



# **Current State Report**

## **Waste Management Strategic Plan**

Regional Municipality of Niagara

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S4		Emiko Marr, Erika Brown	Brian Dermody		Blair Shoniker		Sep 11 2024

**GHD**

Contact: Brian Dermody, Senior Engineer | GHD

455 Phillip Street, Unit 100A

Waterloo, Ontario N2L 3X2, Canada

T+1 519 884 0510 | F +1 519 884 0525 | E info-northamerica@ghd.com | [ghd.com](http://ghd.com)

# Executive summary

The Regional Municipality of Niagara (the Region), located in southwestern Ontario, is an upper tier municipality comprised of 12 local area municipalities (LAMs) that provides waste management services to approximately 480,000 (in 2021) residents and a wide range of businesses. The LAMs serviced by the Region include Fort Erie, Grimsby, Lincoln, Niagara Falls, Niagara-on-the-Lake, Pelham, Port Colborne, St. Catharines, Thorold, Wainfleet, Welland and West Lincoln. The Region currently offers many waste management services and programs to each LAM and the Region has a set of waste management and net-zero goals, including achieving net-zero corporate greenhouse gas (GHG) emissions by 2050 and alignment with Ministry of Environment, Conservation and Parks (MECP) Strategy for a Waste Free Ontario. To help achieve these goals, the Region has set out to develop their first Waste Management Strategic Plan (the Plan) to provide strategic direction for waste management services over the next 25-years. The Plan will be developed by combining waste management system research with stakeholder consultation and applying best practices for strategic planning. The Plan will be developed in the following three phases:

- Phase One – Investigation
- Phase Two – Ideation
- Phase Three – Finalization

This document represents the Current State Report (Report), which is the first technical deliverable in Phase One of the overall Plan, serving to provide a clear picture of the Region's current waste management operating procedures and practices, including the current challenges faced by the Region. The Report will set the stage for the remainder of the project and will allow for the project team to identify potential gaps or clarifications before launching into Phase Two of the project.

Section 2 provides a general summary of Niagara Region, with a focus on the Region's Waste Management Services (WMS) organization, LAMs and populations serviced, corporate and waste strategies (including Council Strategic Priorities, guiding principles), applicable legislation (including existing by-laws, provincial and federal legislations, programs and policies that influence the waste management services provided by the Region), waste services offered (including current collection services, regional facilities and partnerships) and current education and outreach efforts.

The Region's WMS currently provides base collection for garbage, Green Bin Organics (GBO), leaf and yard (L&Y) and bulky wastes and manages the operations at multiple waste facilities including both active and closed landfills and drop-off depots. In terms of Blue Box recyclables, Circular Materials took over the Region's delivery of residential Blue (and Grey) Box recycling collection services as of January 1, 2024. Circular Materials has contracted the Region's existing

collection service contractors Miller Waste Systems and GFL Environmental Inc. to collect the curbside recyclable materials until December 31, 2025.

Section 3 provides a summary of the Region's current waste generation, including waste types managed and the waste sources, including capture and contamination rates, and excluding external waste sources, waste managed externally and Resource Productivity and Recovery Authority diversion credits. The waste types managed namely include garbage, residential Blue and Grey Box recycling (previously), GBO, L&Y and other materials such as household hazardous waste (HHW), large plastics, electronics, fats, oils and grease, etc. The waste sources for the Region include Low Density Residential (LDR) properties, which contain one to six units such as single-family homes, Multi-Residential (MR) properties which contain seven or more units, mixed-use (MU), industrial, commercial and institutional units (IC&I) and multi-purpose units, which include single properties housing multiple distinct property types such as LDR, MR, MU or IC&I.

Section 4 focuses on waste collection within the region including a discussion on waste collection areas, collection contracts, curbside participation rates and collected waste types and tonnage trends, including curbside collection and self-haulage collection. In the region, waste materials are either collected curbside or self-hauled to landfills and drop off depots. The majority of the waste is collected through curbside collection.

Section 5 specifically provides a breakdown of processing activities for the Region's waste including GBO, recyclables, L&Y, tonnages diverted and residue management. Organics (GBO and L&Y) are currently sent to the privately owned Walker Environmental Group composting facility on Townline Road in Thorold and small volumes of L&Y are processed at the Region's compost facilities at the Niagara Road 12 and Bridge Street sites. Recyclables are sent to the Material Recovery Facility (MRF) located on Montrose Road in the City of Niagara Falls. Emterra purchased the MRF from Niagara Region in April of 2023 and are now responsible for the receiving, processing, and marketing of the collected recyclable materials from various sources.

Section 6 provides details on waste disposal sites for the region's garbage, including active and closed disposal sites and historic and current tonnages managed. For final disposal of waste, the Region owns and operates three active landfills, including the Humberstone Road and Niagara Road 12 active landfills and the Bridge Street Landfill, which is closed however, the facility is still open to receiving waste as a residential recycling and waste drop-off depot. The Region also has a partnership agreement with Walker Environmental Group to dispose of curbside collected waste from St. Catharines, Thorold, Niagara-on-the-Lake, and some collection routes/days in Niagara Falls at their Thorold landfill location.

In Section 7, a summary of the financial breakdown of the 2022 budget versus the actual costs per tonne and the 2023 budgeted costs per tonne for various waste management program areas, based on a [Technical Memorandum 7 – Financial Review](#) (<https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-7-financial-review.pdf>) originally prepared by Birett and Associates, is presented. In general, the Financial Review stated that the Region's current financial approach illustrates a good mix of

strategies for financing the WMS programs and should be maintained. In addition, the operating budget is presented noting that the 2023 WMS gross operating budget was \$64,451 million (net of revenues and mitigations) and indicated that garbage, GBO and recycling expenses account for majority of the WMS division net costs.

Section 8 details projections for population, including residential and business customers, tonnages to be managed by the Region through the various waste facilities, including a discussion on predicative landfill capacities, financial projections for operating costs and revenues for each program. This section also provides a summary of the main waste management goals, including long-term goals such as transitioning to a circular economy, reducing the carbon footprint of their waste management operations, and supporting the Council approved goal of net-zero GHG emissions by 2050. It also discusses the short-term goals of leading three consultation series to obtain feedback on the current and future waste management system and services offered to create a Plan that will provide the strategic direction that the Region should consider for the next 25 years.

In Section 9, an overview of the potential opportunities and challenges for the Region are reviewed at a high-level, including the use of waste as a resource, diversion of waste, the role of the Region as a service provider, and the management of municipal assets. Table E.1.1 presents the key social, economic, environmental impact findings from the analysis. Section 9 also highlights key risks that will be reviewed during Phase 2 with respect to the development of potential solutions to address the risks, as well as the challenges and opportunities identified. Key risks are centred on waste generation rates, uncertainty for Blue Box post-transition including material types and sources (i.e. for residential and non-eligible sources), and management of existing waste infrastructure.

**Table E.1.1 Key Social, Economic, and Environmental Impact Findings from the Analysis**

Indicator Type	Category	Key Finding
Social	Gap/Opportunity	While the Region offers base collection services to all property types, organic and recyclable tonnages are unavailable for the Region’s TCM from 2011 to 2022 for MR property types. In addition, data collection on residential recycling and diversion efforts will become increasingly difficult for the Region with the implementation of O. Reg. 391/21 (Blue Box). Given these potential gaps in data, the Plan will need to consider different ways for the Region to measure success/performance going forward.

Indicator Type	Category	Key Finding
	Challenge/Opportunity	Increase participation and reduce self-hauled tonnages particularly of the garbage, recyclables and organics streams. This would reduce GHG emissions due to less trips to the drop-off depots but may also result in a higher participation rate and better utilization of Region programs. However, this behavioural change may also result in budget impacts.
	Challenge	Increase focus on promotion, education, outreach and enforcement to reduce cross-contamination in the material streams. This is particularly relevant for materials under the Region’s programs (i.e., green bin and non-eligible recycling). It also applies to a lesser extent to the residential blue (and grey) box recycling program managed through Circular Materials <sup>1</sup> .
	Opportunity	Obtain a higher participation rate in the GBO program.
	Opportunity	To increase the diversion practices in MR buildings and higher density developments by providing education, outreach and enforcement to residents. Education, outreach and enforcement can also be provided to developers and property managers to ensure that waste collection services can be properly performed.
	Opportunity	Increase outreach and education to the Millennial generation. It was noted that only 12 per cent of this generation check to confirm whether the materials they are recycling are accepted in their local recycling program.
	Opportunity	Receive feedback from the Region’s interested parties on the current waste management services and system to aid in the development of the Plan and ensuring the interested parties’ participation and buy-in.

Indicator Type	Category	Key Finding
	Opportunity	Advocate to the Province for better certainty/clarity on Extended Producer Responsibility (EPR) programs (e.g. blue box, Municipal Hazardous or Special Waste [MHSW], Waste Electrical and Electronic Equipment [WEEE], etc.) with respect to materials, costs, contamination rates and funding.
Economic	Challenge/Opportunity	Opportunity to transition to clear bag collection, apply stringent by-laws, and bag limits to encourage diversion
	Challenge/Opportunity	Opportunity to transition to automated cart collection which would require carts and does not support the use of clear bags. Automated cart-based collection can offer collection cost savings from reduced stoppage time and reduced number of work-related injuries. However, there would be initial capital costs related to providing the carts. Contamination issues have also been seen with cart-based collection.
	Challenge	The Region will need to consider impacts to current service levels as a result of changes to recycling with the implementation of producer responsibility, such as whether to continue to service the IC&I non-eligible sources post 2025 as the new legislation does not require producers to provide recycling services to businesses and other non-residential sources. Producers have advised municipalities that they do not intend to continue offering this service after December 31, 2025. This poses challenges related to realizing economies of scale when providing services to IC&I non-eligible sources.
	Challenge	The Region may foresee an increase in costs beyond what is currently projected. For example, the Region noted that collection contract costs (despite no longer collecting residential recycling) may increase and that 50 to 110 per cent increases are being seen in other municipalities.

Indicator Type	Category	Key Finding
	Opportunity	Given the rising costs of services, the Region may wish to review the way it allocates costs for provision of waste management services to non-residential properties (e.g. IC&I) to ensure the associated costs are fairly distributed when considering the allocation of waste management services costs to LAMs.
	Opportunity	Potential to investigate the implementation of processes/facilities that would reduce costs and/or increase revenues (e.g. the sale of digestate and biogas from anaerobic digestion).
Participation	Challenge	<p>Increasing the participation in the recyclable's diversion program. The total tonnes of recyclables curbside collected<sup>2</sup> and self-hauled has decreased by 12 per cent from 2011 to 2022 most likely due to "lightweighting" of recyclables products and a decline in newsprint.</p> <p>Although the residential Blue Box program is no longer the Region's responsibility, material from the stream can end up in the landfill, for example through incorrect sorting practices, therefore impacting the Region.</p>
	Opportunity	Increasing participation in other diversion programs offered by the Region such as the textiles program and Broken Spoke program to preserve landfill space and promote the act of reuse.
Environmental	Challenge/Opportunity	Decreasing the tonnes of garbage that the Region has to manage. In 2022, approximately 22 per cent of the waste curbside collected and self-hauled to drop-off depots was garbage.
	Challenge/Opportunity	Achieve the Council approved goal of net-zero emissions by 2050 and transition to a circular economy.



Indicator Type	Category	Key Finding
	Challenge/Opportunity	Achieve the Strategy goals of achieving a zero waste Ontario and zero GHG emissions from the waste sector with the interim goals of 30 per cent diversion by 2020; 50 per cent diversion by 2030; and 80 per cent diversion by 2050.
	Challenge/Opportunity	Explore the idea of landfill gas capture and utilization. The Humberstone Road Landfill is currently the only landfill with a landfill gas collection system installed. Moreover, the Region is constrained from insufficient landfill gas from the Humberstone Road Landfill.
	Challenge	The Humberstone Road Landfill landfilled just under half of the Region's waste in 2022 and is also projected to be filled by 2045.
	Challenge	Improve management of materials that are currently occupying landfill space such as soils and construction and demolition (C&D) materials.
	Opportunity	Implement processes/facilities that provide the act of recovering from nutrients such as digestate from anaerobic digestion. These types of actions classify as diversion in Ontario.
	Opportunity	Increase the number of reuse and repair programs the Region offers to help preserve landfill space.

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# Abbreviations

ARO - Asset Retirement Obligation

B&B – Bed and Breakfast Establishment

C&D – Construction and Demolition

CCME – Canadian Council of Ministers of the Environment

CEPA – Canadian Environmental Protection Act

CIF – Continuous Improvement Fund

DBA – Designated Business Area

EA – Environmental Assessment

ECA – Environmental Compliance Approval

e.g. – *exempli gratia* (for example)

EOW – Every Other Week

EPR – Extended Producer Responsibility

Financial Review – Financial Review Technical Memorandum prepared by Birett and Associates

Framework – The Food and Organic Waste Framework

GBO – Green Bin Organics

GFL – Green for Life

GHG – Greenhouse gas

HHW – Household Hazardous Waste

IC&I – Industrial, Commercial and Institutional

i.e. – *id est* (that is)

LAM – Local Area Municipality

LDR – Low Density Residential

LLM – Landfill Liability Model

MBN – Municipal Benchmarking Network

MECP – Ministry of Environment, Conservation and Parks

MHSW – Municipal Hazardous and Special Waste

Mixed-Use – MU

MP – Multi-purpose  
MPAC – Municipal Property Assessment Corporation  
MPF – Material Processing Facility  
MR – Multi-Residential  
MRF – Material Recovery Facility  
N/A – Not applicable  
NPCA – The Niagara Peninsula Conservation Authority  
O. Reg. – Ontario Regulation  
PET – Polyethylene terephthalate  
Plan – Waste Management Strategic Plan  
PRO – Producer Responsibility Organization  
Region – Regional Municipality of Niagara  
Report – Current State Report  
RFP – Request for Proposal  
RPRA – Resource Productivity and Recovery Authority  
*RRCEA – Resource Recovery and Circular Economy Act*  
SO – Stewardship Ontario  
TCM – Tonnage and Costing Model  
The Strategy – Strategy for a Waste-Free Ontario: Building the Circular Economy  
WMS – Waste Management Services



# Definitions

“Blue Box” means a container available from Niagara Region or approved alternative used to set out Blue Box Material for collection.

“Blue Box Material” means recyclable Material that is collected under the Blue Box Program. The Material includes: empty plastic containers and packaging which previously contained a food or consumer product; empty glass bottles, jars and lids/caps; empty metal food and beverage cans; empty gable-top cartons; empty spiral wound containers; empty metal aerosol cans; clean aluminium foil meaning food wrap, food packaging and kitchenware and other material as designated.

“Brush” means woody material including twigs, tree limbs or branches.

“Bulky Goods” means large household items which are collectable material that cannot fit into a normal Garbage Container. Some examples include, but are not limited to, the following: couches, sofa, chair; floor lamps; furniture; glass shards packaged in cardboard box labelled “glass”; large toys; and carpet.

“Capture Rate” is the proportion of divertible waste materials which are successfully diverted from disposal compared to the total amount of the divertible waste materials generated.

“Carts” means a container available from the Region or approved alternative as set out in section 8, 10 and 11 of Niagara Region by-law No. 2022-32 or As Designated, used to set out Blue Box Material, Grey Box Material or Green Bin Organics for Types B-F Premises as set out in Schedule A to said By-law.

“Circular Economy” means an economy in which participants strive,

(a) to minimize the use of raw materials,

(b) to maximize the useful life of materials and other resources through resource recovery, and

(c) to minimize waste generated at the end of life of products and packaging

“Construction, Renovation and Demolition” Material includes but is not limited to windows, tile drywall, lumber, doors, metal, PVC pipe and other building materials as designated by Niagara Region.

“Designated Business Area” means an area designated by the Area Municipality to receive alternate collection services compared to residential or other industrial, commercial and institutional services.

“Diversion Rate” is the percentage of waste diverted relative to the total waste disposed and diverted.

“Drop-off Depot” is a location to self-haul waste and recycling to a centralized location. These facilities typically only accept waste and recycling. See “Household Hazardous Waste (HHW) facility” for Drop-off depots for HHW.

“Electrical and Electronic Equipment (EEE)” means electrical and electronic equipment that, (a) is designed for use with an electrical current and a voltage rating not exceeding 1,000 volts for alternating current and 1,500 volts for direct current, (b) weighs no more than 250 kilograms, and (c) is not intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, as defined in Ontario Regulation 522/20: Electrical and Electronic Equipment under the Resource Recovery and Circulate Economy Act, 2016, S.O. 2016, c.12, Sched. 1, or any successor legislation, including but not limited to the following: computers; printers; video gaming devices; telephones, display devices; radios and stereos; headphones; speakers; cameras, video recorders and drones with audio or visual recording equipment.

“Eligible Source” means any residence or facility in an eligible community, as defined in O. Reg. 391/21 for the purpose of determining eligibility in the Province’s common collection system.

- a. container limits set out in Schedule “A” can be abided by in the normal course of waste generation activity;
- b. the Owner(s) of the Premises are in compliance with this By-law; and
- c. the only Material set out for collection is Material generated on that Premises.

“Employment Rate” means the percentage of the population who are employed.

“Employment Participation Rate” means the total labour force expressed as a percentage of the population aged 15 years and over.

“Environmental Protection Act” means the Environmental Protection Act, R.S.O. 1990, Ch. E.19, or any successor legislation.

“Excess Soil” means soil, crushed rock or soil mixed with rock or crushed rock that has been excavated as part of a project and removed from the project area for the project.

“Excess Soil Standards” means the document entitled “Part II: Excess Soil Quality Standards”, published by the Ministry and dated December 8, 2020, available on a website of the Government of Ontario as Part II of the document entitled “Rules for Soil Management and Excess Soil Quality Standards.”

“Garbage” means all non-hazardous, solid, residual waste which, for purposes of collection or drop-off at a Niagara Region Drop-off Location, does not fall within a recyclable class of material.

“Green Bin Container” means a container such as a Green Bin, Carts or the smaller Kitchen Catcher available from Niagara Region, or other rigid reusable closed or open-top container clearly labelled with handles used for storing and setting out Green Bin/Cart Material.

“Green Bin Organics (GBO)” means compostable organic material collected under the Green Bin program as designated by Niagara Region, including but not limited to food waste (such as meat, bones, shells, tea bags), pumpkins, tissue paper, paper towels and napkins, paper egg cartons,

100% compostable paper cups and plates, dryer lint, soiled newspaper, cold fireplace ashes, brown paper bags, saw dust, wood shavings, paper takeout trays, kitty litter and Pet Waste. It does not include Grass Clippings or Liquid Material.

“Grey Box” means a container available from Niagara Region or approved alternative, used to set out Grey Box Material.

“Grey Box Material” means recyclable Material previously collected as part of the Grey Box Program. The Grey Box Material(s) include(s): paper products or packaging like products; soft-covered books and hard-covered books with the covers removed; boxboard (non-waxed, such as cereal and cracker boxes); cardboard (non-waxed); fine paper and paper envelopes; newspapers and unaddressed ad mail and flyers; plastic bags and stretchy plastic outer-wrap; shredded paper placed in a securely-tied, transparent plastic bag; and telephone books and magazines.

“Hazardous or Special Products” are regulated under Ontario’s individual producer responsibility regulatory framework and include automotive materials (oil filters, oil containers and antifreeze), solvents, paints and coatings, pesticides, fertilizers, mercury-containing devices (barometers, thermometers and thermostats) and pressurized containers (non-refillable pressurized containers, refillable pressurized containers, refillable propane containers). These materials were previously managed under the Municipal Hazardous or Special Waste program.

“Household Hazardous Waste (HHW) facility” is a Drop off depot that specifically accepts HHW.

“Illegal Dumping” means the disposing of material in non-designated areas, including both public property and Niagara Region property, but does not include Litter.

“Individual Producer Responsibility” is a policy approach that makes producers accountable for their products and packaging once consumers are finished with them; sets mandatory and enforceable requirements for resource recovery; and gives producers choices for resource recovery services in a competitive market. This is also referred to as Extended/Individual Producer Responsibility (EPR)

“Industrial, Commercial and Institutional Properties” are used for one or more institutional, commercial or industrial purposes inside or outside Designated Business Areas.

“Information Technology, Telecommunications, Audio-Visual (ITT/AV) and Lighting equipment” ITT/AV is equipment that has a primary purpose of collecting, storing, processing, presenting or communicating information, including sounds and images, recording or reproducing sounds and images. ITT/AV includes equipment supplied into any sector (e.g. residential, business, hospital, institutional, commercial, industrial, etc.) and includes any batteries supplied with the ITT/AV (i.e. in packaging or in product). Lighting equipment is defined as equipment that has the primary purpose of producing light, such as light bulbs, tubes and lamps, including incandescent, fluorescent, halogen, light emitting diode (LED) and high intensity discharge (HID) lamps.

