the closure of the landfill. The effects of the 'Do Nothing' Alternative are presented below by environmental criteria and indicators for the Socio-Economic Environment.

6.1.1 Social Environment

The assessment of effects for the 'Do Nothing' Alternative is described below for the environmental criteria and indicators of the Social Environment.

6.1.1.1 Effects on Local Community

Number of Residents and Residences

The 'Do Nothing' Alternative is not anticipated to result in any changes to the number of employment positions at the TCEC until closure in 2031, at which time the 33 stable employment positions at the landfill will come to an end. Despite the residence location of the employees, given the proximity of Watford to other major urban centres, it is likely that the employees will retire or find alternative employment and commute.

In addition, assuming the planned developments outlined in Section 3.1.1.1 are constructed by 2031, this would add 102 additional households and an additional 245 people to the Social Off-site Study Area under Future Baseline Conditions.

Consequently, no changes to population (number of residents and residences) are anticipated within the Social Off-site Study Area as a result of the 'Do Nothing' Alternative.

Number and Type of Local Businesses

Procurement and provision of products and services are expected to continue as per current operations until landfill closure in 2031, and no business activities will be displaced by landfill activities.

In the Economic Survey, when asked to what extent their business would be affected if the TCEC landfill was to close, 60% of the businesses responded that they would be negatively affected through lost income, sales, and work, and their employees would be affected if the TCEC landfill closed. There is the potential for business closures if the majority of their income comes from the TCEC.

Consequently, the 'Do Nothing' Alternative is not expected to change the number and type of local businesses during operations; however, there may be the loss of some businesses that rely on income from the TCEC upon closure of the landfill.

Nuisance Effects

For the evaluation of the "Do Nothing' Alternative it was assumed that all on-site traffic related to construction and landfilling activities will cease, and landfilling activities including waste and material handling, wind erosion of exposed piles, and final cap construction will cease. The Expansion Landfill will be complete and under final cover and the landfill gas collection system will be fully installed. Normal operations of the landfill gas flares, the RNG Facility, emergency generators, and leachate management will continue.

Information regarding nuisance effects from the 'Do Nothing' Alternative was sourced from the following reports:

- Odour, litter, and dust: Air Quality Effects Assessment Report (RWDI, 2024a).
- Noise: Noise Effects Assessment Report (RWDI, 2024b).
- Traffic: Transportation Effects Assessment Report (HDR, 2024).
- Visual impact: Visual Landscape Effects Assessment Report (Schollen, 2024).

The assessment of nuisance effects for the 'Do Nothing' Alternative is provided below by type of effect.

Odour

Odour emissions are expected to be reduced as a result of the completion of the final cap. Emissions of odour compounds like H_2S and VOCs generated by the decomposition of waste will decrease over time as the waste mound ages and produces less gas resulting in decreased odour emissions. However, it is difficult to quantify the decrease in odour emissions and as a result the 'Do Nothing' Alternative emissions are based on the same flux rates used to assess the Future Baseline and Preferred Alternative. Therefore, it is likely odour impacts from the 'Do Nothing' Alternative are overpredicted. Overall, odour concentrations at discrete receptor locations are expected to decrease.

Litter

After closure, with no active landfilling on site there will be no exposed waste and therefore no potential for the migration of wind-blown litter.

Dust

Dust emissions are dominated by haul route traffic and final cap construction. With the removal of these sources, significant decrease in predicted concentrations is expected at all discrete receptor locations. Small quantities of fine particulates will be emitted from the landfill gas flare and other stationary combustion equipment, but these sources are not expected to significantly contribute to concentrations at discrete receptors.

Noise

Generally, the effects of the 'Do Nothing' Alternative are summarized in Section 3.1.1.1. Future baseline noise conditions will include contributions from ancillary sources at the landfill, such as the approved RNG Facility and existing flares used to control landfill gases from existing waste.

The effects are that sound levels will be dominated by local traffic noise contributions, with the ancillary source contributions being audible during very quiet periods of the day and night. The predicted cumulative sound levels, which are the logarithmic addition of the predicted future sound levels and contributions from existing and approved ancillary sources, meet all guidelines for landfilling and stationary source noise. Future daytime cumulative sound level due to traffic and TCEC ancillary sources are estimated at 37 to 58 dBA for 2032.