“Landfill Liability” refers to the cost related to the closure of the operational sites and post-closure care of the closed landfill sites.

“Leaf and Yard (L&Y)” means leaves, weeds, trimmings, flowers, small twigs less than 1.5 cm in diameter and other material as designated, but does not include Grass Clippings, Brush, soil, dirt, roots, rocks, logs, stumps or sod.

“Litter” means debris, refuse, or material(s) disposed of in non-designated areas, discarded outside the regular collection point, or lying scattered about the area.

“Lightweighting” is a process that reduces the overall material used when manufacturing products (i.e. making products thinner and lighter) while still maintaining functionality.

“Local Area Municipality” means any one of the municipalities or corporations of the Town of Fort Erie, Town of Grimsby, Town of Lincoln, City of Niagara Falls, Town of Niagara-on-the-Lake, Town of Pelham, City of Port Colborne, City of St. Catharines, City of Thorold, Township of Wainfleet, City of Welland, or Township of West Lincoln.

“Low Density Residential Properties” include: single-family detached with one self-contained unit, semi-detached residential with 2 residential homes, both self-contained units; duplex residential structure with 2 self-contained units; residential buildings with three (3) to six (6) units; cottage properties with up to six (6) cottages; Bed and Breakfast establishments with three (3) bedrooms or less; structures with six (6) or more units that are considered horizontal, row or townhouses or condo housing; vertical structures where all units have a primary exterior door directly accessing ground level that is visible from the collection point (including stacked townhouse structures); trailer parks (only those classified as LDR in MPAC), boarding homes with six (6) or fewer rooms; and residential farms.

“Mixed use Properties” are used for one or more institutional, commercial or industrial and residential purposes inside or outside Designated Business Areas.

“MPAC” means the Municipal Property Assessment Corporation.

“Multi-Purpose Property” means a single property as defined by MPAC and/or contained in applicable Site Plan Conditions, housing multiple premises types.

“Multi-Residential Properties” are residential buildings containing seven (7) or more self-contained units, including but not limited to, apartments, condominiums and rentals, nursing and retirement homes, cottage properties with seven (7) or more cottages, boarding homes with seven (7) or more rooms, Group Homes, and vertical structures (stacked townhouses or similar style) where one or more unit does not have a primary external access door directly accessing ground level.

“Municipal Hazardous or Special Waste” program was operated by Stewardship Ontario. Following the wind up of the program on September 30, 2021, it was replaced by an individual producer responsibility regulatory framework for Hazardous or Special Products (HSP) producers.

“Non-Eligible Source” means premises which are not Eligible Sources in the Provinces common collection system.

“Organics” is a general term in this report used to refer to both GBO and L&Y collectively.

“Organic waste” is generic term in this report and represents a waste product including the inedible parts of plants and animals and organic material that may be processed along with food waste, the edible parts of plants and animals that are produced or harvested but that are not ultimately consumed.

“Participation Rate” represents the proportion of Low Density Residential units in the 2020 to 2021 Waste Composition Study that had an item set out in the recycling, garbage and organic waste streams at least once during the two week seasonal study period.

“Premises” means land and buildings combined in the geographic area of Niagara region or a part of such land and buildings combined in the case of land and buildings which contain multiple self-contained units with respect to which a Person is considered an Owner.

“Resource Productivity and Recovery Authority” (RPRA) is the regulator mandated by the Government of Ontario to enforce the province’s circular economy laws. Established in November 2016 to support the transition to a waste-free Ontario, RPRA administers the *Resource Recovery and Circular Economy Act, 2016 (RRCEA)* and the *Waste Diversion Transition Act, 2016 (WDTA)*, and their associated regulations.

“*Resource Recovery and Circular Economy Act*” is a producer responsibility framework for products and packaging in Ontario, making brand holders and other persons with a commercial connection to products and packaging accountable for recovering associated resources and reducing associated waste.

“Resource Recovery” means the extraction of useful materials or other resources from things that might otherwise be waste, including through reuse, recycling, reintegration, regeneration or other activities.

“*Waste Diversion Transition Act*” facilitates the transition from previously existing waste diversion programs to the new producer responsibility framework.

“Waste Electrical and Electronics Equipment” program operated by the Ontario Electronic Stewardship organization was wound up on December 31, 2020 and replaced by the Electrical and Electronic Equipment (EEE) individual producer responsibility regulatory framework for information technology, telecommunications, audio-visual (ITT/AV) and lighting equipment.

“Waste Reduction” means the minimization of waste generated at the end of life of products or packaging, including through activities related to design, manufacturing and material use.

“White Goods” means major household appliances or items such as stoves, washers, dryers, dishwashers, dehumidifiers, water tanks, barbeques, swing sets, bicycles, air-conditioning units, heat-pumps, microwaves, refrigeration units or freezer units and other material as designated.

# 1. Introduction

The Regional Municipality of Niagara (the Region) is an upper tier municipality that provides waste management services to approximately 480,000 residents and a wide range of businesses. The Region is home to the Niagara Escarpment, a UNESCO World Biosphere Reserve, which is a significant natural landscape that stretches 725 kilometres (km) from Lake Ontario to the tip of the Bruce Peninsula. It represents the largest contiguous stretch of primarily forested land in south-central Ontario. The Glenridge Quarry Naturalization Site is a notable example of the Region's commitment to sustainable development. This site was originally a limestone quarry, which was repurposed into a municipal landfill before being naturalized. The site has received several awards, including the First Place and Gold Award at the 2005 International Awards for Livable Communities.

The Region's economy is significantly influenced by tourism, with over 13 million tourists visiting annually and tourism spending in the region exceeds \$2 billion annually, contributing to the local economy. The tourism sector employs over 40,000 people in areas such as accommodation, food services, arts, culture, recreation, and entertainment. The region is home to over 2,800 tourism-oriented establishments, including full-service restaurants, hotels, motels, bed and breakfasts, performing arts establishments, wineries, and golf courses.

The Region is comprised of 12 local area municipalities (LAMs) and in 1996, the Region assumed waste management responsibilities for all LAMs. The Region offers a variety of services and programs to each LAM to meet the needs of the communities while also promoting waste reuse and diversion. In addition to the Region Council approved goal of net-zero corporate greenhouse gas (GHG) emissions by 2050, the Region is also seeking to align with the Ministry of Environment, Conservation and Parks (MECP) Strategy for a Waste Free Ontario. The legislation accompanied by this strategy lays out Ontario's vision for a circular economy and goals to a zero-waste Ontario with zero GHG emissions from the waste sector. To help achieve these goals, the Region has set out to develop their first Waste Management Strategic Plan (the Plan) that will provide strategic direction for waste management services for the next 25-years. The Plan will be developed by combining waste management system research with stakeholder consultation and applying best practices for strategic planning. The Plan will be developed in the following three phases:

- Phase One – Investigation
- Phase Two – Ideation
- Phase Three – Finalization

This document represents the Current State Report (Report) which is the first technical deliverable in Phase One of the overall Plan.

## **1.1 Purpose of this report**

The purpose of this Report is to provide a clear picture of the Region's current waste management system and related policies, including the current challenges faced by the Region. The Report will set the stage for the remainder of the project and will allow for the project team to identify potential gaps or clarifications before launching into Phase Two of the project. A review of the Regional system including existing by-laws and policies that influence the waste management services provided by the Region will be performed. In addition, the information the Region has available regarding operational, social and financial indicators will be reviewed. The current status and historical trends related to waste generation, collection, processing, and disposal will be explored to identify potential gaps. Potential opportunities will also be explored at a high-level, including the use of waste as a resource, diversion of waste, the role of the Region as a service provider, and the management of municipal assets.

## **1.2 Scope and limitations**

This Report has been prepared by GHD for the Regional Municipality of Niagara and may only be used and relied on by the Regional Municipality of Niagara for the purpose agreed between GHD and the Regional Municipality of Niagara as set out in Section 1 of this Report.

GHD otherwise disclaims responsibility to any person other than the Regional Municipality of Niagara arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this Report were limited to those specifically detailed in the Report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this Report to account for events or changes occurring subsequent to the date that the Report was prepared.

The opinions, conclusions and any recommendations in this Report are based on assumptions made by GHD described in this Report (refer to Section 1 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

## **1.3 Assumptions**

The following assumptions were utilized when creating this Report:

- Waste data was sourced primarily from the final Tonnage and Costing Model (TCM) and other documents provided by the Region. Data sources, assumptions, and discrepancies have been documented throughout.
- The TCM provided by the Region contains confirmed data from the years 2011 to 2022. The year 2022 was therefore used as the “current” benchmark year. The years 2023 to 2051 were used for forecasting.

- The Resource Productivity and Recovery Authority (RPRA) automatically includes diversion credits for activities such as container recycling through the Ontario Deposit Return Programs, grass cycling and backyard composting when calculating annual municipal residential diversion rates across the province. These credits have been excluded from this analysis as they are based on provincial estimates that are not directly associated with the Region’s TCM data.

## **2. Municipal overview**

### **2.1 Niagara region**

Niagara Region is located in southwestern Ontario, sandwiched between Lake Ontario to the north and Lake Erie to the south. Bordered by Haldimand County to the southwest, the City of Hamilton to the northwest, and the State of New York, U.S.A. to the east, the region encompasses an area of 1,854 square kilometres (km<sup>2</sup>) see Figure 2.1.



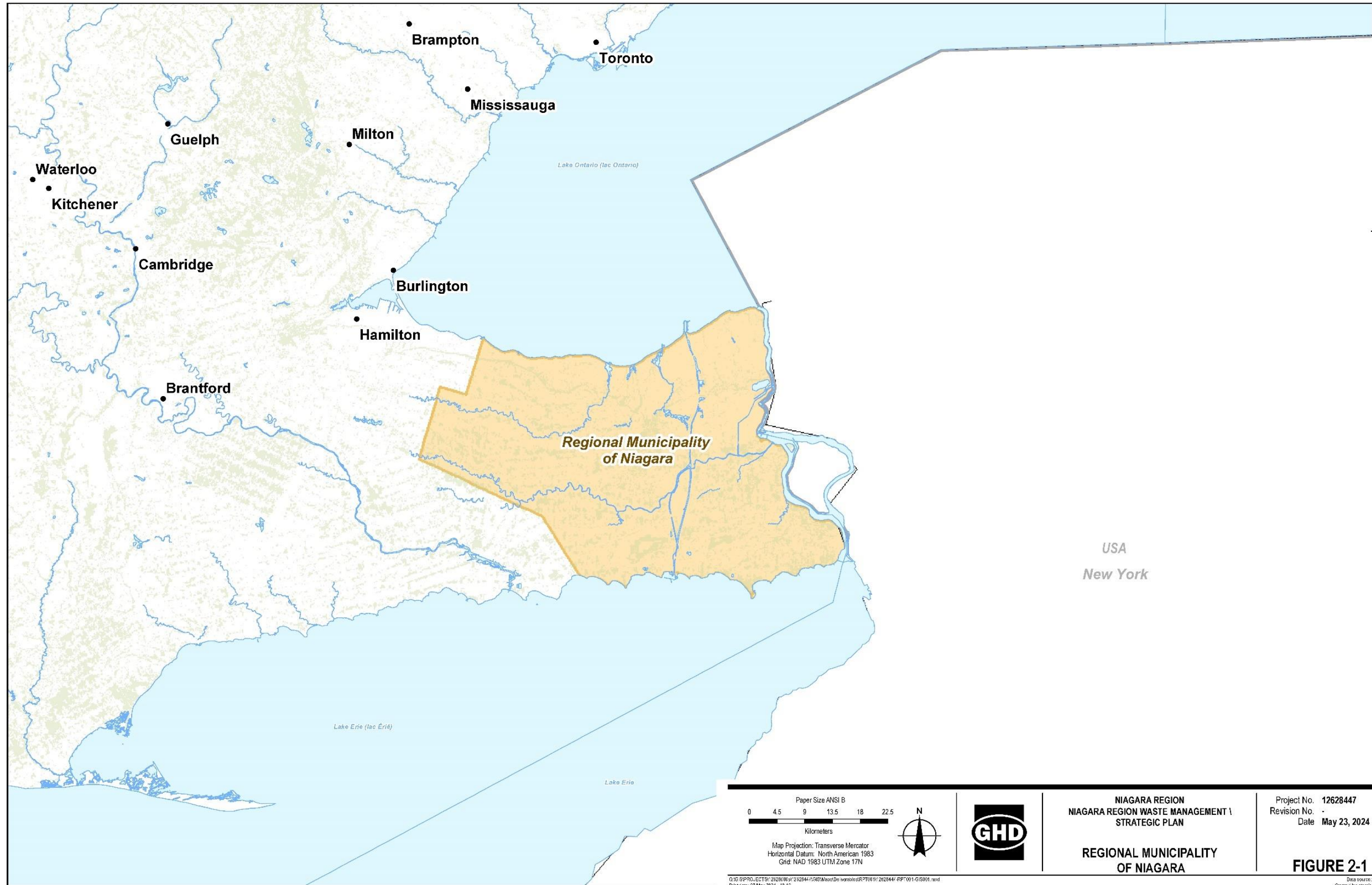


Figure 2.1 Niagara Region – Geographical Location

The region is an upper tier municipality comprised of 12 LAMs and is home to 477,941 residents<sup>3</sup>. The Region's 2051 Vision, as reported in the 2022 Official Plan, is to "support and grow a sustainable and diversified economy while providing exceptional quality of life for all and protecting our beautiful natural landscape"<sup>4</sup> and is echoed in the Council Strategic Priorities 2023 to 2026 Vision of "modern communities growing better together"<sup>5</sup>.

As of 2021, the region's median age is 46.0 years, as compared to the Ontario median age of 41.6 years, with nearly 26 per cent more persons within the 65 years or older age group than the Ontario average<sup>6</sup>. With respect to education level within the region, 52.4 per cent of the population aged 15 years and older have a post-secondary certificate, diploma, or degree (Ontario average is 57.5 per cent), 32.2 per cent have their high school diploma (27.2 per cent Ontario average), and 15.5 per cent have no certificate, diploma, or degree (on par with Ontario average of 15.3 per cent)<sup>7</sup>. 80.5 per cent of the region's population (not including temporary foreign workers, refugees, students, or other visitor visas) were born in Canada, which is more than 13 per cent higher than the Ontario average of 67.3 per cent.

Temporary Foreign Workers, Migrant and International Agricultural Workers are integral to Niagara's economy and, as of 2019, the maximum housing capacity to accommodate them was approved at 3,755 persons<sup>8</sup>. The total number of immigrants in Niagara is 83,005, with 8,720 of these having arrived between 2016 and 2021<sup>9</sup>. Of recent immigrants to the region, refugees comprise 18.2 per cent<sup>10</sup>. Regarding international students studying on student visas, 2,529 attended Brock University in 2021 and 4,304 attended Niagara College in 2022<sup>11</sup>. The median after tax income for economic families (two or more persons who live in the same dwelling and have a relationship with one another) in the region is \$86,000, \$10,000 lower than Ontario's median of \$96,000<sup>12</sup>. Niagara's living wage, which accounts for the actual costs of living and being included in a specific community, was calculated at \$19.80 per hour in 2022, \$4.30 per hour higher than Ontario's minimum wage in 2022 of \$15.50 per hour<sup>13</sup>. It is noted that the current minimum wage in Ontario is \$16.55 per hour, which will increase to \$17.20 per hour on October 1, 2024.

The region offers convenient access to a labour market of over a million workers within commuting distance from its small business economy<sup>14</sup>. As of 2019, the top sectors of employment include accommodation and food services, retail trade, health care and social assistance, manufacturing, and educational services<sup>15</sup>. In 2021, Niagara had an employment rate (i.e. percentage of the population who are employed) of 49.5 per cent and an employment participation rate (i.e. total labour force expressed as a percentage of the population aged 15 years and over) of 58.5 per cent<sup>16</sup>. Its growing market had an eight per cent increase in jobs from 2016 to 2019, due to the Region's investments in job creation<sup>17</sup>. As a critical location for North America's economic trade corridors, the region plays an essential role in the transportation of goods and services, contributing to its economic growth<sup>18</sup>. The Region has committed to strengthening and expanding the economy by initiating opportunity through the collaboration and diversification of economic prospects, while focusing on emerging sectors, in their 10-year economic plan<sup>19</sup>.

## 2.1.1 Waste management services

The Region's Waste Management Services (WMS) falls under the Public Works Department, which also includes the divisions of Water and Wastewater Services and Transportation Services<sup>20</sup>. WMS is comprised of Waste Management Administration (including Engagement and Education), Waste Disposal Operations, Waste Policy and Planning, and Waste Collection and Diversion Operations, as illustrated in the Organizational Chart provided in Figure 2.2.

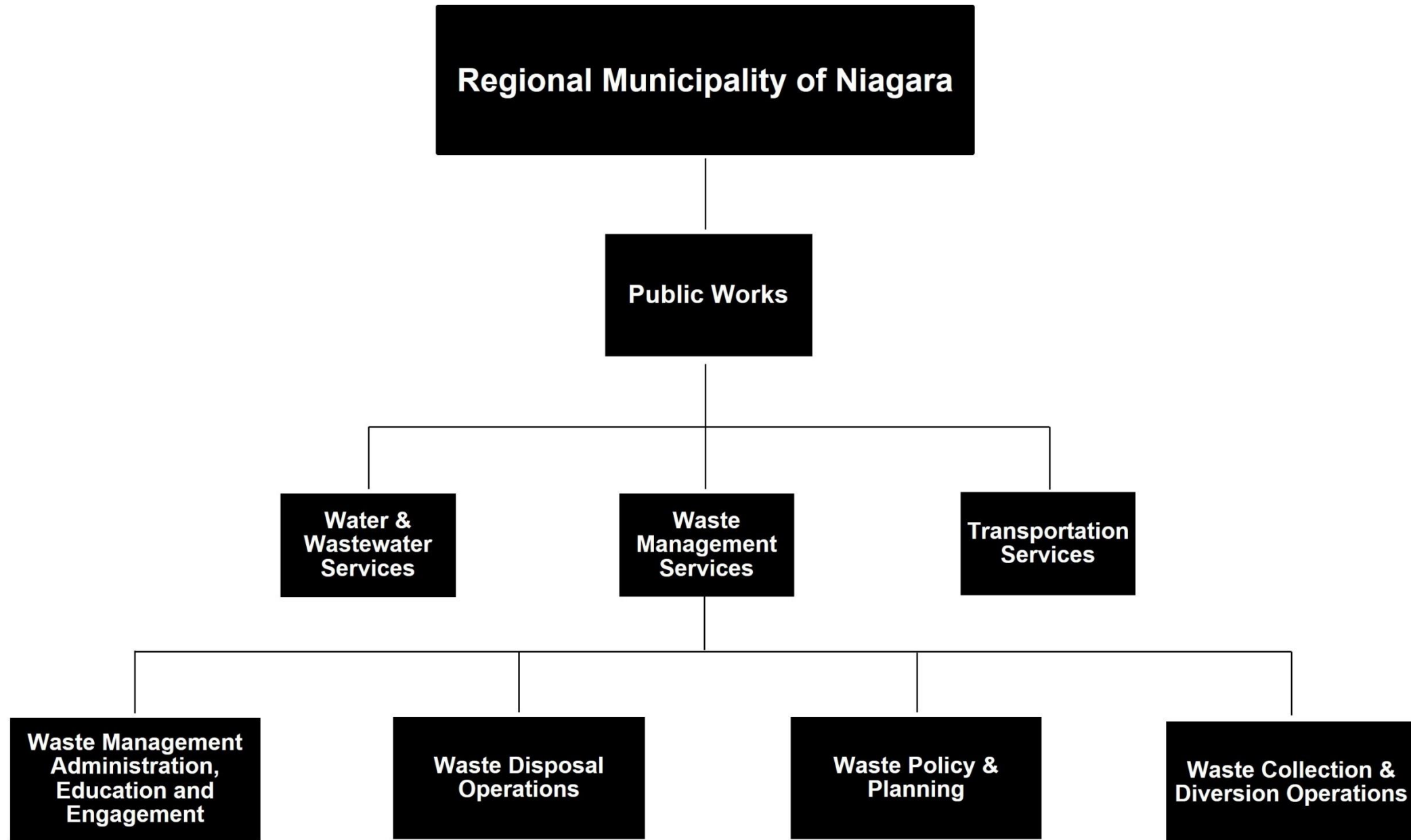


Figure 2.2 The Region – Waste Management Services Organizational Chart

WMS promotes waste reduction, reuse and diversion and provides waste collection and disposal services to residents in both low density residential (LDR, consisting of one to six residential units) and multi-residential units (MR, consisting of seven or more residential units), as well as to eligible industrial, commercial, and institutional (IC&I), and mixed-use (MU, commercial with a residential component) properties within the region.

Further, the Region acts as an advocate for residents, businesses and LAMs as it relates to potential future changes to the waste management system, including the blue box transition, seeking partnerships for additional diversion/ reuse, etc.

## **2.2 Local area municipalities**

As noted, as of 1996 the Region has been responsible for the provision of waste management services for all 12 of its LAMs, illustrated on Figure 2.3 and as noted in Table 2.1.

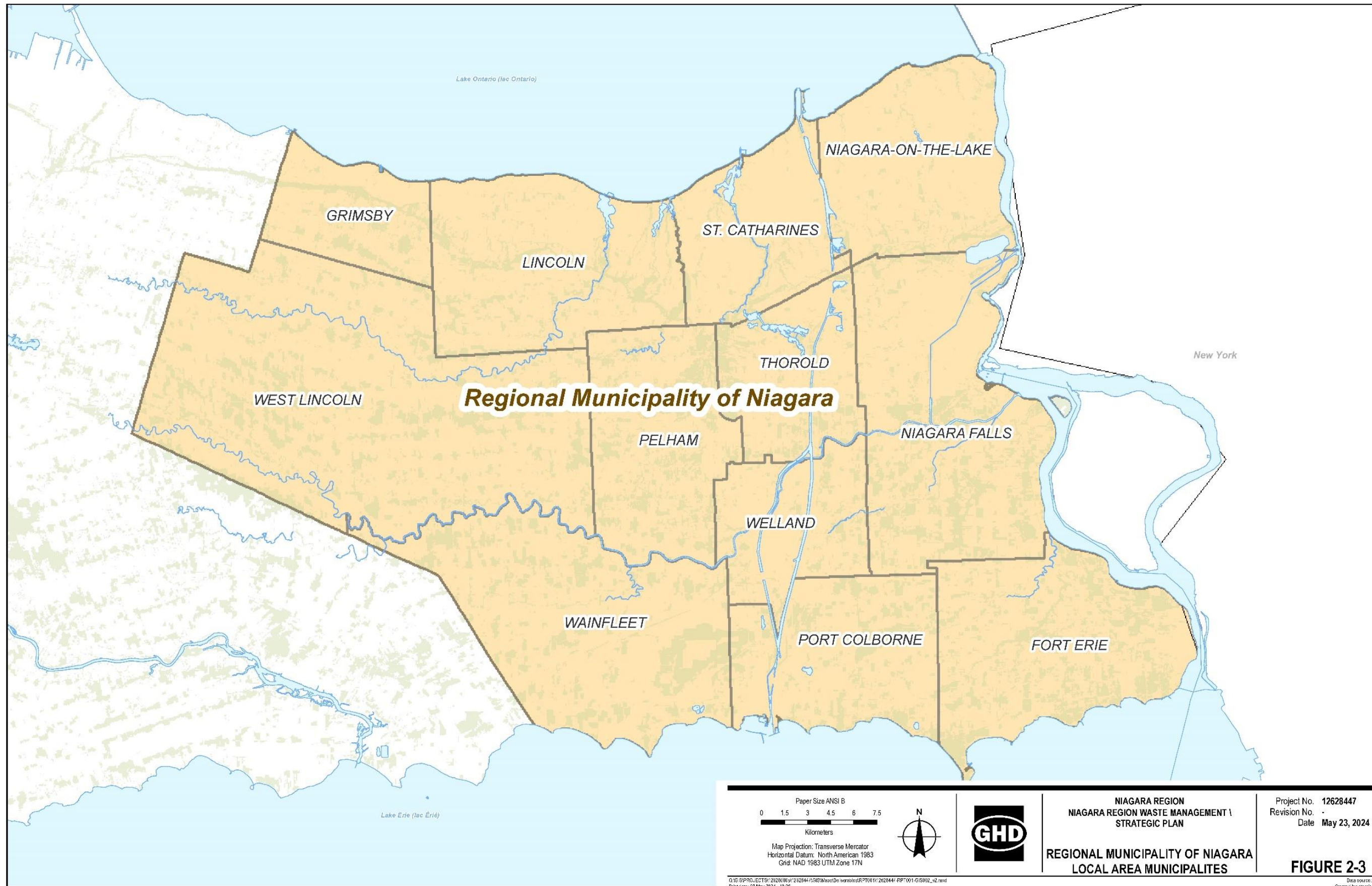
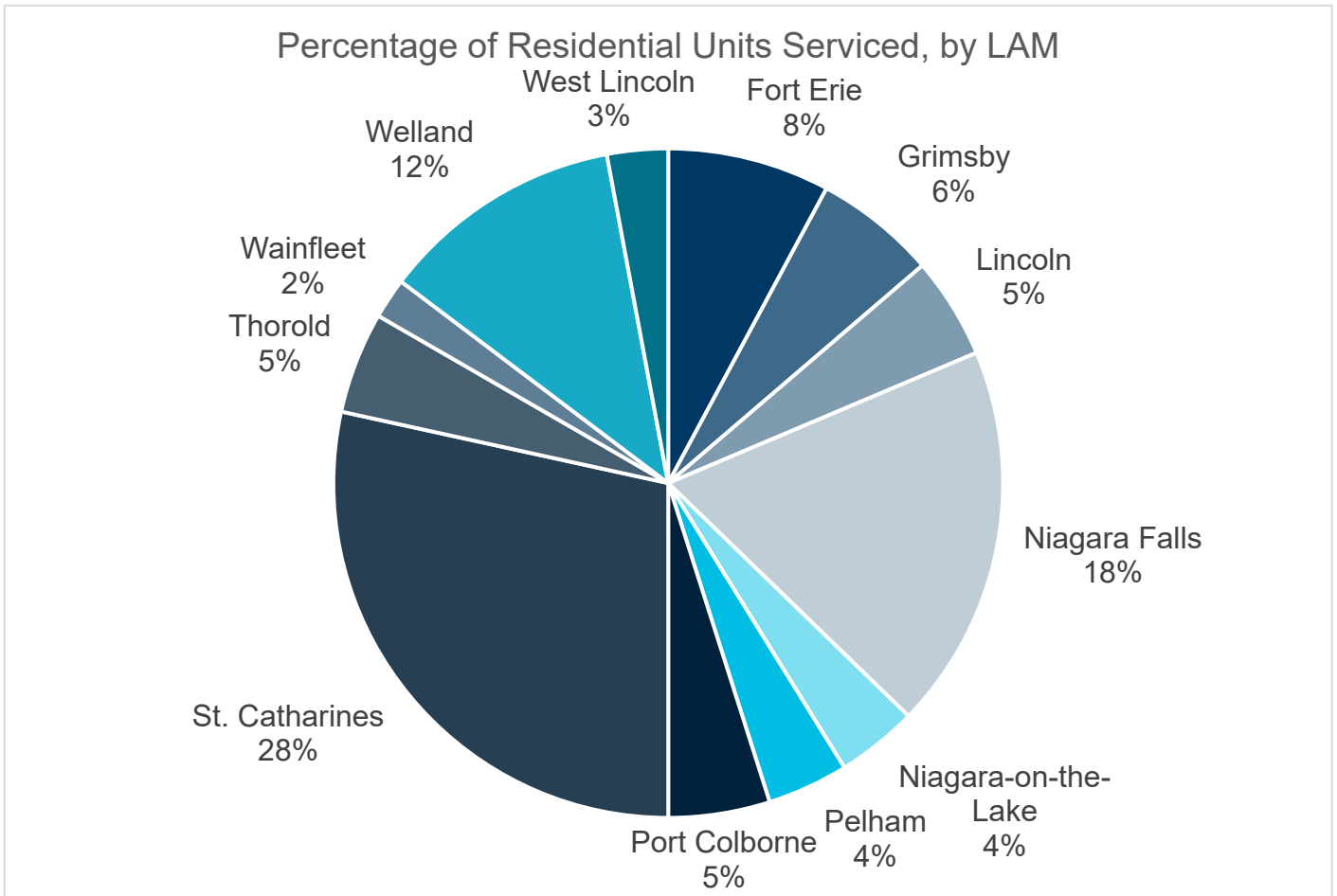


Figure 2.3 Niagara Region – Local Area Municipalities

**Table 2.1 Local Area Municipalities, Niagara Region**

<b>Local Area Municipality</b>	<b>Population (2021 Census)<sup>21</sup></b>	<b>Total Number of Residential Units<sup>22</sup></b>
<b>Fort Erie</b>	32,901	16,690
<b>Grimsby</b>	28,883	12,205
<b>Lincoln</b>	25,719	10,618
<b>Niagara Falls</b>	94,415	40,379
<b>Niagara-on-the-Lake</b>	19,088	9,057
<b>Pelham</b>	18,192	7,657
<b>Port Colborne</b>	20,033	10,452
<b>St. Catharines</b>	136,803	61,639
<b>Thorold</b>	23,816	10,549
<b>Wainfleet</b>	6,887	3,269
<b>Welland</b>	55,750	24,918
<b>West Lincoln</b>	15,454	5,704
<b>Niagara Region Total</b>	<b>477,941</b>	<b>213,137</b>

Figure 2.4 provides a visual of the breakdown by LAM of residential units serviced by Niagara Region.



**Figure 2.4 Niagara Region – Percentage of Residential Units Served, by LAM**

### 2.3 Population serviced

As previously stated, approximately 480,000 residents receive waste management services within the Region. Appendix A details the sub-category development type breakdown within each of these serviced development types within the Region in 2023 from Municipal Property Assessment Corporation (MPAC) data.

A review of reported census population and annual growth rate for the region indicates a significant boost in the growth rate starting in 2011. Table 2.2 presents census data from Statistics Canada for the years 2011, 2016 and 2021 and reports both population growth rates as well as changes in dwelling type over these periods. The data indicates that the average number of persons living in private households between 2011 and 2021 remained constant at 2.4 and that the greatest growth in housing types during this period was in row houses (43.6 per cent increase) and movable dwellings (63.2 per cent increase), while growth in other housing types ranged between eight and 16 per cent.



Table 2.2 Census data, 2011, 2016, 2021 – Niagara Region

Year	2011 <sup>23</sup>	2016 <sup>24</sup>	2021 <sup>25</sup>
Population	431,346	447,888	477,941
Rate of population growth (from previous census year, per cent)	0.92%	3.83%	6.71%
Total number of occupied private dwellings by structural type of dwelling	174,685	183,825	195,915
Single-detached house	119,790	123,700	129,970
Apartment, building (5+ storeys)	9,565	10,120	10,775
Movable dwelling	340	285	555
Semi-detached house	8,995	9,600	10,205
Row house	10,735	13,050	15,410
Apartment, duplex	5,955	6,410	6,655
Apartment, building (<5 storeys)	18,720	19,980	21,725
Other single-attached house	570	680	625
Average number of persons living in private households	2.4	2.4	2.4

## 2.4 Waste management strategies within corporate priorities and official plan

### 2.4.1 Council strategic priorities 2023-2026

As noted previously, the Region’s vision of *modern communities growing better together* was developed through the Council Strategic Priorities 2023-2026<sup>26</sup>. The Council Strategic Priorities are a blueprint to guide the Region over the coming years to support the needs of the community. In addition to the vision, the Council Strategic Priorities outline the Region’s mission, guiding principles, strategic priorities, objectives and key actions for Region staff for the years 2023 through 2026. The current Guiding Principles are:

- Diversity, equity, inclusion, and Indigenous reconciliation
- Fiscal responsibility
- Innovation
- Sustainability and climate change
- Partnerships with government and community
- Transparency and accountability

The current Strategic Priorities are:

- **Effective Region:** Remain an employer of choice by transforming service delivery in a way that is innovative, collaborative and fiscally-responsible.
- **Green and Resilient Region:** Reduce our collective carbon footprint and prepare to adapt to climate change impacts by ensuring current and future infrastructure is resilient.
- **Equitable Region:** Provide opportunities for a safe and inclusive Niagara by listening and responding to our community needs and planning for future growth.
- **Prosperous Region:** Advocate with senior governments for future growth. Improve Niagara's transportation network to help new and existing businesses thrive and grow locally, nationally and internationally.

Development of the Plan will be undertaken with these guiding principles and priorities in mind, ensuring the resulting strategy is:

- Representative of and accessible to all Region residents;
- Aligned with the Strategic Priorities of Council;
- Supports the use of best available technology to achieve the desired waste management outcomes while protecting the environment today and for future generations of residents;
- Promotes future collaboration between the Region, LAMs and residents; and
- States clearly the goals, objectives and actions for implementation and the parties responsible for their success.

It is important to note that the strategic priorities may change with each term of Council, and that the Plan must therefore include an element of flexibility to adapt its implementation to align with any priority shifts.

## 2.4.2 Niagara Region official plan

The Region's 2022 Official Plan includes a commitment in Section 5.2.1.20 to develop a Long-Term Waste Management Strategic Plan in consultation with the LAMs<sup>27</sup>. This Long-Term Waste Management Strategic Plan is to guide the operation of the Region's day-to-day waste management programs. This includes reduction, reuse, recycling, composting, diversion, and disposal of residual waste while also aimed at reducing GHG emissions, addressing Provincial climate change adaptation goals, identifying opportunities for energy from waste and source reduction, and supporting long-term financial sustainability<sup>28</sup>. Other Official Plan commitments related to waste include:

**5.2.1.21** The Region will design, operate, and monitor waste management facilities in such a manner as to promote sustainability and public health and, wherever feasible, provide for future adaptive reuse opportunities in accordance with applicable Local official plan policies and Provincial requirements.

**5.2.1.22** Waste management systems shall be located and designed in accordance with Provincial legislation and standards.

**5.2.4.1** The Region will provide for the disposal and treatment of solid wastes to the Local Area Municipalities, and in alignment with the Region's Long Term Waste Management Strategic Plan.

**5.2.4.2** The disposal and treatment of solid wastes shall be provided in an integrated manner that evaluates full life cycle impacts with respect to financial and environmental sustainability, public health, and aesthetics.

**5.2.4.3** The Region shall provide waste management systems that are an appropriate size and type to accommodate present and future requirements, and facilitate, encourage, and promote reduction, reuse, and recycling objectives.

**5.2.4.4** In collaboration with the Region, Local Area Municipalities should ensure that their official plan, zoning by-law, plan of subdivision approvals and site plan approvals for new development comply with the Region's requirements for waste collection to ensure safe and efficient waste collection and diversion and includes support for the resource recovery of food and organic waste for their residents.

**5.2.4.5** During the development review process, the Local Area Municipality will promote enhanced waste reduction, composting and recycling initiatives, and the identification of new opportunities for energy generation from waste, source reduction, reuse, and diversion, where appropriate. Consideration shall be given to increased convenience and access for waste diversion collection programs to promote participation.

**5.2.4.6** The selection of all solid waste disposal sites will involve consideration of:

- a. the compatibility of the methods of operation with adjacent land uses;
- b. the nature of bedrock and soil conditions in order to reduce the likelihood of groundwater contamination;
- c. operational economics, transportation costs, maintenance, land prices, opportunity for future expansion, etc.; and
- d. compliance with the policies of Chapter 3, and specifically Section 3.1, of this Plan.

**5.2.4.7** Site and rehabilitation plans will be developed prior to the use of a particular site for solid waste disposal. These plans should make provision for:

- a. the control of odour, vermin, and other nuisances;
- b. the phasing of the site expansion;
- c. the ultimate use of the site;
- d. landscaping and berms;
- e. access; and
- f. a uniformly high standard of operation.

**5.2.4.8** The Region will investigate the application of waste diversion techniques, including the reuse and recycling of construction material.

**5.2.4.9** Proposed development within the influence area, as determined by Provincial Land Use Compatibility Guidelines or through site specific study, of all waste management facilities shall demonstrate that the solid waste disposal site will not have any unacceptable adverse effects on the proposed development and will not pose any risks to human health and safety.

**5.2.4.10** Notwithstanding Policy 5.2.4.9, the following compatible uses may not require a study provided that the solid waste disposal site water table is not affected and excavations shall not result in landfill gas migration or removal of a visual screen buffering of the landfill from the public view: utilities, waste-processing facilities, above grade transportation routes, forestry activities, and gravel pits, quarries and other mining activities. No new land use shall be permitted within 30 metres of the licensed perimeter of an operating solid waste disposal site.

**5.2.4.11** Development on, or within 250 metres of a non-operating waste disposal site (e.g. old closed landfills) shall address Provincial requirements for contaminated sites.

**5.2.4.12** Development within 500 metres of a non-operating waste disposal site shall also demonstrate that there is no risk to human health and safety from landfill gas.

**5.2.4.13** The Region will identify and support new opportunities to enhance waste reduction, composting and recycling initiatives and for energy from waste, source reduction, reuse, and diversion, where appropriate.

**5.2.4.14** When exploring new food and organic waste resource recovery systems, the Region will pursue regional approaches, including considering potential partnerships with neighbouring municipalities and private industry.

**5.2.4.15** Approvals for new or expanded resource recovery systems will address the Provincial Land Use Compatibility Guidelines and the Guidelines for the Production of Compost in Ontario, to ensure appropriate siting and compatibility between uses and adjacent uses as well as to prevent or mitigate adverse effects from odour, noise and other contaminants.

**5.2.4.16** The establishment of a new waste disposal site is not permitted in the Niagara Escarpment Plan Area.

Further, Section 3.5.3.1(b.vi.) of the Official Plan consolidates policy direction that supports the transition to net-zero communities that mitigate climate change and includes a commitment for the Region to endeavour to support conservation and energy reduction by, among others, promoting opportunities for energy generation from waste. Section 4.1.9.2(d) dictates that proposals for non-agricultural residential development on rural lands must ensure adequate means of waste disposal and 4.1.9.2 (f.iv.) dictates that proposed developments must be appropriately separated and protected from existing and former solid waste sites.

## 2.5 Legislative scan

### 2.5.1 Niagara region and LAM by-laws

#### 2.5.1.1 Niagara region’s waste management by-law no. 2022-32

Niagara Region’s Waste Management By-Law No. 2022-32<sup>29</sup>, as amended from time to time, enforces the use of a waste management system, including waste collection and transportation, across the region. The By-Law provides the Region’s residents with information on waste class separation, waste restrictions, and other requirements for proper collection. The regulations regarding waste transportation and drop off procedures, as well as further By-Law restrictions act as enforcements to ensure the safe and efficient operation of the waste management system for the Region.

#### 2.5.1.2 Local area municipalities by-laws

Applicable by-laws for the Region’s LAMs are summarized in Table 2.3.

**Table 2.3 LAM By-Laws**

Local Area Municipality	By-Laws	Summary
<b>Fort Erie</b>	By-Law No. 186-08 – To Prescribe Standards for the Maintenance and Occupancy of Property <sup>30</sup>	The Property Standards By-Law promotes good property maintenance standards and safety regulations including direction for suitable waste storage and proper waste disposal.
<b>Grimsby</b>	By-Law No. 21-70 – Clean Yards <sup>31</sup>	Ensures land maintenance, recycling, and proper disposal and keeping of waste by owners and occupants, while prohibiting the intentional or accidental waste deposition to land without consent. Clean Yards also enforces clearing of roads and walkways from waste materials.
<b>Lincoln</b>	By-Law No. 2018-92 – Clean Yards <sup>32</sup>	Lincoln’s Clean Yards By-Law enforces clearing and the maintenance of property so that it is free of material waste. This also ensures that disposal or dumping of waste on property without permission is prohibited.

<b>Local Area Municipality</b>	<b>By-Laws</b>	<b>Summary</b>
<b>Niagara Falls</b>	By-Law No. 2007 – Waste <sup>33</sup>	The Waste-By-Law enforces the sanitary disposal of all waste by each inhabitant. This includes the prohibition of any waste accumulation or improper storage of waste on land.
<b>Niagara-on-the-Lake</b>	By-Law No. 5190-10 – Maintaining Land in Clear Condition <sup>34</sup>	Niagara-on-the-Lake’s Clean Yards requires landowners to maintain and clear properties of waste materials, while regulating the disposal of refuse and waste on public and private properties.
<b>Pelham</b>	By-Law No. 4496(2022) – To Regulate the Cleaning, Clearing and Maintenance of Land <sup>35</sup>	Mandates proper standards for municipality and inhabitants by regulating the proper disposal of waste materials and the maintenance of lands. This includes the accumulation of waste on public (owned by Pelham, Niagara Region, or NPCA) and privately owned property.
<b>Port Colborne</b>	By-Law No. 4299/135/02 – For the Maintenance and Occupancy of Property <sup>36</sup>	The Property Standards By-Law enforces good property maintenance. This includes ensuring the proper storage and timely disposal of waste materials.
<b>St. Catharines</b>	By-Law No. 2020-106 – To Prohibit the Use of Certain Lands for the Disposal of Waste and Establish Standards Respecting Their Maintenance <sup>37</sup>	This Waste Disposal By-Law regulates the disposal of domestic, industrial, yard, or commercial waste. This includes enforcing the proper disposal of loose rubbish, and debris on certain land to limit public health and safety hazards.
<b>Thorold</b>	By-Law No. 146-2019 – Respecting Litter, Yard Waste, and the Maintenance of Property <sup>38</sup>	Thorold’s Clean Yards enforces the maintenance of lands and regulates poor waste disposal. More specifically, prohibits dumping of garbage, refuse, or waste on any land.