Traffic

Site traffic volumes are assumed to remain the same as current levels until landfill closure in 2031. There will be a reduction in traffic volume resulting from landfill closure under the 'Do Nothing' Alternative; however, site traffic is a small component of the total traffic volumes on the surrounding off-site road network. The reduction in traffic volume resulting from the removal of the landfill-associated traffic will improve traffic operations by a marginal amount.

Visual Impact

The approved top of landfill cover is at an elevation of 282 masl, approximately 42 m above average ground level. The side slopes are to be graded at approximately 4H:1V from the existing grade to approximately 271.5 masl, at which point slopes will transition to 5% for the remaining slope to the highest point. The topographic form of the landform of the 'Do Nothing' Alternative is described as a flattened mound.

From the original landfill EA (2005), from a total of 109 identified receptors, there were 39 high-effect receptors and 36 moderate-effect receptors based on the height and shape of the capped landfill.

Use and Enjoyment of Property

No negative effects with respect to current and future land uses are anticipated as a result of the 'Do Nothing' Alternative. Existing approved setback distances and buffer areas between the TCEC operation and any existing and/or planned land uses will be

maintained until such time that the landfill area reaches capacity. Once the landfill is closed, there is a twenty-five (25) year post-closure care period, and new development will require approval from the Minister, in accordance with Section 46 of the *Environmental Protection Act*, R.S.O. 1990, CHAPTER E.19.

Should the 'Do Nothing' Alternative be maintained, at the time the existing landfill area reaches capacity in 2031, waste will need to be accommodated at another existing landfill or a new landfill elsewhere.

Based on the results of the odour effects assessment, recreational resources to the south of the TCEC site, such as the adjacent trail, may experience a decrease in odour upon capping of the landfill, which would continue to decrease over time.

Although the 'Do Nothing' Alternative could result in a decrease in odour concentrations at off-site recreational resources to the south of the landfill footprint (e.g., the trail), this is unlikely to result in a change in use of property. Consequently, changes to use and enjoyment of property are anticipated to be minor.

Level of Satisfaction with Living/Working in the Community

Based on the results of the Community Survey, satisfaction appears to be tied to proximity to home, access to surrounding cities, and low development charges. These factors are not likely to change as a result of the 'Do Nothing' Alternative; therefore, the level of satisfaction with living/working in the community is expected to stay the same as existing conditions.

Confidence in TCEC Operations

Under the 'Do Nothing' Alternative, the approved RNG Facility and existing flares used to control landfill gases from existing waste will continue to operate as per existing conditions. Based on odour being a primary issue for the community, confidence in TCEC operations is unlikely to change from existing conditions.

6.1.2 Economic Environment

The assessment of effects for the 'Do Nothing' Alternative is described below for the environmental criteria and indicators of the Economic Environment.

6.1.2.1 Economic Effects on Local Community

Employment at Site

The 'Do Nothing' Alternative is not anticipated to result in any changes to the number of employment positions at the TCEC until closure in 2031, at which time the 33 stable employment positions at the landfill will come to an end.

Contributions to the Host Community

WM has a Host Community Agreement with the Township of Warwick and has contributed over $36.9M in host community fees to the Township since 2009 (2009 through 2023). Through annual host community payments, WM has contributed, on

average, approximately 39% of the Township's total annual revenue. Over the past 10 years, WM has also provided additional support for community projects, contributing over $800,000 to important projects across the County of Lambton.

It is expected that WM will continue its host community contributions and community support under the 'Do Nothing' Alternative. Based on the average annual contributions, estimated at approximately $4.1M, host community payments are estimated to amount to an estimated $28.8M (2024-2031) for a total of $65.8M by 2031. Community support contributions depend upon the availability of community projects, so the dollar amount of future contributions cannot be estimated in advance.

Host community payments and community contributions will cease upon landfill closure, which will result in an approximately 39% decrease in revenue for the Township.