Local Area Municipality	By-Laws	Summary
<b>Wainfleet</b>	By-Law No. 016-2021 – For Maintenance of Yards <sup>39</sup>	Wainfleet’s Clean Yards ensures the protection of proper waste management through the regulation of land. This By-Law enforces properties to be clear of waste build up by prohibition waste depositing.
<b>Welland</b>	By-Law No. 2019-135 – To Provide Regulations for Maintaining Land in A Clean and Clear Condition <sup>40</sup>	Regulates land maintenance to ensure inhabitants keep public and private properties clear and clean of waste. Enforces the Environmental Protection Act for proper waste disposal.
<b>West Lincoln</b>	By-Law No. 2019-38 – Respecting Litter, Yard Waste, and the Maintenance of Property <sup>41</sup>	Regulates the maintenance of yards and proper recycling and disposal of refuse and litter, while prohibiting the dumping or disposing of domestic and industrial waste onto undesignated lands.

## 2.5.2 Government of Ontario legislation, policies, and programs

A summary of Provincial legislation, policies and programs with implications for the Region’s waste management system is provided in this subsection, with a full description and analysis provided in Technical Memo 1 – Federal and Provincial Policy and Legislative Review

([https://www.niagararegion.ca/projects/waste\\_management\\_strategic\\_plan/pdf/technical\\_memo\\_1\\_legal\\_review.pdf](https://www.niagararegion.ca/projects/waste_management_strategic_plan/pdf/technical_memo_1_legal_review.pdf)).

In the last several years, the solid waste landscape in the Province has experienced sweeping changes that will fundamentally shift the Region’s approach to managing its waste. The *Waste-Free Ontario Act*, 2016 and its accompanying Strategy for a Waste-Free Ontario: Building the Circular Economy (Strategy) established a framework for changes with regards to responsibility for the management of resources, the provision of oversight and enforcement and creation of synergies between various pieces of legislation to achieve the stated outcomes. It seeks to alter the current linear pattern of production, consumption and disposal towards circularity and an aspirational goal of ‘zero waste’. By doing so, economic growth and prosperity is reconciled with environmental outcomes.

In addition to the waste specific acts and regulations described below, provincial initiatives such as the More Homes Built Faster Act, 2022 has the potential to have a direct impact on waste

management service needs in the Region over the planning period covered by the Plan. The Plan will need to consider the waste requirements associated with these types of mandates (e.g. approvals processes). Another example of a regulation that can indirectly impact municipal waste management systems is O. Reg. 406/19 On-Site and Excess Soil Management Regulation, as the construction industry will continue to need avenues for disposal of soil that cannot be reused for a beneficial purpose.

Ontario has made amendments to O. Reg. 406/19 On-Site and Excess Soil Management Regulation and the Rules for Soil Management and the Excess Soil Quality Standards document. These changes are intended to increase opportunities for the beneficial reuse of excess soil from housing, infrastructure, and other construction projects. Ontario Regulation 406/19 also aims to protect people and the environment while working to stop the illegal dumping of potentially contaminated soil.

### **2.5.2.1 Waste-free Ontario act, 2016 & the strategy for a waste-free Ontario**

The *Waste-Free Ontario Act, 2016*<sup>42</sup>, is comprised of the *Resource Recovery and Circular Economy Act (RRCEA), 2016*<sup>43</sup> and the *Waste Diversion Transition Act, 2016*<sup>44</sup>, which replaced the *Waste Diversion Act, 2002*. This legislation focuses on the problem of waste generation by increasing resource recovery and moving toward a circular economy, while also streamlining waste diversion programs across the province, increasing access to diversion programs, and realizing economies of scale.

A key driver to achieving a circular economy is a shift to producer responsibility, which places responsibility and accountability on producers to collect and manage products and packaging that they produce once a consumer is finished using it. In Ontario the producer responsibility framework is outlined within the *RRCEA* with the Government of Ontario being responsible for designating which materials are to be transitioned to the producer responsibility framework. The *Waste-Free Ontario Act* legislation is accompanied by the “Strategy for a Waste-Free Ontario: Building the Circular Economy<sup>45</sup>” (the Strategy). Together the *Waste-Free Ontario Act* and accompanying Strategy sets an aspirational goal to achieve a zero waste Ontario and zero GHG emissions from the waste sector with interim targets of 30 per cent diversion by 2020; 50 per cent diversion by 2030; and 80 per cent diversion by 2050. In addition to this, there are specific initiatives with respect to the planning of future and management of existing landfills in the Province of Ontario to minimize their need and reduce GHG emissions.

#### **2.5.2.1.1 Waste diversion transition act, 2016**

The *Waste Diversion Transition Act* was established to provide support to the Ministry of the Environment and Climate Change (now referred to as MECP) to wind-up the four existing waste diversion programs that were established under the *Waste Diversion Act* and transition them to the *RRCEA*. The four waste diversion programs include:

- Blue Box, transitioned to producer responsibility under O. Reg. 391/21 (Blue Box) (see Section 2.5.2.3).



- Municipal hazardous or special waste currently operated by Stewardship Ontario transitioned to producer responsibility on October 1, 2021; for single use batteries the program operations were transitioned to producer responsibility on July 1, 2020.
- Waste electrical and electronic equipment currently operated by Electronic Stewardship transitioned to producer responsibility in January 2021. Obligations for lighting came into effect on January 1, 2023.
- Used tires, previously operated by Ontario Tire Stewardship, transitioned to producer responsibility on January 1, 2019.

The transition to producer responsibility is enforced by RPRA.

#### **2.5.2.1.2 Resource recovery and circular economy act, 2016**

The *RRCEA* regulates the producer responsibility framework, which enables the Government of Ontario to provide direction related to resource recovery and waste reduction activities through policy statements and provincial interests. The RPRA<sup>46</sup> was established in November 2016 by the Government of Ontario to support the transition to a circular economy and waste free Ontario. The Authority is governed by the *RRCEA* and the *Waste Diversion Transition Act*.

In some instances, the legislation removes responsibilities from the Region (e.g. full producer responsibility), in other areas (e.g. planning, reporting and managing certain wastes) the Region will likely have additional requirements placed upon them. This legislation impacts the material that the Region will manage beyond those subject to producer responsibility under O. Reg. 391/21 (Blue Box) and ultimately whether that material is within the Region’s waste stream and requires disposal or could be diverted at the Region’s discretion by an enabling By-Law.

#### **2.5.2.2 Food and organic waste framework**

The Food and Organic Waste Framework (Framework) approved in 2018 includes a Food and Organic Waste Action Plan<sup>47</sup> and a Food and Organic Waste Policy Statement<sup>48</sup>. The Action Plan includes a number of initiatives to:

- Reduce food and organic waste
- Recover resources from food and organic waste such as amending the 3Rs Regulations (O. Reg. 101/94, 102/94, 103/94) and banning food and organic waste from disposal sites
- Support resource recovery infrastructure
- Promote beneficial uses of processed food and organic waste

The Food and Organic Waste Policy Statement was established pursuant to Section 11 of the *RRCEA*, 2016. Policy Statements provide policy direction across the production chain including the Government of Ontario, municipalities, and the private sector. The Food and Organic Waste Policy Statement established the targets for Ontario municipalities seen in Table 2.4 and Table 2.5.

**Table 2.4 Municipality Targets – Southern Ontario**

<b>Food and Organic Waste Policy Statement</b>	<b>Municipalities that currently provide green bin collection</b>	<b>Large municipalities with higher density (&gt;50,000 population &amp; &gt;300 persons/km<sup>2</sup>)</b>	<b>Large and medium municipalities with medium density (&gt;50,000 pop. &amp; &lt;300 persons/km<sup>2</sup> or &gt;20,000 population &amp; &gt;100 persons/km<sup>2</sup>)</b>
Diversion Target	70 per cent waste reduction and resource recovery of food and organic waste generated by single-family dwellings in urban settlement areas by 2023	70 per cent by 2025	50 per cent by 2025

**Table 2.5 MR Buildings and IC&I Sector Targets**

<b>Food and Organic Waste Policy Statement</b>	<b>Multi-residential buildings with 6 or more units</b>	<b>Large IC&amp;I facilities (as per) O. Reg 103/94 which generate more than 300 kg/week</b>	<b>Other IC&amp;I facilities which generate more than 300 kg/week</b>	<b>All other IC&amp;I establishments</b>
Diversion Target (per building or facility)	50 per cent by 2025	70 per cent by 2025	50 per cent by 2025	None

The targets displayed in Table 2.4 and Table 2.5 may impact the future volume of residual material that the Region will manage based on participation rates. The targets being applied to MR buildings and the IC&I sector may encourage more interest for municipal servicing and impact available processing capacities.

In addition to these targets, the Government of Ontario is still reviewing the implementation of a ban and recently amended the Policy Statement to allow for compostable plastics as part of the organic waste stream. These two elements of the Policy Statement may affect the volume and composition of the Region’s organics stream. The Plan may need to consider the associated implications of compostable plastics to the Region's services.

The addition of compostable materials to the organic waste stream and changes to recycling through O. Reg. 391/21 will require an increased focus on promotion and education from the

Region in order to ensure maximum recovery of divertible materials and to reduce the potential for contamination of waste streams. Further, the need to reduce contamination will also necessitate greater promotion and education.

### **Food and Organic Waste Disposal Ban**

While the Government of Ontario had previously committed to an organic waste to landfill ban by 2022, this action has been delayed while further work is completed with respect to implementation (latest update from the Government of Ontario via the *Made-in-Ontario Environment Plan* is a phasing out of food/organic waste to landfill by 2030). It is, however, prudent for the Region to plan for the potential implementation of an Ontario-wide food and organic waste ban from landfill/Energy from Waste (EFW), which the Region would be subject to. With a well-established Green Bin program the Region will be in a good position to address this potential ban. Efforts to divert Green Bin Organics (GBO) from MR sources within the Region may also need to increase to meet the Government of Ontario's identified targets. As it is difficult to plan for such a ban, a main over-arching theme is to provide flexibility in implementation to avoid unintended consequences elsewhere within the overall waste management system. Further, overarching enabling and supporting policies need to be in place to assist and facilitate a ban, otherwise, there is the potential for material to continue to flow into landfills.

In short, resources will be required to ensure compliance and enforcement of the ban along the entire waste management chain of custody, not just at the end.

#### **2.5.2.3 O. Reg. 391/21 (Blue Box)**

On June 3, 2021, the Province of Ontario announced the finalization of O. Reg 391/21 (Blue Box), marking a significant legislative change for municipal waste management. Under the new regulation, producers of printed paper and packaging became fully responsible for the provision of collection and processing services for residential Blue Box materials across the province. Implementation of O. Reg. 391/21 means the Region is no longer responsible for the provision or cost of this service to its residents. Transition of Blue Box recycling services from municipalities to producers began on July 1, 2023 and is scheduled to be completed by December 31, 2025. On January 1, 2024, Circular Materials, acting on behalf of the producers, took over the Region's residential Blue (and Grey) Box recycling collection and processing. It should be noted that the new legislation does not require producers to provide recycling services to businesses and other non-residential sources. Circular Materials has agreed to continue providing collection and processing services to local businesses while the provincial program is transitioning. However, producers have advised municipalities across the province that they do not intend to continue offering this service after December 31, 2025. As a consequence, the Plan will need to consider how the Region will manage recyclable materials not covered by the Regulation (i.e. recyclables from non-residential sources that the Region currently manages.)

The Region is also providing depot collection of recycling on behalf of producers during transition period but starting January 1, 2026 producers are not required to maintain depots where curbside collection is provided.

#### **2.5.2.4 Environmental Assessment Act**

The Ontario *Environmental Assessment (EA) Act*<sup>49</sup> is a provincial statute that sets out a planning and decision-making process to evaluate the potential environmental effects of a proposed undertaking. In March of 2007, the Ontario Government enacted O. Reg. 101/07, the Waste Management Projects Regulation, made under the *EA Act*. The purpose of the Regulation was to bring greater clarity to what waste projects are designated as an undertaking under the *EA Act*, and to establish new environmental assessment requirements for waste projects consistent with the potential significance of such projects.

While the Region is not embarking on a waste management project that would be subject to the *EA Act* at this time (or the Comprehensive EA when formally implemented), understanding the process and timelines associated with waste disposal approvals will be key when developing future disposal capacity solutions. Specifically, one key item to point out is that as part of Bill 197, *COVID-19 Economic Recovery Act, 2020*<sup>50</sup>, new sections within the *EA Act* essentially provides municipalities the ability to veto a new landfill that is either proposed within their own municipal borders, or within 3.5 km of their municipal border. This is particularly relevant to the Region given that there is a strong reliance on private landfill disposal of waste (a private landfill site, Walker Environmental Group, currently accepts approximately 41 per cent of waste generated by the Region). It has become increasingly more difficult to develop a new landfill in Ontario based on this policy shift, which may impact future disposal capacity within the Province. Should the Region be unable to dispose of a portion or all of the current 41 per cent sent to private facilities, the Region's disposal capacity at their current landfill sites would decrease more rapidly.

Recent reporting provided by Waste To Resource Ontario (W2RO) has determined that based on waste disposal volumes/ weights from 2019 to 2021, coupled with additional approved capacity (but not yet built) shows that the province has approximately 10 years of landfill capacity (depleted in 2034)<sup>51</sup>. This estimated remaining capacity is predicated on the continued export of approximately 30 per cent of solid waste generated in Ontario to the United States. Private landfills now account for 53 per cent of landfill capacity in Ontario, up from 36 per cent in 2017 and the trend of Municipalities utilizing private sector capacity is increasing due to limited capacity of their own or the ability/ desire to establish new capacity for their residents<sup>52</sup>. This trend and the remaining capacity is important to note for the Region to ensure visibility on available private capacity for the Region's waste.

### **2.5.3 Government of Canada legislation, policies, and programs**

A summary of Federal legislation, policies and programs with implications for the Region's waste management system is provided in this subsection, with a full description and analysis provided in [Technical Memo 1 – Federal and Provincial Policy and Legislative Review](#)

(<https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-1-legal-review.pdf>).

### **2.5.3.1 Canadian Environment Protection Act, 1999**

Under the *Canadian Environmental Protection Act, 1999* (CEPA) the Government of Canada is seeking input on a proposed integrated management approach to plastics, by taking a number of actions, including Regulations which would be developed under the provisions of the CEPA<sup>53</sup>. Under the proposed integrated management approach, authorities under CEPA would be enabled to regulate certain plastic manufactured items. This would allow the Government of Canada to enact Regulations that target sources of plastic pollution and change behaviours at key stages in the lifecycle of plastic products such as design, manufacture, use, disposal and recovery in order to reduce pollution.

Further details are provided in Technical Memo 1, however a summary of the products under the Single use Plastics Prohibition Regulations<sup>54</sup> (published by the Government of Canada on June 22, 2022) that prohibit the manufacture, import and sale of the following six categories of single use plastics items are as follows:

- checkout bags
- cutlery
- foodservice ware containing expanded or extruded polystyrene, polyvinyl chloride, oxodegradable plastic or black plastic made with carbon black
- ring carriers
- stir sticks
- straws

The Single Use Plastics Prohibition Regulations remain in force.

It is expected that a ban on these single use plastics would impact the volume of such material in the Region's residual waste stream.

### **2.5.3.2 Canada wide action plan on zero plastic waste**

The Canada Wide Action Plan on Zero Plastic Waste<sup>55</sup> was approved through the Canadian Council of Ministers of the Environment (CCME), the federal, provincial and territorial governments in November 2018, which builds on the Ocean Plastics Charter<sup>56</sup>, a voluntary international framework signed in 2018. Under the Charter framework, partners aimed to increase recycled content by at least 50 per cent in plastic products, to recycle and reuse at least 55 per cent of plastic packaging and to move towards 100 per cent reusable, recyclable, or recoverable plastics, by 2030.

Key actions established under the strategy to achieve zero plastic waste includes the banning of certain single use plastics, the development of a roadmap to address other single use and disposable plastics and the potential for the Government of Canada to facilitate consistent

producer responsibility programs. CCME and jurisdictions will work with stakeholders and other interested parties in the development and implementation of the actions outlined in the plan. It should be noted that as the Government of Canada moves forward on the initiatives under the Canada Wide Action Plan under its Two Phase Action Plan, further engagement with municipalities on how they manage their plastic waste will continue and consideration may need to be given to how the Plan can support these efforts in a cost effective manner.

## **2.6 Waste services offered**

### **2.6.1 Collection services**

#### **2.6.1.1 Base collection services**

All LDR and MR properties and some eligible IC&I and MU properties receive base collection services from the Region. As of October 19, 2020, the Region provides the following base services<sup>57</sup>:

- Every-other week (EOW) garbage collection of two containers (bag or can) per residential household. A MR property may have two containers per residential unit, up to 24 containers
  - Some households are subject to exemptions through an annual application process from the two containers curbside garbage limit for waste that cannot be contained in the current limit. These include eligible:
    - households with children under the age of four in diapers,
    - daycares operating out of a residential property,
    - households needing additional collection of non-hazardous waste because of a medical condition,
    - group homes, homes for adults with disabilities and homes for assisted living needing additional collection of non-hazardous waste because of a medical condition.
- For IC&I properties:
  - Inside the designated business areas (DBAs): weekly collection of up to four garbage containers
  - Outside the DBAs: EOW collection of up to eight garbage containers
- For MU properties:
  - Inside DBA: weekly collection of up to four garbage containers
  - Outside DBA: EOW collection of up to eight garbage containers
- Weekly GBO collection for all property types
- EOW collection (via call-in service or on-line booking) of up to four bulky items per residential unit for LDR properties
- Weekly collection of leaf and yard waste (L&Y) for LDR properties
- Four weeks of branch collection in both the spring and fall for LDR properties

- Yearly Christmas tree collection for LDR properties
- A Recycle Centre Drop-off Depot in Niagara Falls, that accepts residential blue and grey box recycling, commercial recycling, large household plastics, used clothing and bicycles
- Special Set-out Collection Service:
  - Eligible LDR properties (up to 6 units) are offered special set-out collection service for residents who are physically incapable of carrying household garbage, Green Bin and recycling. Residents of these properties do not have to bring their Garbage, Blue Box, Grey Box, or Green Bin to the curb for collection.
  - Bulky items and L&Y are not included in this service

As noted in Section 2.5.2.3, Circular Materials took over the Region’s delivery of residential Blue (and Grey) Box recycling collection services as of January 1, 2024. Circular Materials has contracted the Region’s existing collection service contractors Miller Waste Systems and GFL Environmental Inc. to collect the recyclable materials.<sup>58</sup>

### 2.6.1.2 Enhanced collection services

LAMs may request enhanced services from the Region. The following are examples of enhanced services<sup>59</sup>:

- Public space litter or recycling bin collection
- Containerized garbage collection
- Additional garbage container limits
- Increased garbage, organics or recycling collection frequency
- EOW collection (via call-in service or on-line booking) of up to four bulky items per unit for MR properties in Niagara-on-the-Lake

## 2.6.2 Regional facilities

WMS manages the operations at multiple facilities including both active and closed landfills and drop-off depots. Table 2.6 lists the facilities that the Region’s WMS is responsible for managing<sup>60</sup>. These are illustrated in Figure 2.5.

**Table 2.6 Niagara Region Waste Management Services Facilities**

<b>Active Landfills</b>	<ul style="list-style-type: none"> <li>– Humberstone Landfill (Welland)</li> <li>– Niagara Road 12 Landfill (West Lincoln)</li> </ul>
<b>Closed Landfills</b>	<ul style="list-style-type: none"> <li>– Bridge Street<sup>61</sup> (Fort Erie)</li> <li>– Caistor Road (West Lincoln)</li> <li>– Centre Street (Pelham) - Leash-free dog park</li> <li>– Elm Street (Port Colborne) - Naturalization site and leash-free dog park</li> </ul>

	<ul style="list-style-type: none"> <li>– Glenridge Quarry (St. Catharines) - Naturalization site</li> <li>– Line 5 (Niagara-on-the-Lake)</li> <li>– Mountain Road (Niagara Falls)</li> <li>– Park Road (Grimsby)</li> <li>– Perry Road (Wainfleet)</li> <li>– Quarry Road (Lincoln)</li> <li>– Station Road (Wainfleet) Naturalization Site</li> <li>– Winger Road (Fort Erie)</li> </ul>
<b>Waste and Recycling Drop off Depots<sup>62</sup></b>	<ul style="list-style-type: none"> <li>– Fort Erie - Bridge Street: Dropoff depot accepts household hazardous waste (only batteries, oil, propane tanks and paint) and other items</li> <li>– West Lincoln - Niagara Road 12: Drop-off depot accepts household hazardous waste, other items, oversized items and reuse items</li> <li>– Welland - Humberstone Road: Drop-off depot accepts household hazardous waste, oversized items, other items and reuse items</li> <li>– Thorold - Thorold Yard: Drop-off depot accepts household hazardous waste</li> </ul>
<b>Windrow leaf/yard compost sites</b>	<ul style="list-style-type: none"> <li>– Niagara Road 12 Landfill</li> <li>– Bridge Street Landfill</li> </ul>

According to the Region’s Asset Management Plan dated June 15, 2022<sup>63</sup>, the WMS assets utilized for services included two active landfills, one recycling centre (sold as of April 2023), three household hazardous/residential drop-off depots, 14 vehicles and 126 pieces of equipment. Some of the vehicles and equipment quantified in the Asset Management Plan were related to MRF operation and are now sold. The Asset Management Plan also remarked that WMS has one of the highest percentages under the “Very Good” asset condition as a percentage of value by service with a percentage of 81.5.