Provision and Procurement of Products and/or Services

As per Section 2.1.3.1, WM relies on a variety of local vendors to maintain its operations at the TCEC, contributing between approximately $1.7M and $10.8M annually to the local economy (Watford and Township of Warwick) through the procurement of local goods and services. These contributions are expected to continue under the 'Do Nothing' Alternative. Based on an annual average of $2.2M in local expenditures, an estimated $15.7M will be contributed to the local economy by landfill closure in 2031, after which the procurement of products and services will cease.

WM is currently constructing a Renewable Natural Gas (RNG) Facility at the TCEC that will convert landfill gas into renewable natural gas that will be supplied to the gas distribution network. The RNG Facility will be operational under the 'Do Nothing' Alternative.

6.2 Comparison of the Preferred Alternative against the 'Do Nothing' Alternative

The effects of the Preferred Alternative are compared against those of the 'Do Nothing' Alternative in **Table 6-1**.

Table 6-1. Comparison of the Preferred Alternative and the 'Do Nothing' Alternative

Evaluation Criteria	Indicator	Summary of Net Effects		
		'Do Nothing' Alternative	Preferred Alternative	Comparison
Social Environment				
Effects on Local Community	Number of residents and residences (e.g., receptors)	No net effects.	No net effects.	No difference between the Preferred Alternative and the 'Do Nothing' Alternative.
	Number and type of local businesses	There may be the loss of some businesses that rely on income from the TCEC upon closure of the landfill.	No net effects.	The Preferred Alternative will not result in any changes to local businesses for an additional 12 years.
	Nuisance effects (litter, dust, noise, odour, birds, traffic, visual)	• Predicted odour concentrations at discrete receptor locations are expected to decrease after closure. • Reduction of all predicted dust concentrations at all receptors after closure. • Visual impact: 39 high-effect receptors and 36 moderate-effect receptors. • No net effects from litter, noise, birds, and traffic after closure.	• Predicted odour concentrations may exceed criteria at discrete receptor locations and the frequency of odour levels above defined odour benchmarks may increase. • Visual impact using the same receptors as the 'Do Nothing' Alternative: 22 high-effect receptors and 52 moderate-effect receptors. • No net effects from litter, dust, noise, birds, and traffic.	• The Preferred Alternative will result in an increase in odour at discrete receptor locations. • The Preferred Alternative will result in continued dust emissions, litter, noise, birds, and traffic during operations for an additional 12 years. • The Preferred Alternative will result in 17 fewer 'high' effect visual receptors but will result in an increase in the number of 'moderate' effect receptors by 16.
	Predicted changes to use and enjoyment of property	Minor changes to use and enjoyment of property are anticipated due to decreased odour at recreational areas located south of the landfill after closure.	Minor changes to use and enjoyment of property are anticipated due to increased odour at recreational areas located south of the landfill.	The Preferred Alternative will result in minor changes to the use and enjoyment of property due to increased odour at recreational areas located south of the landfill.
	Level of satisfaction with living/working in the community	No net effects.	Minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.	The Preferred Alternative will result in minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.
	Confidence in TCEC operations	No net effects.	No net effects.	No difference between the Preferred Alternative and the 'Do Nothing' Alternative.

Table 6-1. Comparison of the Preferred Alternative and the 'Do Nothing' Alternative

Evaluation Criteria	Indicator	Summary of Net Effects		
		'Do Nothing' Alternative	Preferred Alternative	Comparison
Economic Environment				
Economic Effects on Local Community	Employment at site (number, type, and duration)	Loss of 33 stable employment positions upon closure.	Existing 33 stable employment positions will continue for an additional 12 years.	The Preferred Alternative will result in the continuation of 33 stable employment positions for an additional 12 years.
	Contributions to the host community	• Based on the average annual contributions, estimated at approximately $4.1M, host community payments are estimated to amount to an overall total of $65.8M by 2031. • Host community contributions will end at closure resulting in an approximately 39% decrease in overall Township revenue. • Contributions to community projects will end upon closure.	• Based on the average annual contributions, estimated at approximately $4.1M, continued host community payments are estimated to amount to approximately $49M. • WM will continue to contribute to community projects during operations.	• The Preferred Alternative will result in continued host community payments, which make up approximately 39% of the Township's annual revenue, for an additional 12 years, amounting to approximately $49M. • The Preferred Alternative will result in continued contributions to community projects for an additional 12 years.
	Opportunities for the provision and procurement of products and/or services	• Based on an annual average of $2.2M in local expenditures, an estimated $15.7M will be contributed to the local economy by landfill closure in 2031, after which the procurement of products and services will cease. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operations.	• Based on an annual average of $2.2M in local expenditures, an estimated $27M will be contributed to the local economy during operations. • Operate the new RNG Facility at the TCEC to convert landfill gas into renewable natural gas to be supplied to the gas distribution network during operations.	The Preferred Alternative will result in an estimated $27M in contributions to the local economy over 12 years.