### 2.6.3 Partnerships

Furthermore, the Region also offers a range of diversion programs such as the Broken Spoke program at the Port Colborne High School. The Broken Spoke program was established in 2015 with the mission to engage students by teaching them mechanical skills and to also provide environmental benefits. The program takes in old bikes as well as spare parts and tools and has donated 22,045 bikes as of May 14, 2024<sup>64</sup>. Another notable program the Region offers is their textile donation program. Residents are able to bring in the following, but not limited to, items in garbage bags or cardboard boxes: gently used clothing, accessories, footwear, cloth-based items, etc.<sup>65</sup>. Items that are ripped, torn and unmatched can still be dropped off for recycling at the



Canadian Diabetes collection bins located at the Region's landfills or the Niagara Road 12 reusables goods depot<sup>66</sup>.

As the Region has had success with these programs, the Region can consider expanding the reuse and repair programs they offer. Technical Memo 4 – Comparative Scan of Peer Municipal Better Practices ([https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical memo 4 comparative scan of peer municipal better practices.pdf](https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-4-comparative-scan-of-peer-municipal-better-practices.pdf)) notes how the City of Burlington offers a lending library program and how the City of Toronto has an abundance of unique sewing, bike repair hubs and sharing and reuse spaces.

The Region has a partnership with Walker Environmental Group, for the Waste and Recycling drop-off depot at the Thorold Landfill location and Emterra Group, for the Niagara Falls MRF. The MRF is no longer a Regional facility (Emterra Group owns and operates this location) and the depot ceased operations as of June 2024.

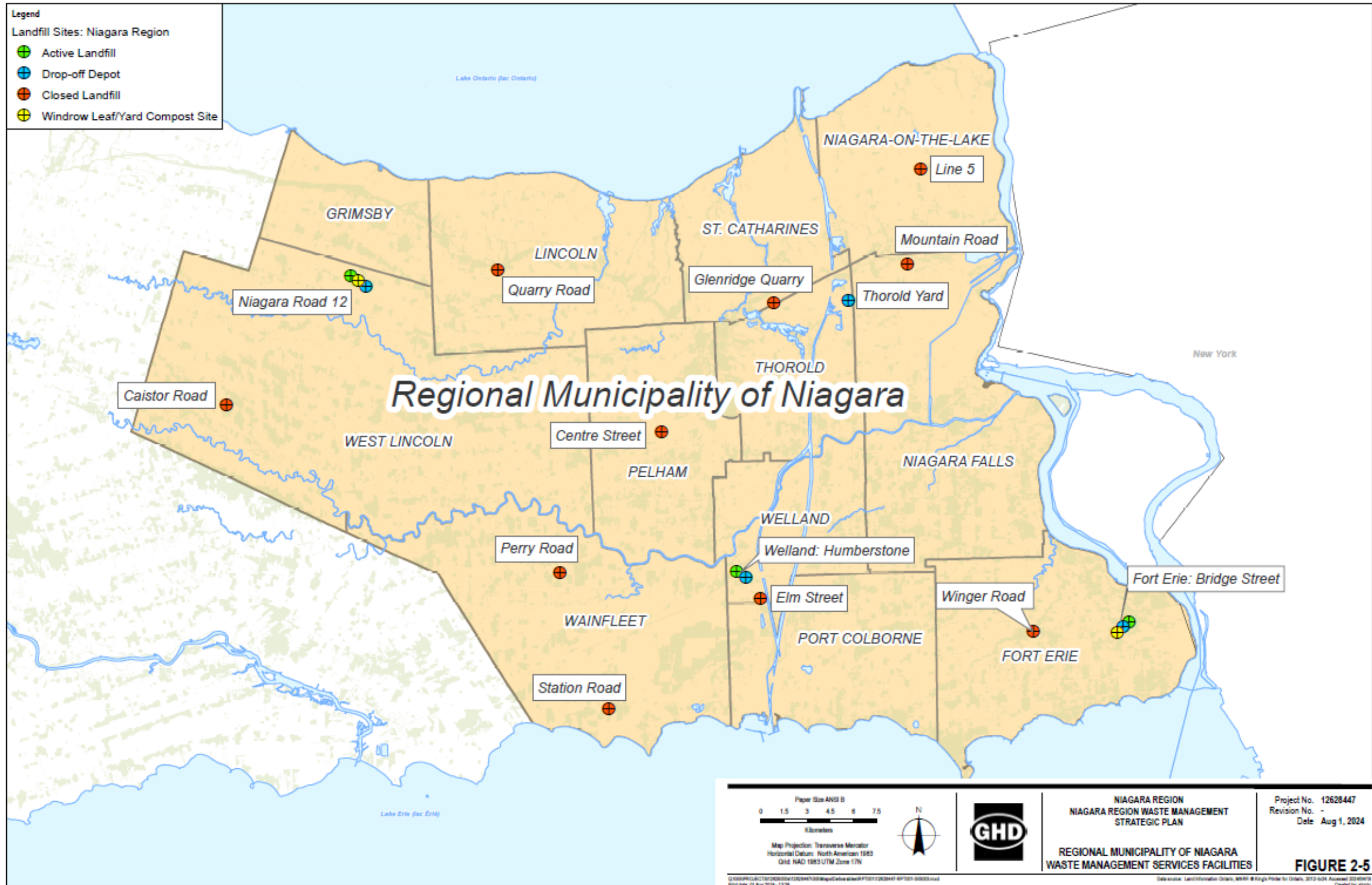


Figure 2.5 Niagara Region’s Waste Management Services Facilities

## 2.7 Education, outreach, and enforcement

The Region currently provides an array of different outreach and communication methods to support the community in learning about and complying with its waste management system, starting with the “Garbage, Recycling and Organics” webpage on the Region’s website<sup>67</sup>. Here, residents can find the following:

- Their waste collection day
- Information on how to book pickup of large or bulky items
- Details about picking up or replacing their GBO containers
- How to report illegal dumping
- Addresses for the Region’s household hazardous waste depots
- The item disposal search tool to determine which container to place an item in or a donation location if the item is deemed reusable
- Information on garbage tag prices and locations for pick-up
- Exemption application forms (i.e. diaper, daycare, medical, group home and charity collection),
- Textile donation information
- How to request presentations

The webpage also provides links with details on containers, bags and cart limits, landfills, Region contact information, Green Scene newsletter sign-up for receiving quarterly updates on waste management activities, transportation and water and wastewater in the Region, and a link to the Rethink You Waste at Your Workplace webpage that promotes waste diversion and sustainable practices for local businesses. A link to information on the producer responsibility transition is also available at the top of the webpage.

As per the Region’s Frequently Asked Questions document<sup>68</sup>, the current outreach and communication efforts include:

- Presentations on waste reduction, reuse and recycling at schools, summer camps, service clubs, etc.
- Special events recycling and GBO collection – recycling and GBO collection containers provided free of charge to public events such as fairs and festivals, including drop-off and pick up and of containers and recycling/organics materials and proper processing of material
- Information and education opportunities on proper recycling and waste management through staffed booths at community events, farmers markets, etc.
- Education and awareness campaigns such as illegal dumping and Green Bin campaigns
- Green Scene Public Works Newsletter
- MR promotion and education for organics and other diversion programs
- Annual Waste Collection Calendar
- Niagara Region Waste App

- Printed resources, calendars
- Staff resources, customer service
- Social media links for X, Nextdoor app, Facebook, Twitter, regular radio spots, newspaper ads, billboards
- Anti-littering campaigns to decrease street litter in communities and to increase understanding and use of proper disposal methods for commonly littered items
- IC&I recognition program to encourage diversion and waste reduction practices among small business users of Niagara Region’s waste diversion programs
- Community Waste Reduction Week and Earth Week events
- Compost giveaway events
- By-law enforcement (see Section 2.5.1 for Niagara Region and LAM waste by-laws).

### 3. Waste generation

#### 3.1 Waste types

As mentioned in Section 2.6, the WMS division manages several different waste materials consisting of primarily garbage, recycling (currently only from non-eligible sources), organics (GBO and L&Y), and other materials such as household hazardous waste (HHW), large plastics, electronics, fats, oils and grease, etc. As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services. Currently the noneligible sources still remain the Region’s responsibility for recycling services and the Region continues to accept residential recycling at drop-off depots. Based on a review of the Region’s TCM from 2011 to 2022 and the “Items Picked Up on your Collection Day” webpage on the [Regional Municipality of Niagara website](https://niagararegion.ca/waste/collection/items/default.aspx?landing=1) (<https://niagararegion.ca/waste/collection/items/default.aspx?landing=1>)<sup>69</sup> the waste types managed by the Region are categorized in Table 3.1.

**Table 3.1 Categories of Waste Niagara Region Manages**

<b>Garbage</b>	<b>Recycling</b>	<b>Organics</b>	<b>Other</b>
<ul style="list-style-type: none"> <li>– Garbage (Non-recyclable and Non-compostable Items such as cleansing wipes, paper coffee cups, cosmetics, gift wrapping paper,</li> </ul>	<ul style="list-style-type: none"> <li>– Blue Box Materials from non-eligible sources (Containers such as plastics, cans, metals, glass and polystyrene)</li> </ul>	<ul style="list-style-type: none"> <li>– Green Bin Organics (Items such as Food Waste, Paper Egg Cartons and Small Amounts of Yard Waste)</li> <li>– Leaf and Yard Waste (Items such</li> </ul>	<ul style="list-style-type: none"> <li>– Municipal Hazardous and Special Waste (MHSW)</li> <li>– White goods</li> <li>– Construction and Demolition (C&amp;D) waste</li> <li>– Scrap Metal</li> </ul>

Garbage	Recycling	Organics	Other
pads from meat trays, diapers, etc.)	– Grey Box Materials from non-eligible sources (Items, such as paper, cardboard and plastic bags)	as Leaves, Plants, Weeds, Twigs, Branches and Hedge Trimmings. Grass clippings are not accepted. Christmas Trees are also collected during the special collection week in January)	– Tires – Electronics – Textiles – Carpets/Underpads – Mattresses/Boxsprings – Fats/Oils/Grease – Mixed Plastics – Recycled Bicycles – Porcelain – Bulky Items – Soils

Residents can utilize the Region’s search feature on the “Items Picked Up on your Collection Day” webpage<sup>70</sup> to confirm how to properly dispose or recycle a waste item.

### 3.2 Waste sources

The Region currently accepts waste from a multitude of sources including, but not limited to, LDR properties which contain one to six units, MR properties which contain seven or more units, MU, MP and IC&I units.

LDR properties include single family homes, duplexes, semi-detached homes, boarding homes, residential farms, bed and breakfast establishments with three bedrooms or less, and cottage properties with up to six cottages.

MR properties include condominium and rental buildings with seven or more units, cottages with seven or more cottages or residential units, boarding houses with seven or more rooms, long-term care facilities, nursing homes and retirement homes with seven or more units. For recycling and organics purposes, a MU property with seven or more units may also be classified as a MR property.

Multi-Purpose (MP) properties include single properties as defined by MPAC (Municipal Property Assessment Condition) and/or contained in applicable Site Plan Conditions that contain two or more distinct property types such as LDR, MR, MU or IC&I.

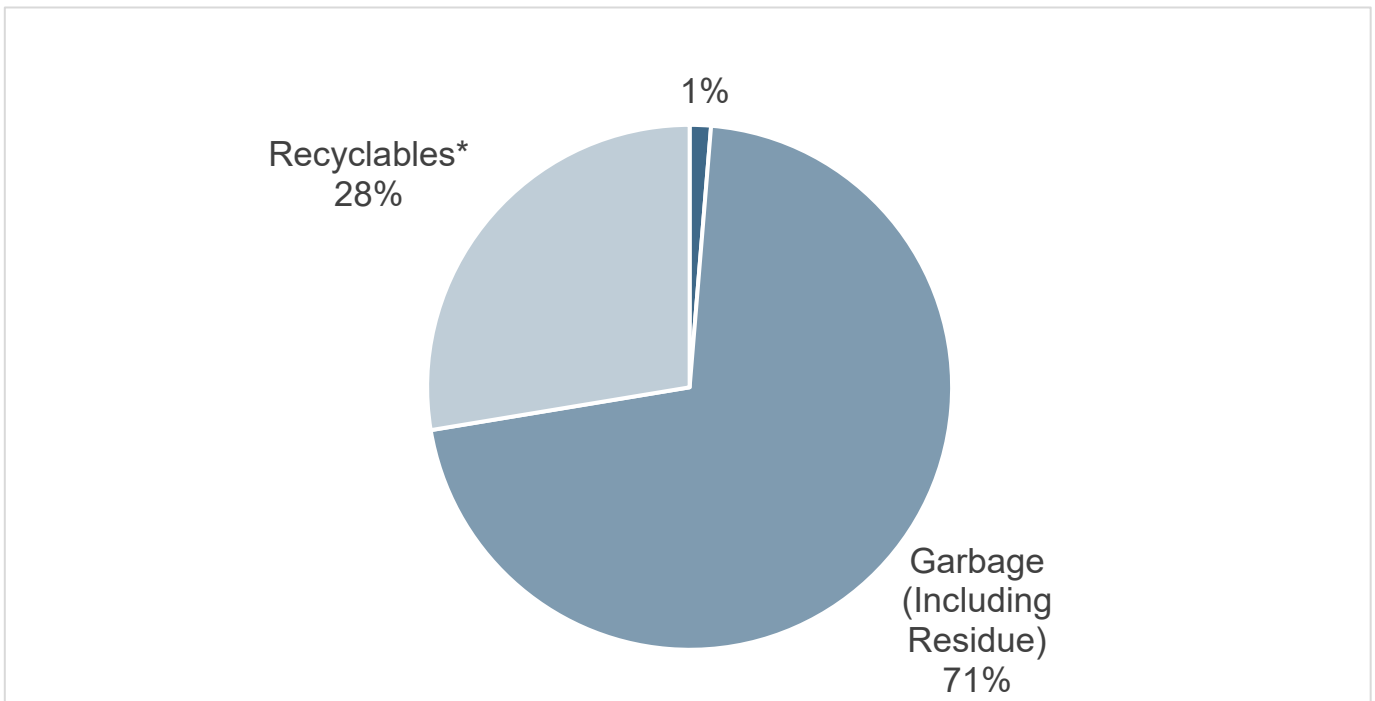
Table 3.2 provides a breakdown of how materials are collected (i.e. curbside collection vs. self-hauled) from each of the waste sources.

**Table 3.2 Waste Sources Received at Landfills/Drop-off Depots from Curbside Collection and Self-Hauled Activities<sup>71</sup>**

Curbside Collected Sources	Self-Hauled Sources
– LDR	– Residential
– MR	– IC&I
– MU	– Municipal agencies
– IC&I <sup>72</sup>	– Regional agencies
– MP	

### 3.3 Waste managed

The TCM was used to calculate the tonnes of waste that the Region has managed from 2011 to 2022. The tonnage was calculated by excluding the external waste sources (i.e. from Waterloo Region, Haldimand County) which were managed at that time as well as the RPRRA residential diversion credits. As seen in Figure 3.1, garbage (including residue) makes up the largest portion of the waste managed in the Region (50 per cent), followed by organics (27 per cent), recyclables (19 per cent), and other (four per cent).



**Figure 3.1 Percentage of Each Waste Source from the Total Tonnages Managed in 2022<sup>73, 74</sup>**

\*Net of Residue

Table 3.3 provides a breakdown of the materials that make up the ‘other’ category in 2022.

**Table 3.3 Breakdown of the Other Category Managed Tonnages in 2022<sup>75</sup>**

<b>Other Category</b>	<b>Tonnages</b>	<b>Percentage of Total Other</b>	<b>Percentage of Tonnages Diverted<sup>76</sup></b>
Municipal Hazardous & Special Waste (MHSW)	941	11%	88%
White Goods	0	0%	N/A
Construction & Demolition (C&D)	4,306	52%	100%
Scrap Metal	1,444	17%	100%
Tires	360	4%	100%
Electronics	359	4%	78%
Textiles	24	0%	100%
Carpets & Underpads	0	0%	N/A
Mattresses & Boxsprings	0	0%	N/A
Fats, Oils & Grease	0	0%	N/A
Mixed Plastics	700	8%	N/A
Recycled Bicycles	27	0%	100%
Porcelain	130	2%	100%
Bulky	0	0%	N/A

Table 3.3 shows that C&D material accounts for the largest share of the ‘other’ category, at more than 50 per cent in 2022.

The annual tonnage of each waste source from 2011 to 2022 can be found in Figure 3.2 and is taken from the Region’s TCM model. The total tonnes of waste (including residue) have varied by approximately nine per cent from 2011 to 2022 and averages approximately 222,000 tonnes per year.

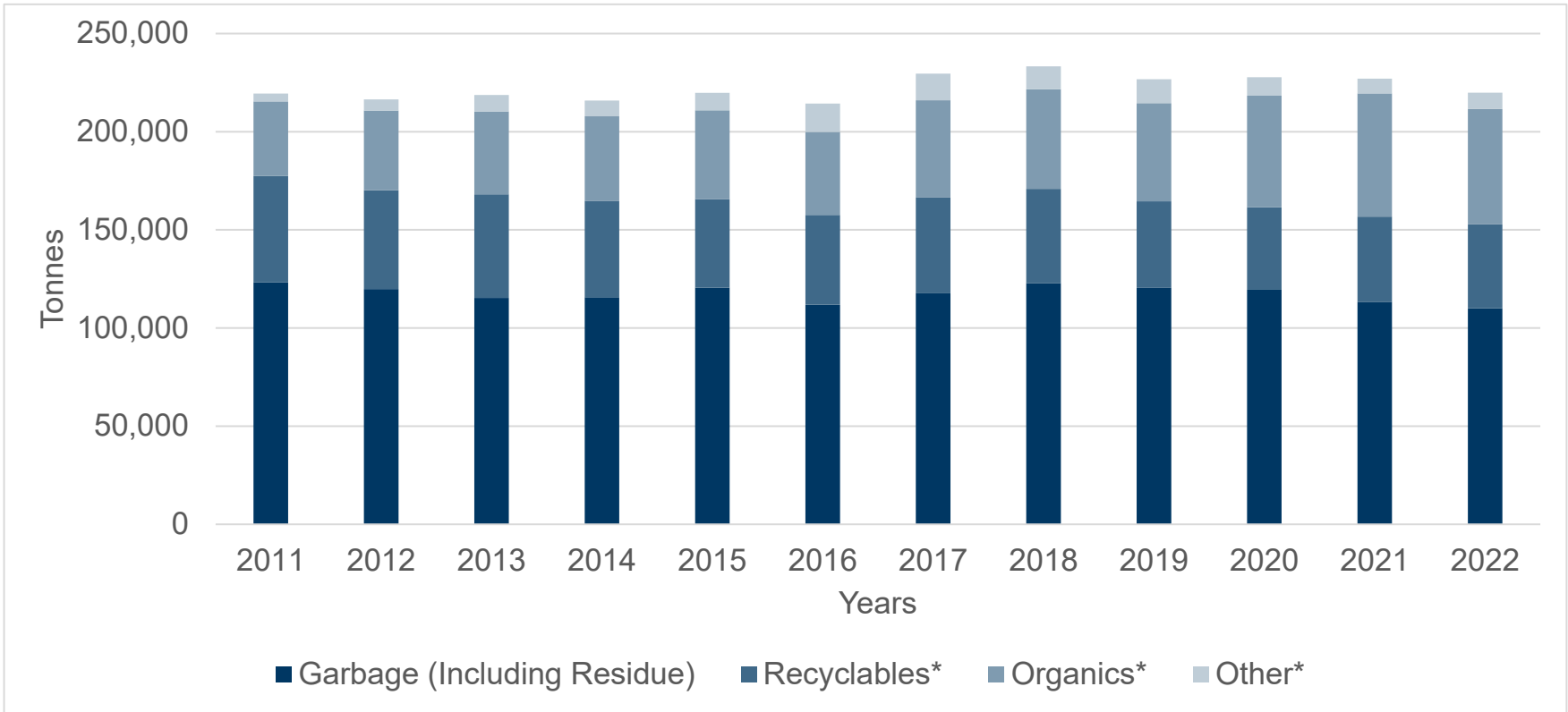


Figure 3.2 Total Waste Curbside Collected and Self-hauled from 2011 to 2022<sup>77,78</sup>



When looking at each waste type in isolation, the total tonnes of garbage collected curbside and self-hauled that the Region has had to manage (including residue) has decreased by 11 per cent from 2011 to 2022. Similarly, the total tonnes of recyclables have also decreased by 21 per cent while the organics stream has increased by 55 per cent and the 'other' stream source has increased by 108 per cent.

The current challenge for the Region is ensuring that Circular Materials maximizes participation in the residential Blue/Grey Box program to divert recyclables in order to minimize these materials in the Region's managed streams. As previously noted, as of January 1, 2024, the Region is no longer responsible for residential (Blue/Grey Box) recycling collection services. While there is an opportunity for the Region to increase the recycling participation rate by utilizing promotion, education and enforcement techniques, the Region may not receive information on how many tonnes of recyclables producers are collecting.

The review and analysis of the curbside collected and self-hauled tonnages are discussed in Section 4.4.

### 3.3.1 Capture and contamination rates

The Region, in partnership with the Continuous Improvement Fund (CIF) and Stewardship Ontario (SO) conducted a waste composition study in 2020 to 2021 (referred to as 2020 to 2021 Waste Composition Study) from a total of 100 LDR households across the Region. The 2020 to 2021 Waste Composition Study included 10 out of the 12 LAMs which were Fort Erie, Grimsby, Lincoln, Niagara Falls, Niagara-on-the-Lake, Pelham, Port Colborne, St. Catharines, Thorold and Welland. The results from the 2020 to 2021 Waste Composition Study will be used by the Region to evaluate its ongoing waste diversion efforts (i.e. impacts of EOW garbage collection). Additionally, the intent of performing the four seasonal, two-week waste audits was to:

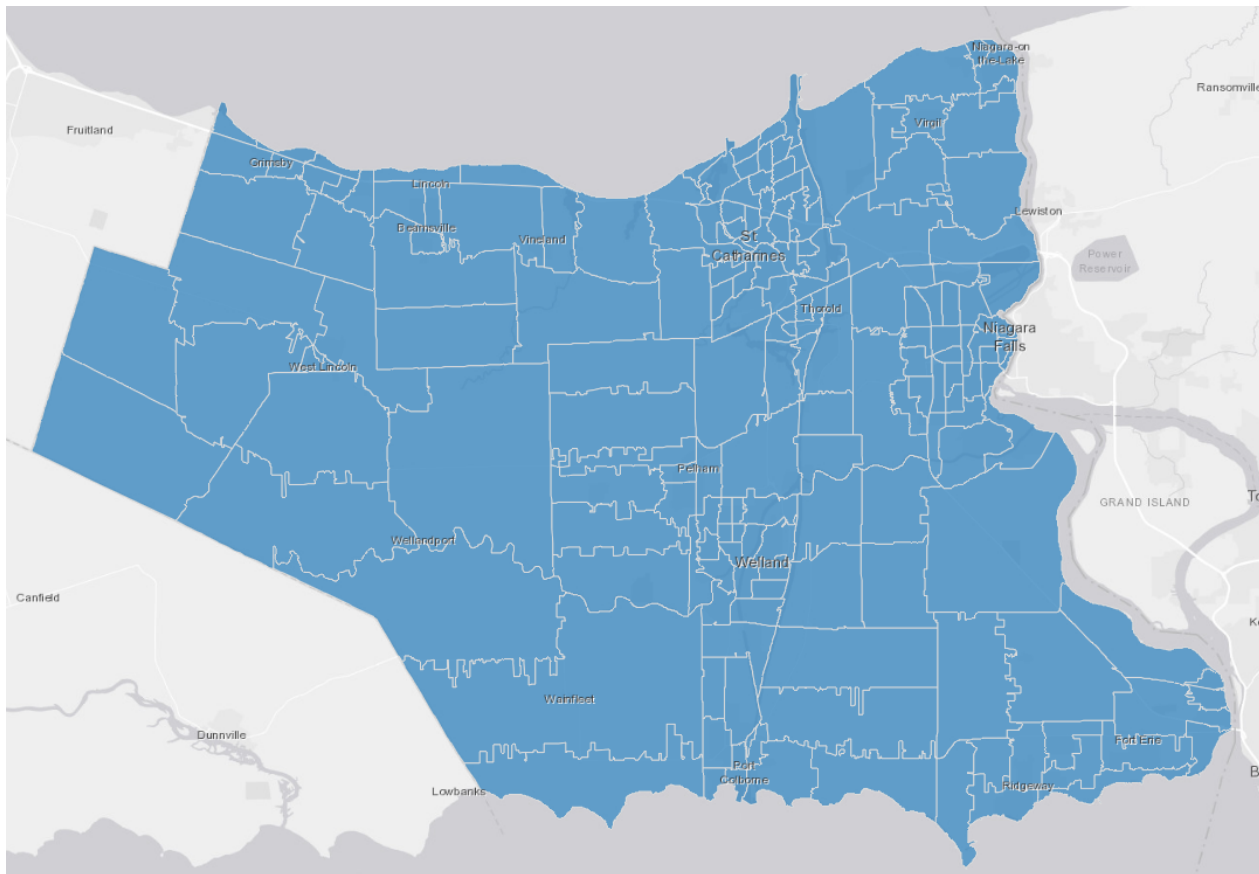
- Determine the 2020 to 2021 program performance measures such as the capture and diversion rate;
- Identify various 2020 to 2021 set-out trends;
- Quantify the extent of recycling contamination;
- Provide a Region- wide detailed analysis of the 2020 to 2021 audit results; and
- Complete a comparative trend analysis based on the 2015 to 2016 and 2020 to 2021 audit results.

The results of the 2020 to 2021 Waste Composition Study demonstrated that there has been an 18.45 per cent decrease in the tonnes of garbage generated from 2015 to 2016, a 20.9 per cent increase in the tonnes of recycling (combined) generated and a 105.7 per cent increase in the tonnes of organics generated. Moreover, the 2020 to 2021 waste composition study also illustrated that the Region is experiencing a 14.30 per cent increase in their recycling and organics diversion rate. In addition, a 36.07 per cent increase, 75.54 per cent increase and 22.36 per cent decrease from 2015 to 2016 was also noted for the number of full container equivalents set out per household per week for recycling (combined), organics and garbage respectively.

## 4. Waste collection

### 4.1 Routes and collection areas

The Region is split into two waste collection service areas: Collection Area One and Collection Area Two. In total, there are 171 collection routes which are further split by collection week (i.e. Week One or Week Two) and collection day. In addition to residential properties, each collection route also services some IC&I and MU properties. Figure 4.1 provides the delineation of each unique collection area. Appendix B provides a detailed breakdown of the collection routes, days, and week classification for each LAM.



**Figure 4.1 Delineation of Each Unique Collection Route Area in the Region<sup>79</sup>**

Region residents can utilize the following website to determine their waste collection day based off their address: [Find Your Garbage Day and Pick-up Details - Niagara Region, Ontario](https://www.niagararegion.ca/waste/collection/schedule/default.aspx) (<https://www.niagararegion.ca/waste/collection/schedule/default.aspx>).

## 4.2 Contracts

As mentioned in Section 4.1, the Region currently holds two collection contracts for Collection Area One and Collection Area Two, both of which commenced on October 19, 2020. Table 4.1 provides details on the current collection contracts.

**Table 4.1 Overview of Collection Contract Details**

Contract Item	Collection Area One	Collection Area Two
<b>Service Provider</b>	GFL Environmental Inc.	Miller Waste Systems
<b>Contract End Date</b>	March 5, 2028	March 5, 2028
<b>Extension Options</b>	One Year	One Year
<b>Customers</b>	<ol style="list-style-type: none"> <li>1. Town of Grimsby</li> <li>2. Town of Lincoln</li> <li>3. Town of Pelham</li> <li>4. City of Thorold</li> <li>5. Township of Wainfleet</li> <li>6. Township of West Lincoln</li> </ol>	<ol style="list-style-type: none"> <li>1. Town of Fort Erie</li> <li>2. City of Niagara Falls</li> <li>3. Town of Niagara-on-the-Lake</li> <li>4. City of Port Colborne</li> <li>5. City of St. Catharines</li> <li>6. City of Welland</li> </ol>
<b>Waste Types</b>	Garbage, Recyclables <sup>80</sup> , Organics	Garbage, Recyclables <sup>81</sup> , Organics <sup>82</sup>
<b>Number of Residential Units</b>	50,002 <sup>83</sup>	163,135 <sup>84</sup>

## 4.3 Curbside collection participation rates

The 2020 to 2021 Waste Composition Study which included 100 LDR properties concluded that the transition to EOW garbage collection implemented on October 19, 2020, resulted in a reduction in the tonnes of garbage placed out for collection by LDR properties and improved usage of the curbside collection waste diversion programs.

The 2020 to 2021 Waste Composition Study also included the overall participation rates for each participating LAM. Table 4.2 depicts the program participation rates for the Region as whole.

**Table 4.2 Program Participation Rates in the 2020 to 2021 Waste Composition Study<sup>85</sup>**

Municipality	Combined Recycling Participation Rate	Garbage Participation Rate	GBO Participation Rate
<b>Niagara Region</b>	82.9%	86.2%	59.2%

Table 4.2 demonstrates that there is variability in the participation of the Region’s programs as the organics program has the lowest rate at approximately 59 per cent and the garbage program has the highest at approximately 86 per cent. The participation rates represent the proportion of LDRs in the study that had an item set out in the recycling, garbage and organic waste streams at least once during the two week seasonal study period.

The 2020 to 2021 Waste Composition Study noted the following factors which may have contributed to the participation rates seen from 2020 to 2021 for the curbside garbage, recycling, and organics programs:

- The implementation of EOW garbage collection commencing in October of 2020.
- The number of residents working from home, ordering more products online and preparing more meals at home due to the stay at home order from the COVID-19 pandemic.

## 4.4 Waste types and tonnages

As spoken of earlier, waste materials are either collected curbside or self-hauled to landfills and drop-off depots. Thirty-nine (39) per cent of the garbage, not including residues from diversion programs, received at the Region’s landfills and drop-off depots is from self-hauled activities. In addition, 23 per cent of the recycling received is from self-hauled activities and 26 per cent of organics is as well.

When looking specifically at garbage, the Humberstone Road landfill has consistently received the most self-hauled garbage from 2011 to 2022. In 2022, self-hauled garbage accounted for 62 per cent of the total tonnage. Table 4.3 provides a breakdown of the 2022 curbside collected and self-hauled tonnages of garbage received at each active landfill.

**Table 4.3 Tonnage of Garbage Managed in 2022 at each Active Landfill based on Source<sup>86</sup>**

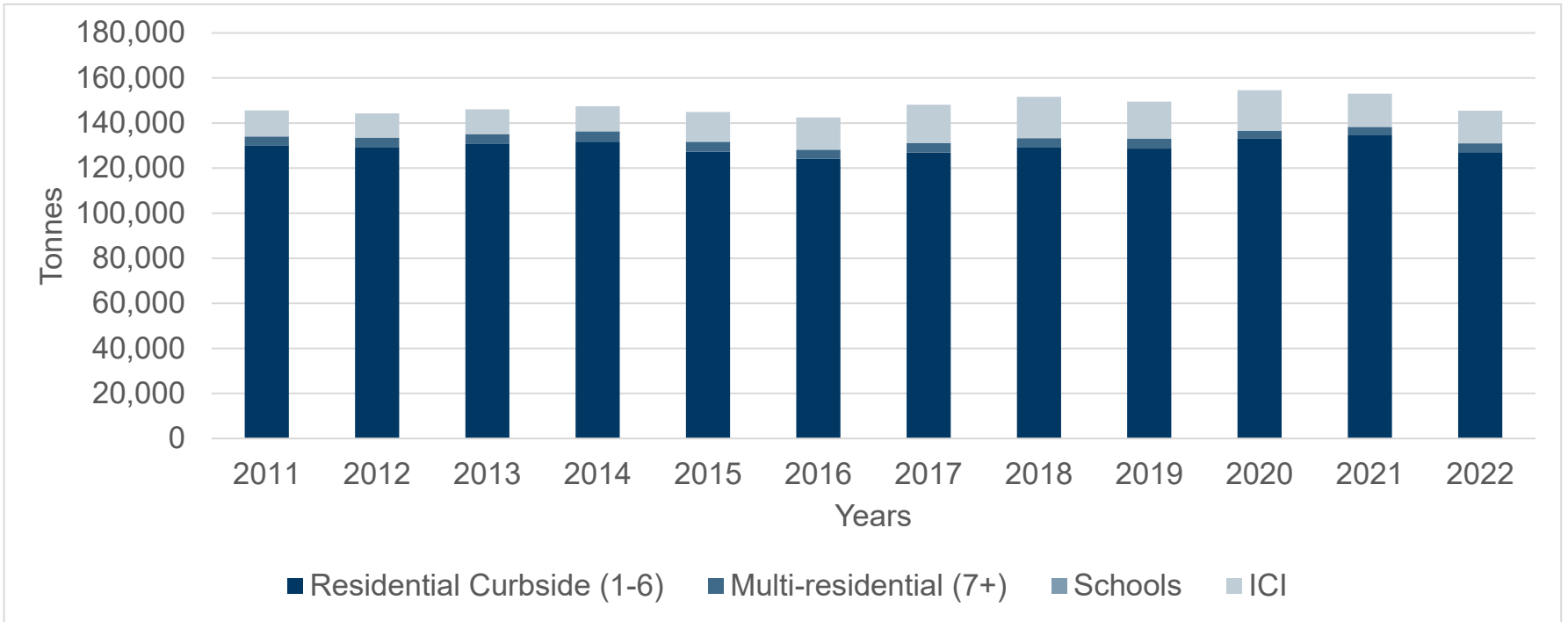
Facility	Total Garbage (Tonnes)	Curbside Collected Garbage (Tonnes)	Percentage of Curbside Collected out of Total	Self-Hauled Garbage (Tonnes)	Percentage of Self-Hauled out of Total
Humberstone Road Landfill	43,535	16,758	38%	26,777	62%
Niagara Road 12 Landfill	14,159	8,862	63%	5,297	37%
Walker Environmental Group Thorold Landfill	43,130	36,348	84%	6,782	16%

The Region also collects soils from LAMs, residential self-hauled, commercial sources and from the Region. In 2022, the Region collected a total of 21,442 tonnes of soil, with approximately 83 per cent going to the Humberstone Road Landfill and the remainder going to the Niagara Road 12 Landfill.

The Region's current opportunity as it relates to collection is to decrease the tonnages from self-hauled activities, particularly at the Humberstone Road Landfill. This would not only reduce GHG emissions due to less trips to the drop-off depots but may also result in a higher participation rate and better utilization of Region programs. However, this behavioural change may also result in budget impacts.

#### 4.4.1 Curbside collected tonnages

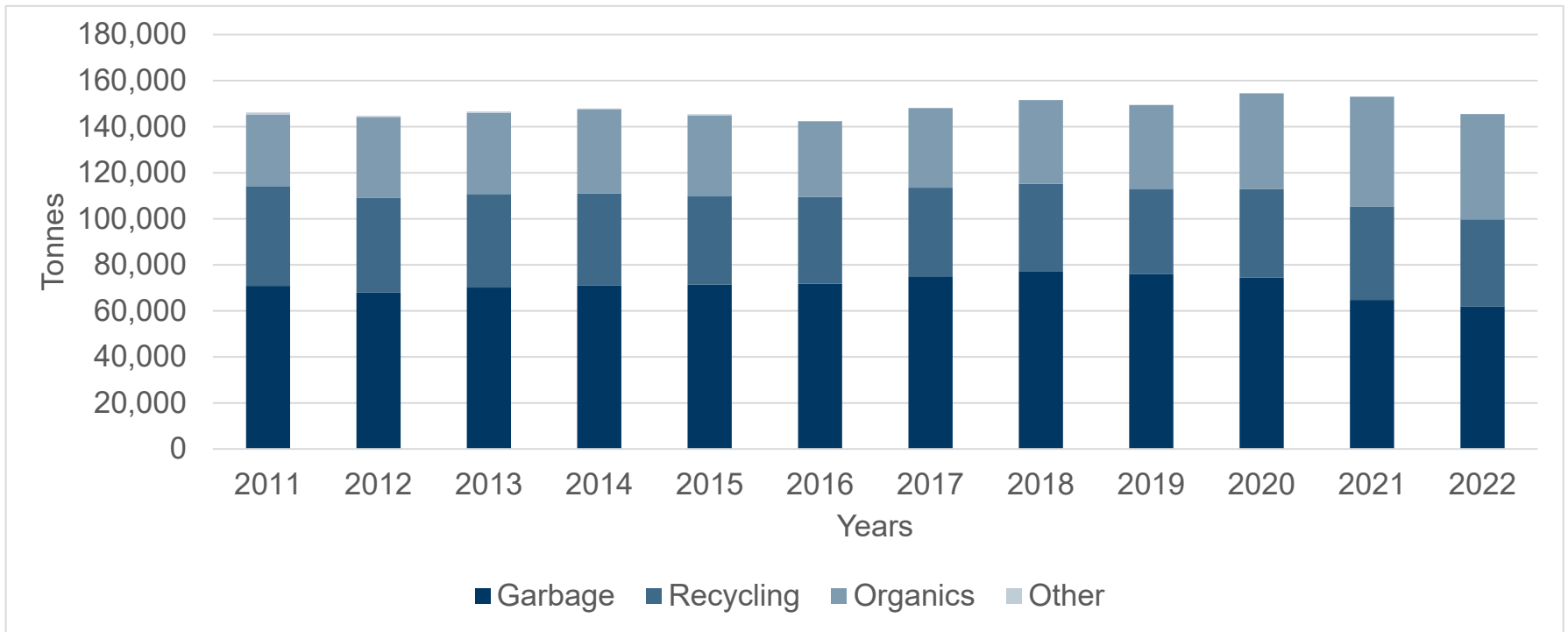
**Figure 4.2** demonstrates the combined total garbage, recyclables, and organics tonnages collected curbside in the Region from 2011 to 2022. The "other" category of waste was not included for purposes of this analysis due to being unable to confirm where the material was handled based on the TCM provided by the Region. In addition, the "other" category typically makes up a small percentage (average of four per cent from 2011 to 2022) of the total waste managed in the Region. Thus, the assessment was performed for the known curbside collected waste sources that make up the majority of the waste the Region has to manage.



**Figure 4.2 Total Curbside Collected Tonnages from 2011 to 2022 based on Waste Source<sup>87</sup>**

A key observation from **Figure 4.2** is that the total curbside collected tonnages from LDRs account for an average of 87 per cent of the total tonnages collected from all unit types.

**Figure 4.3** demonstrates the total waste tonnages collected curbside in the Region from 2011 to 2022 broken down by waste type.