6.3 Advantages and Disadvantages of the Preferred Alternative

The differences in net effects between the Preferred Alternative and the 'Do Nothing Alternative' are used to determine the advantages and disadvantages of the Preferred Alternative. The advantages and disadvantages of the Preferred Alternative are listed in **Table 6-2**. Based on the list below, the advantages of the Preferred Alternative outweigh the disadvantages.

Table 6-2. Advantages and Disadvantages of the Preferred Alternative

Evaluation Criteria	Advantages	Disadvantages
Social Environment		
Effects on Local Community	• The Preferred Alternative will not result in any changes to local businesses for an additional 12 years. • The Preferred Alternative will result in 17 fewer 'high' effect visual receptors but will result in an increase in the number of 'moderate' effect receptors by 16.	• The Preferred Alternative will result in an increase in odour at discrete receptor locations. • The Preferred Alternative will result in continued dust emissions, litter, noise, birds, and traffic during operations for an additional 12 years. • The Preferred Alternative will result in minor changes to the use and enjoyment of property due to increased odour at recreational areas located south of the landfill. • The Preferred Alternative will result in minor changes in the level of satisfaction with living and working in the community due to increased odour and changes to the visual landscape.
Economic Environment		
Economic Effects on Local Community	• The Preferred Alternative will result in the continuation of 33 stable employment positions for an additional 12 years. • The Preferred Alternative will result in continued host community payments, which make up approximately 39% of the Township's annual revenue, for an additional 12 years, amounting to approximately $49M. • The Preferred Alternative will result in continued contributions to community projects for an additional 12 years. • The Preferred Alternative will result in an estimated $27M in contributions to the local economy over 12 years.	• None

7 Commitments and Monitoring

The commitments associated with the Socio-Economic Environment are listed in Section 7.1. No monitoring is proposed for the Socio-Economic Environment.

7.1 Socio-Economic Environment Commitments

The commitments associated with the Socio-Economic Environment relate to nuisance effects and are as follows:

- WM will continue to implement the odour BMPP to address odour emissions, the dust BMPP to address dust emissions, the litter BMPP to effectively control blowing litter, and bird control protocols.
- Temporary operational berms will be constructed when working along the landfill perimeter, and the number of equipment operating near the landfill perimeter will be reduced to mitigate noise effects.
- WM will continue to provide prompt attention to nuisance complaints to mitigate adverse effects to the surrounding community.

8 References

HDR

2024 Draft Transportation Effects Assessment Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment. Prepared for WM Canada.

MBPC (Monteith Brown Planning Consultants)

2024 Draft Land Use Effects Assessment Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment. Prepared for WM Canada.

NRSI (Natural Resource Solutions Inc.)

2024 Draft Ecological Environment Effects Assessment Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment. Prepared for WM Canada.

RWDI

2024a Draft Air Quality Effects Assessment Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment. Prepared for WM Canada.

2024b Draft Noise Effects Assessment Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment. Prepared for WM Canada.

Schollen (Schollen & Company Inc.)

2024 Visual Landscape Effects Assessment Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment. Prepared for WM Canada.

Statistics Canada

2023 Census Profile – Watford and Township of Warwick, Ontario. 2021 Census of Population. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released November 15, 2023.

WSP

2024 Conceptual Design Report. Twin Creeks Environmental Centre Landfill Optimization Project Environmental Assessment. Prepared for WM Canada.