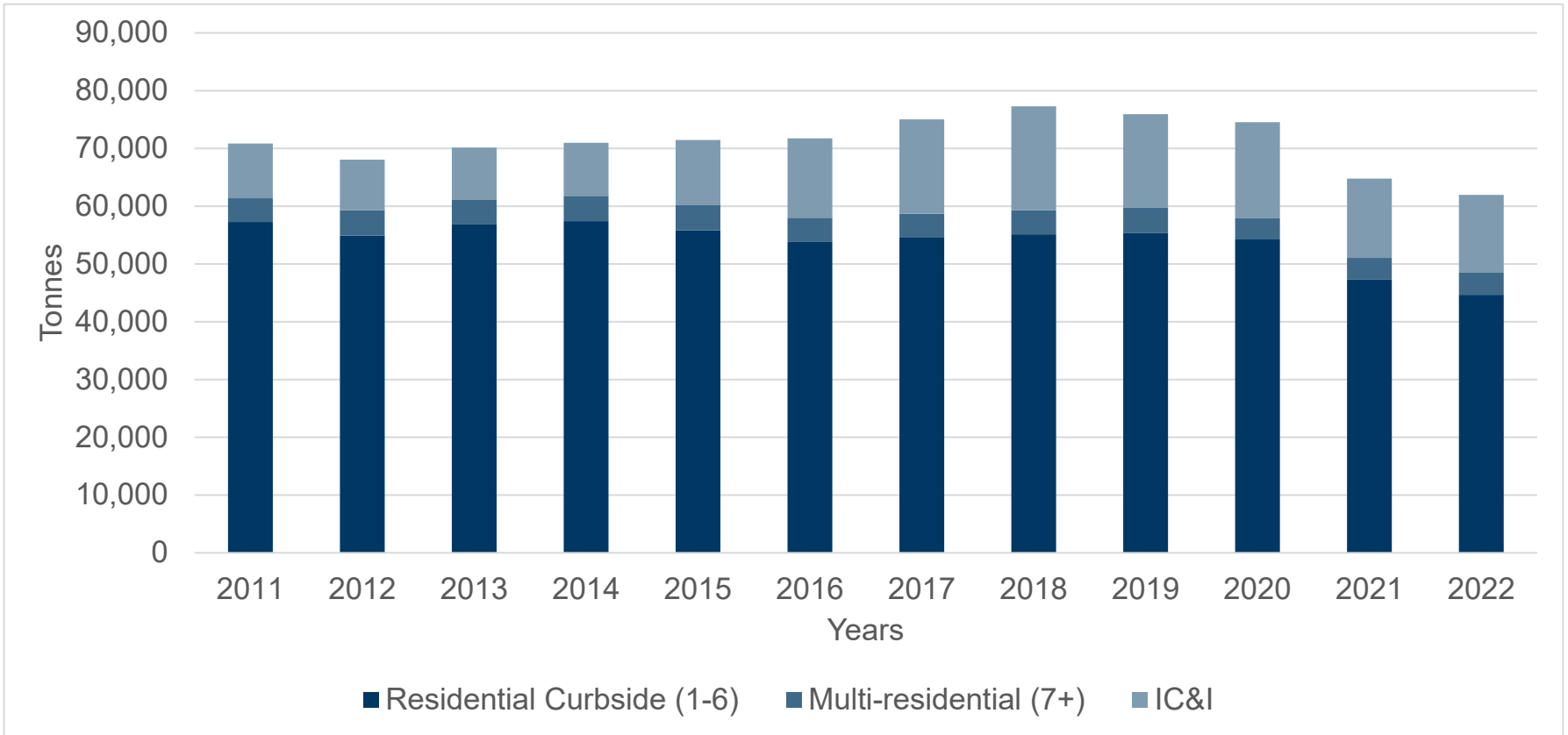


**Figure 4.3 Total Curbside Collected Tonnages from 2011 to 2022 based on Waste Type<sup>88</sup>**

In 2022, garbage accounted for 43 per cent of the total tonnes collected in the Region, further illustrating that the residents are making use of the available diversion programs (i.e. recycling and organics). The fraction of garbage has decreased from a high of 51 per cent in 2019.

When looking at each waste type in isolation, the total tonnes of garbage decreased by 13 per cent between 2011 and 2022. Similarly, the total tonnes of recyclables collected through curbside has decreased by 12 per cent over the same time period, while the total tonnes of organics has increased by 46 per cent, and the total tonnes of other waste types has decreased by 98 per cent. The reduction of curbside collected recyclables is likely due to ‘lightweighting’ of recyclables products and a decline in newsprint. “Lightweighting” is a process that reduces the overall material used when manufacturing products (i.e. making products thinner and lighter) while still maintaining functionality.

A summary of the garbage collected curbside by property type from 2011 to 2022 is provided in Figure 4.4.



**Figure 4.4 Tonnage of Garbage Curbside Collected from 2011 to 2022 based on Property Type<sup>89</sup>**



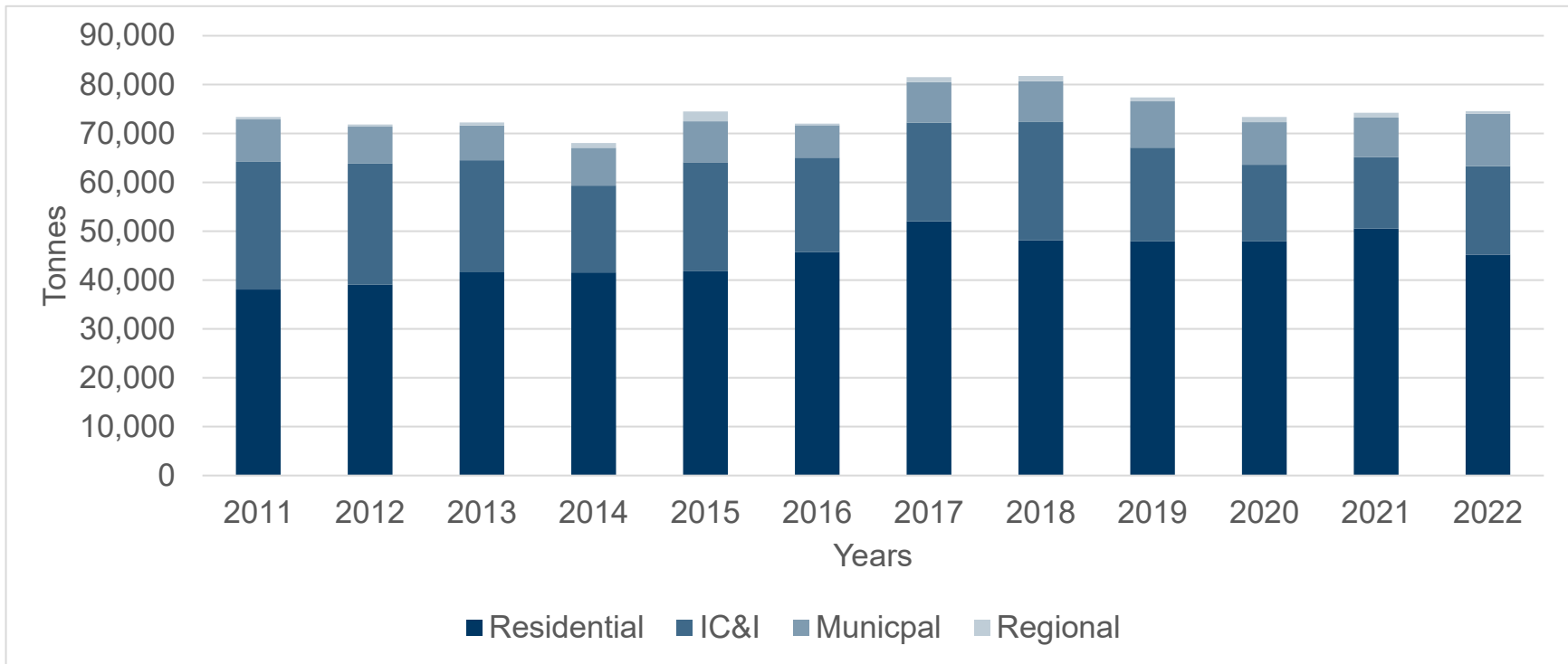
Key observations on the curbside collected garbage tonnages from 2011 to 2022 include:

- Garbage collected from LDRs accounts for an average 76 per cent of the total collected through curbside.
- The tonnage of curbside collected garbage has remained relatively steady between 2011 and 2016 with a slight increase occurring over 2017 and 2018.
- A decrease of 13 per cent in the tonnes of curbside collected waste from LDR units was observed from 2020 to 2021, with another 6 per cent decrease observed from 2021 to 2022. It is noted that the Covid-19 pandemic was occurring over this time and it was assumed that it would lead to an increase in waste due to the usage of masks, cleaning supplies, etc. However, the Region experienced a decrease in garbage over this period which could indicate that more residents were making use of the diversion programs. Another correlation for the decrease in the tonnes of garbage collected can be due to the EOW waste collection that commenced as of October 2020.
- The curbside garbage collected from MR units remained relatively constant between 2011 and 2019. The tonnage decreased by 18 per cent in 2020 likely due to the COVID-19 pandemic, but has been steadily increasing toward pre-pandemic levels since 2020.

The Region's current challenge and opportunity as it relates to curbside collection is to increase diversion, particularly in MR buildings that receive base services.

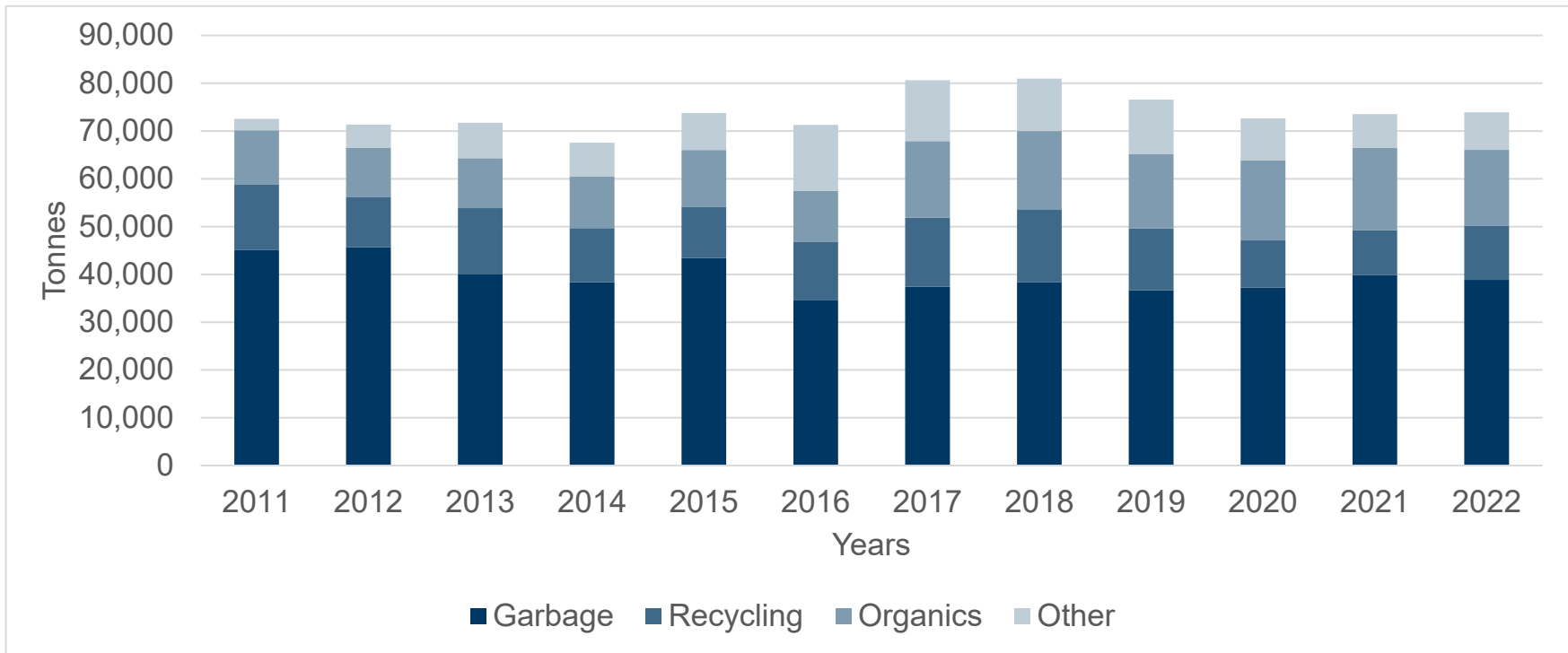
#### 4.4.2 Self-hauled tonnages

In addition to the materials received from curbside collection activities, the Region also receives self-hauled materials at its drop-off depots from residents, businesses and municipal and regional facilities. The types of waste managed from the self-hauled drop-offs include garbage, recycling, organics, and other. A summary of the self-hauled drop-off tonnages by customer type is provided in Figure 4.5. Similar to Section 4.4.1, the "other" category of waste was not included for purposes of this analysis due to being unable to confirm where the material was handled based on the TCM provided by the Region. In addition, the "other" category typically makes up a small percentage of (average of four per cent from 2011 to 2022) of the total waste managed in the Region. Thus, the assessment was performed for the known self-hauled sources that make up the majority of the waste the Region is to manage.



**Figure 4.5 Total Self-Hauled Tonnages from 2011 to 2022 based on Waste Source<sup>90</sup>**

The total tonnes of self-hauled waste has ranged from approximately 57,500 to 70,000 tonnes and averaging 65,000 tonnes per year between 2011 and 2022. Garbage from residential self-hauled drop-off represents the largest source from 2011 to 2022. Figure 4.6 provides the breakdown of the self-hauled drop off tonnages by waste type from 2011 to 2022.



**Figure 4.6 Total Self-Hauled Tonnages from 2011 to 2022 based on Waste Type<sup>91</sup>**

The total tonnes of waste self-hauled to the Region’s drop-off locations has remained relatively stable between 2011 and 2022. However, when looking at each waste type in isolation, the total tonnes of garbage and recyclables self-hauled to drop-off depots have both decreased by 14 per cent and 17 per cent respectively over the same period. Conversely, the total tonnes of organics has increased by 40 per cent, and the total tonnes of other<sup>92</sup> waste has increased by 229 per cent.

Similar to curbside collection, the Region’s current challenge and opportunity as it relates to self-hauled materials is to increase the tonnes of recyclables and organics diverted, while decreasing the tonnes of garbage, particularly in MR buildings that receive base services.

## 5. Waste processing

Organics, recyclables, and L&Y are currently processed as follows in the Region:

- Organics (GBO and L&Y) are sent to the privately-owned Walker Environmental Group (Walker) composting facility on Townline Road in Thorold.
- Recyclables are sent to the Material Recovery Facility (MRF) located on Montrose Road in the City of Niagara Falls. The facility was recently sold to Emterra in April of 2023 who continues to receive, process, and market recyclable materials from various sources, including recyclables from the producer operated residential Blue Box program.
- L&Y are processed at the Region’s compost facilities at the Niagara Road 12 and Bridge Street sites.
- Hazardous and special wastes are received at HHW drop-off depots owned by the Region. The operations of HHW drop-off depots, including sorting and consolidation of the HHW, is contracted out to GFL Environmental Inc. The transportation of HHW from the drop-off depots is also contracted out. The materials are currently sent to different processors who then manage the materials. The Region sends non-commingled and commingled lab packs, which are large, sturdy drums used for shipping smaller containers of waste (i.e. drums, boxes and pails of paint, etc. are sent via non-commingled lab packs and acids, bases, etc. are sent via commingled lab packs) to Photech. Photech also receives waste such as miscellaneous pressurized cylinders (i.e. cylinders of propane, helium, etc.), miscellaneous materials (i.e. mercury thermometers, fire extinguishers, etc.) waste oil and more. Items such as empty antifreeze, oil container bags and oil paints are sent to Pnewko Brothers, and sharps and syringes to Daniels c/o Photech<sup>93</sup>.

The landfills used by the Region for waste disposal are discussed in Section 6.

### 5.1 Organics

The Region currently has a contract with Walker Environmental Group (formerly known as “Integrated Municipal Services Inc.”) until March 31, 2036<sup>94</sup> for the processing of organics. Under the current terms and conditions, Walker Environmental Group is required to accept and process up to 48,000 tonnes of the Region’s organics annually. The Region has the ability to terminate the agreement on March 31, 2029, or March 31, 2033.

Walker Environmental Group’s composting facility operates under Waste Environmental Compliance Application (ECA) No. A121001 dated January 30, 2021. The site includes a 5.3-hectare composting facility and is located at 3879 Thorold Townline Road in the City of Thorold. The total site area is 13 hectares and includes the following:

- A 2.8-hectare pad for open windrow composting and/or for a modified GORE cover system;
- A 7,832 m<sup>2</sup> GORE cover system on an asphalt pad used for in vessel composting; and

- A 9.359 m<sup>3</sup> stormwater pond.

The site can receive up to 90,000 tonnes of organics per year or 2,675 tonnes per day. In addition, the maximum daily rate of residual waste transferred from the site for final disposal is to not exceed 1,000 tonnes per day based on a weekly average (Monday to Saturday).

The Site Plan of the Walker Environmental Group composting facility can be found in Figure 5.1.

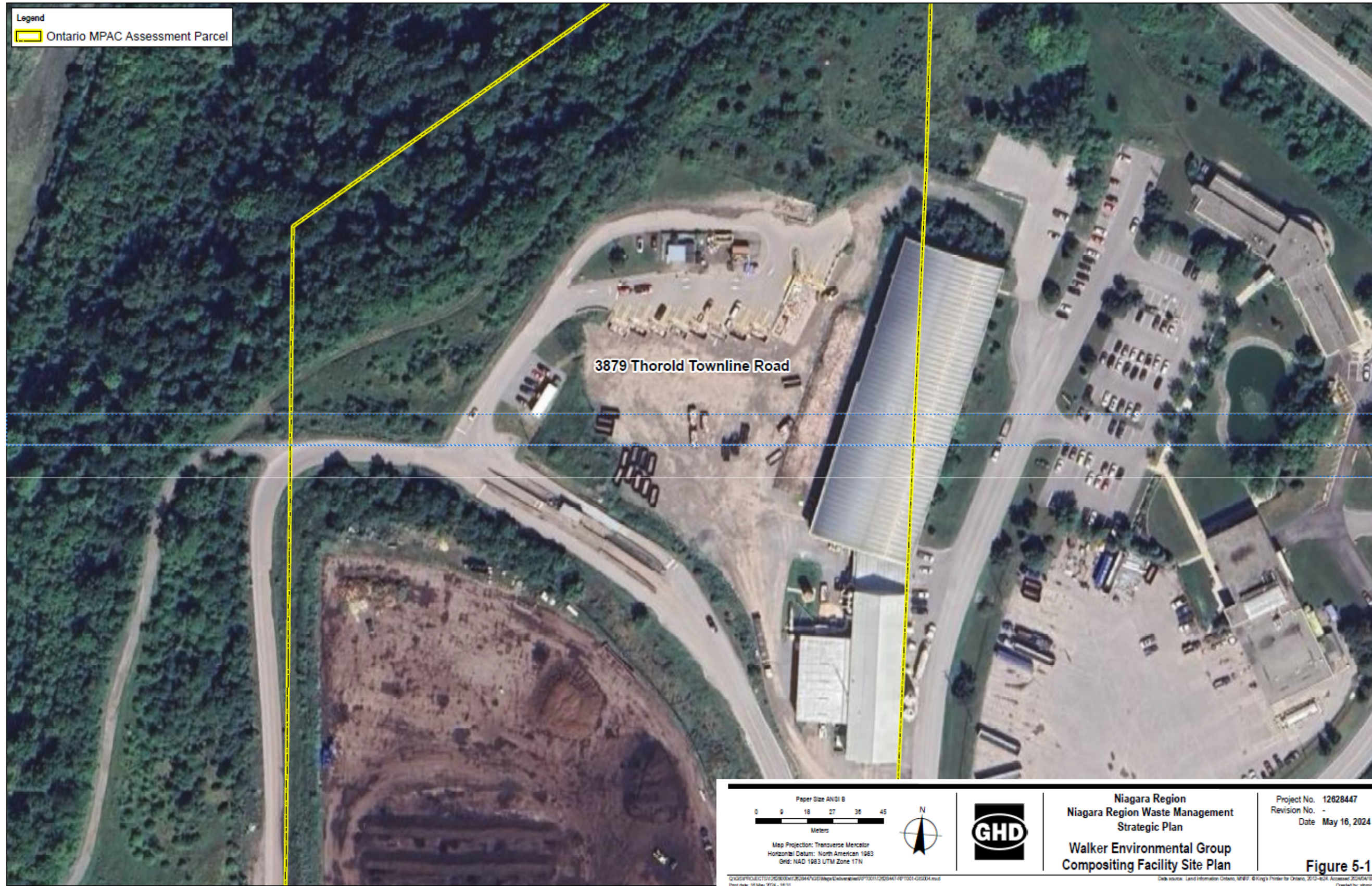


Figure 5.1 Walker Environmental Group Compositing Facility Site Plan

## 5.2 Recyclables

Niagara Region owned and operated the MRF located in Niagara Falls until April 2023, which was the official closing date of the purchase from Emterra. The sale of the MRF was to aid the Region with changes arising from the Blue Box regulation (O. Reg. 391/21) which make producers of products and packaging responsible for the cost and operation of the residential blue box program in Ontario. As mentioned in Section 2.5.2.3, the transition for the Region occurred in January of 2024. Emterra, under contract with Circular Materials, now receives the recyclables collected as part of Regulation 391/21<sup>95</sup>. Recyclables from the Region's drop-off depot operations and non-eligible sources are also processed at this facility during the EPR transition period.

The MRF operates under Waste ECA Number 3576-5DTNNJ dated April 21, 2015. The facility is located at 5030 Montrose Road in the City of Niagara Falls. The facility is permitted to receive non-hazardous materials and old electronics that are received from either the residential curbside collection program<sup>96</sup> or from IC&I sources and residential self-haul activities. The total tonnes of waste received (excluding old electronic products) is not to exceed 450 tonnes per day based on a weekly (Monday to Friday) average. For old electronic products specifically, the total tonnage is to not surpass 2.5 tonnes per day based on a weekly (Monday to Friday) average.

The Site Plan of the MRF can be found in Figure 5.2.

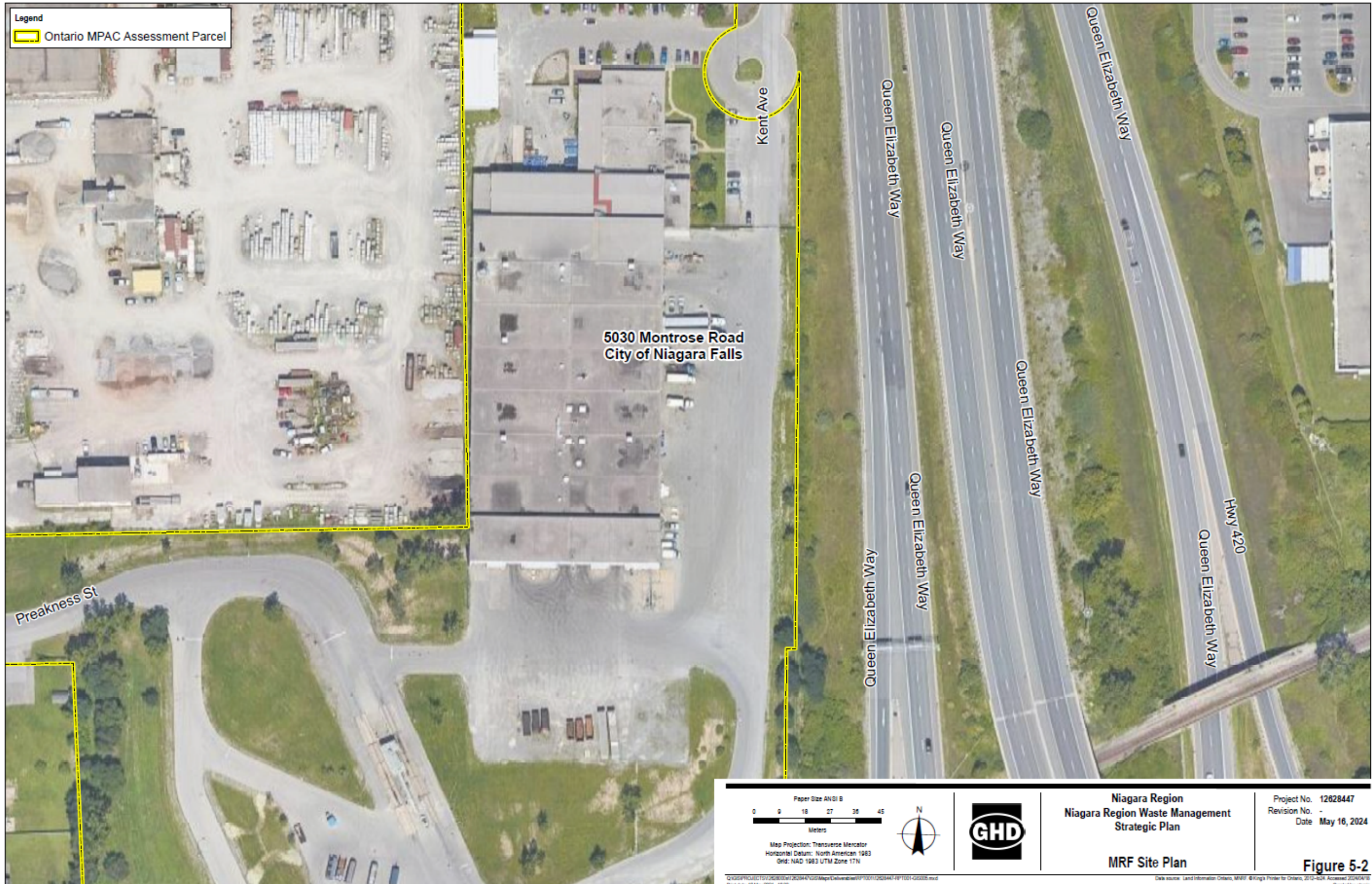


Figure 5.2 MRF Site Plan



### **5.3 Leaf and yard waste**

The Region owns and operates two composting facilities: one located at the Bridge Street Drop-off Depot and the other at Niagara Road 12 Landfill site.

The Bridge Street composting site operates under Waste ECA Number A120401 dated September 16, 2022. The facility is located at 1300 Bridge Street, Concession 4, Lot 7 and 8 in the Town of Fort Erie. The composting material processing facility (MPF) is limited to the L&Y waste generated within the Region. A limit of 12,383 m<sup>3</sup> of L&Y, immature compost, and finished compost may be stored at the Bridge Street MFP at any one time.

The Site Plan of the Bridge Street composting facility can be found in Figure 5.3.



Figure 5.3 Bridge Street Compositing Facility Site Plan

The Niagara Road 12 composting facility operates under the Waste ECA No. A121215 dated July 14, 2022. The facility is located at 7015 Concession Road 7, Concession 7, Lot 6 and 7 in the Township of West Lincoln. The waste received at the L&Y composting facility is limited to L&Y generated by residential households and commercial operations in Grimsby, Lincoln, West Lincoln, and Pelham. The facility has a maximum storage of 12,300 m<sup>3</sup> of L&Y, immature compost and finished compost at any one time.

The Site Plan of the Niagara Road 12 composting facility can be found in Figure 5.4.

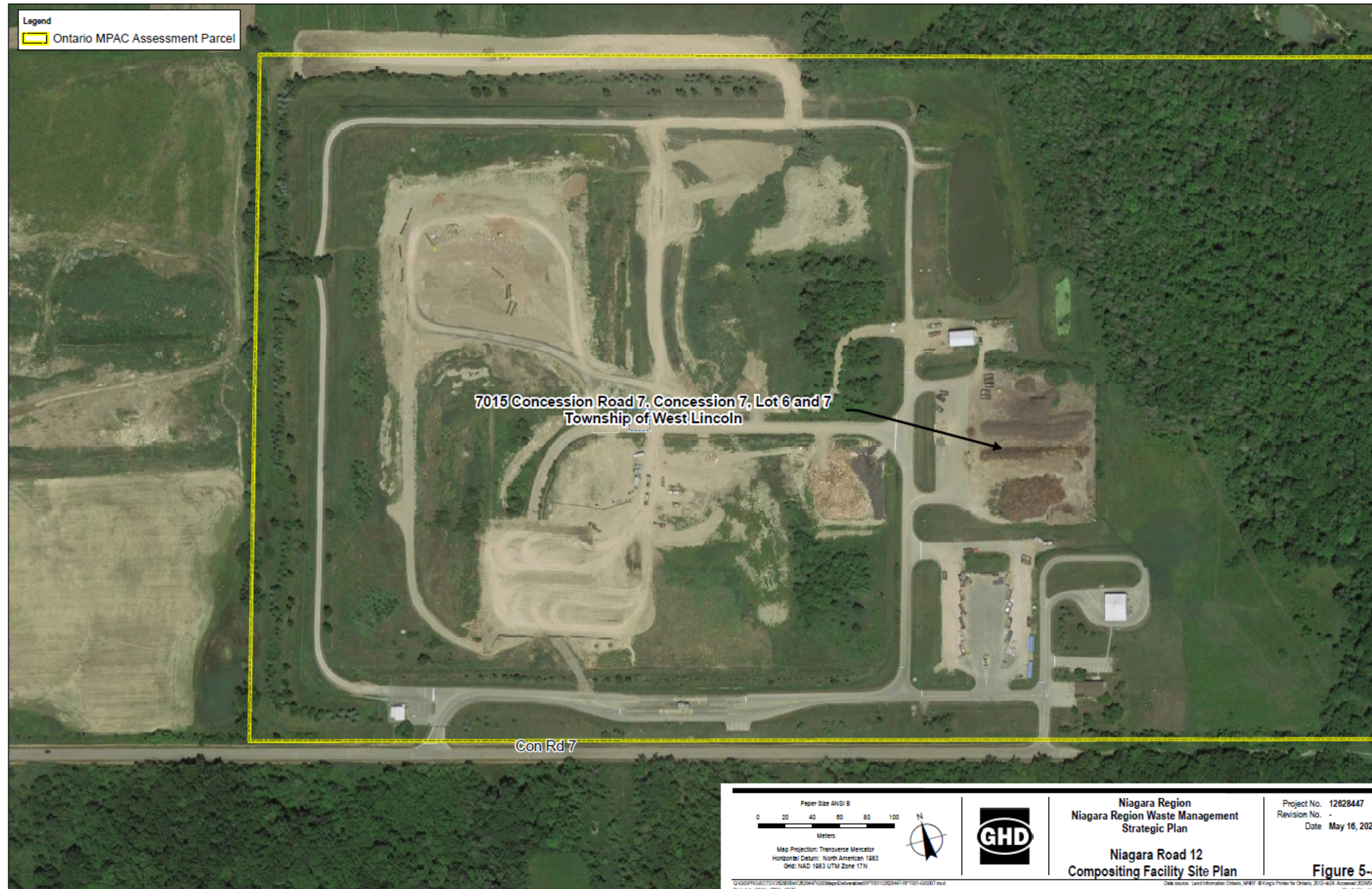


Figure 5.4 Niagara Road 12 Compositing Facility Site Plan

## 5.4 Tonnage Diverted

By utilizing the above-mentioned facilities and diversion processes, the Region has been able to consistently divert more than half of all organic and recyclable materials received. For example, in 2022, 87 per cent of the recyclables received were diverted and 95 per cent of organics were diverted. Figure 5.5 shows the general trend of organics diversion from 2011 to 2022.

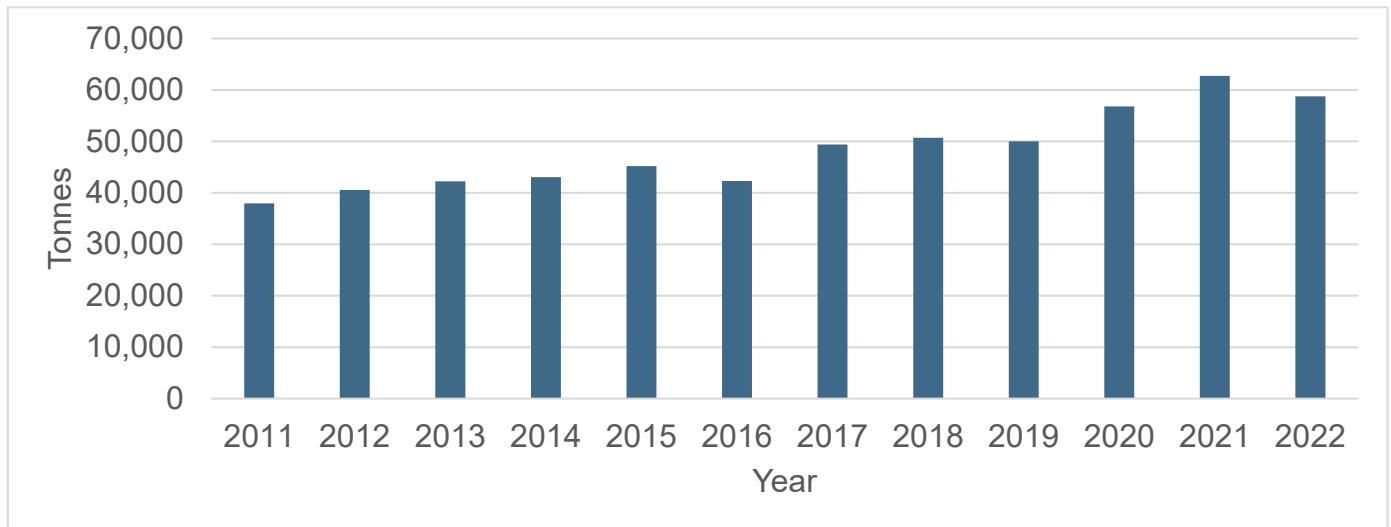


Figure 5.5 Tonnes of Organics Diverted from 2011 to 2022<sup>97</sup>

As seen in Figure 5.5, the general trend for organics diversion is positive as more organics are being diverted from landfilling. However, as shown in Figure 5.6, the tonnes of recyclables diverted has been decreasing between 2011 and 2022.

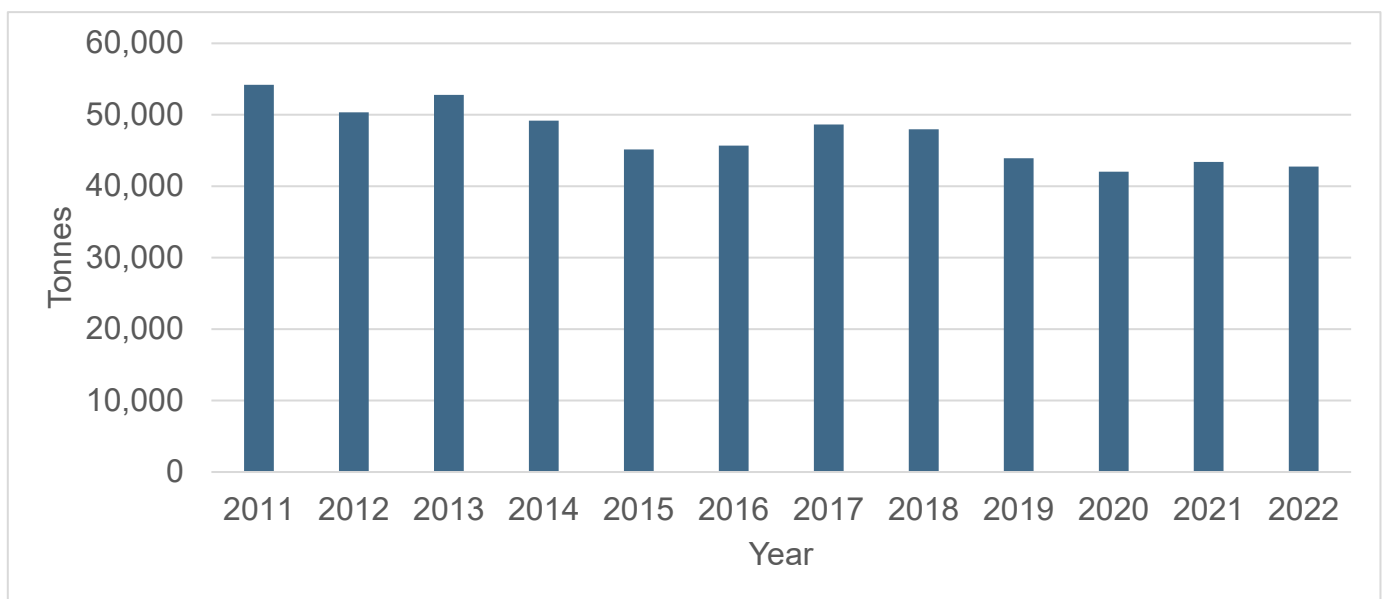
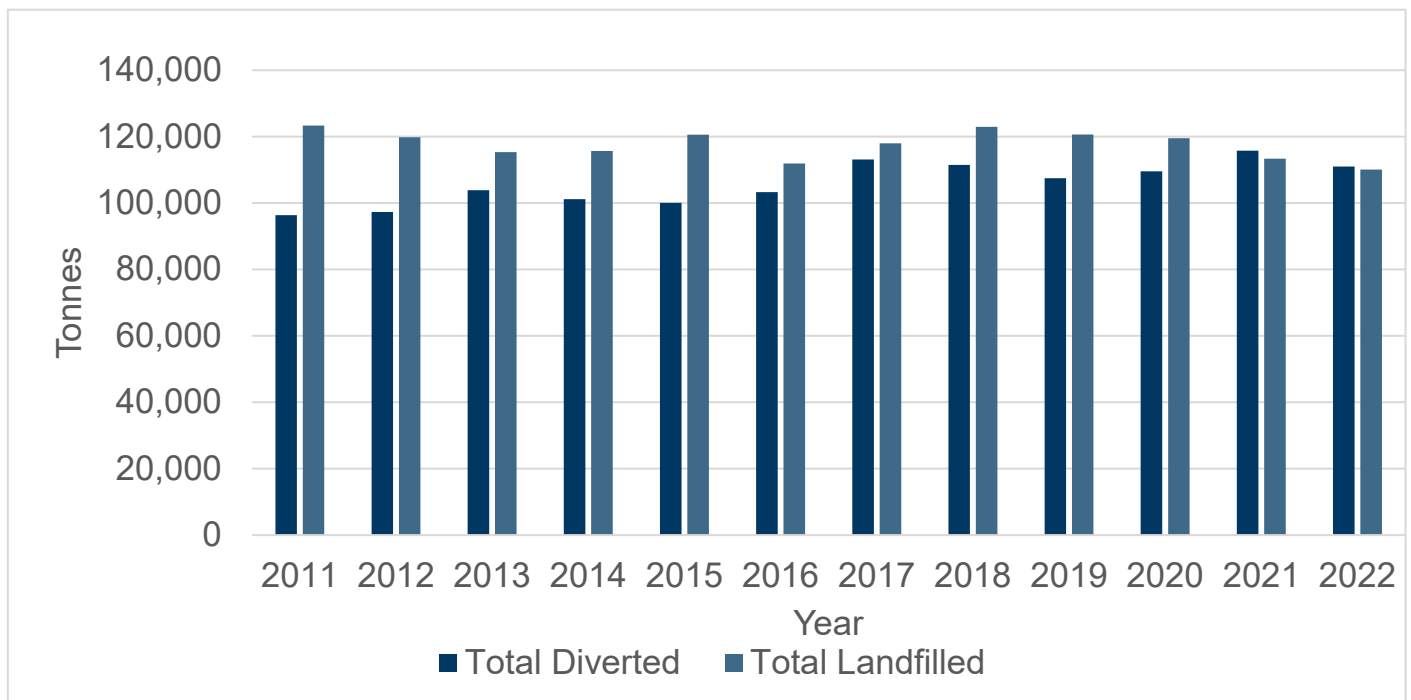


Figure 5.6 Tonnes of Recyclables Diverted from 2011 to 2022<sup>98</sup>

It is important to note that this decrease may be due to changes in composition of material resulting in “light weighting” and decreasing use of newsprint in the Region rather than a result of lower participation rate. Moreover, due to the producer responsibility transition, the Region may not have access to the tonnes of residential recyclable tonnages collected<sup>99</sup>. This will present a barrier to future efforts to measure overall diversion performance. Consideration of new KPIs will need to be considered as part of the Plan process.

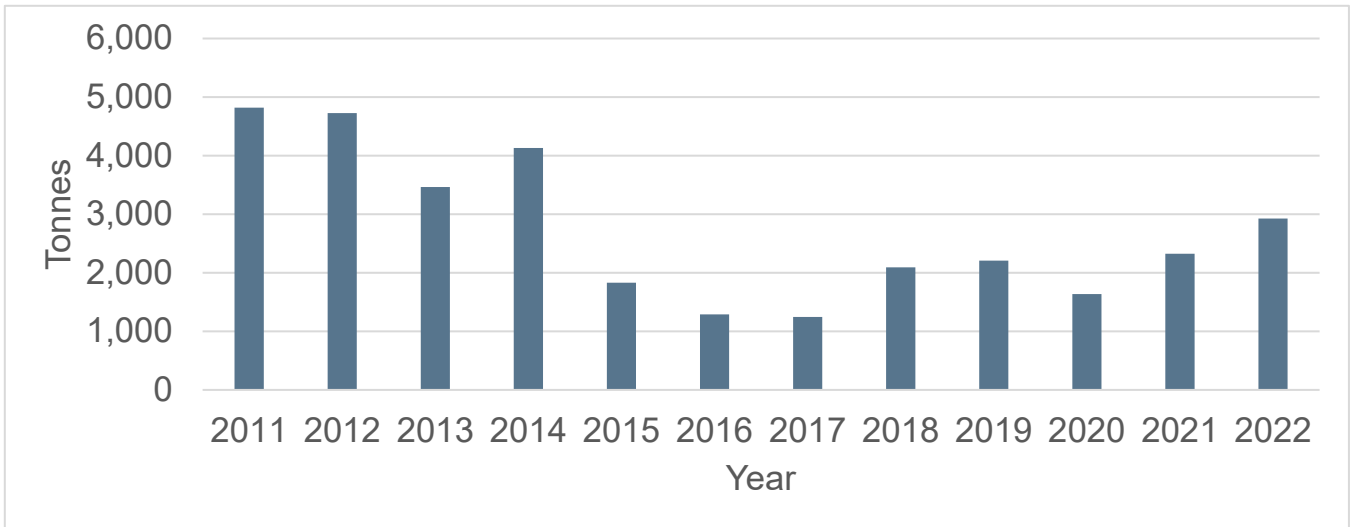
In terms of total tonnage diverted as it relates to total tonnage landfill, as seen in Figure 5.7, the general trend for total diversion is positive as the diverted tonnage generally increases. From 2021 to 2022, the diverted tonnage is greater than the landfilled tonnage.



**Figure 5.7 Total Tonnage of Diverted Waste Compared to Total Tonnage of Landfilled Waste from 2011 to 2022<sup>100</sup>**

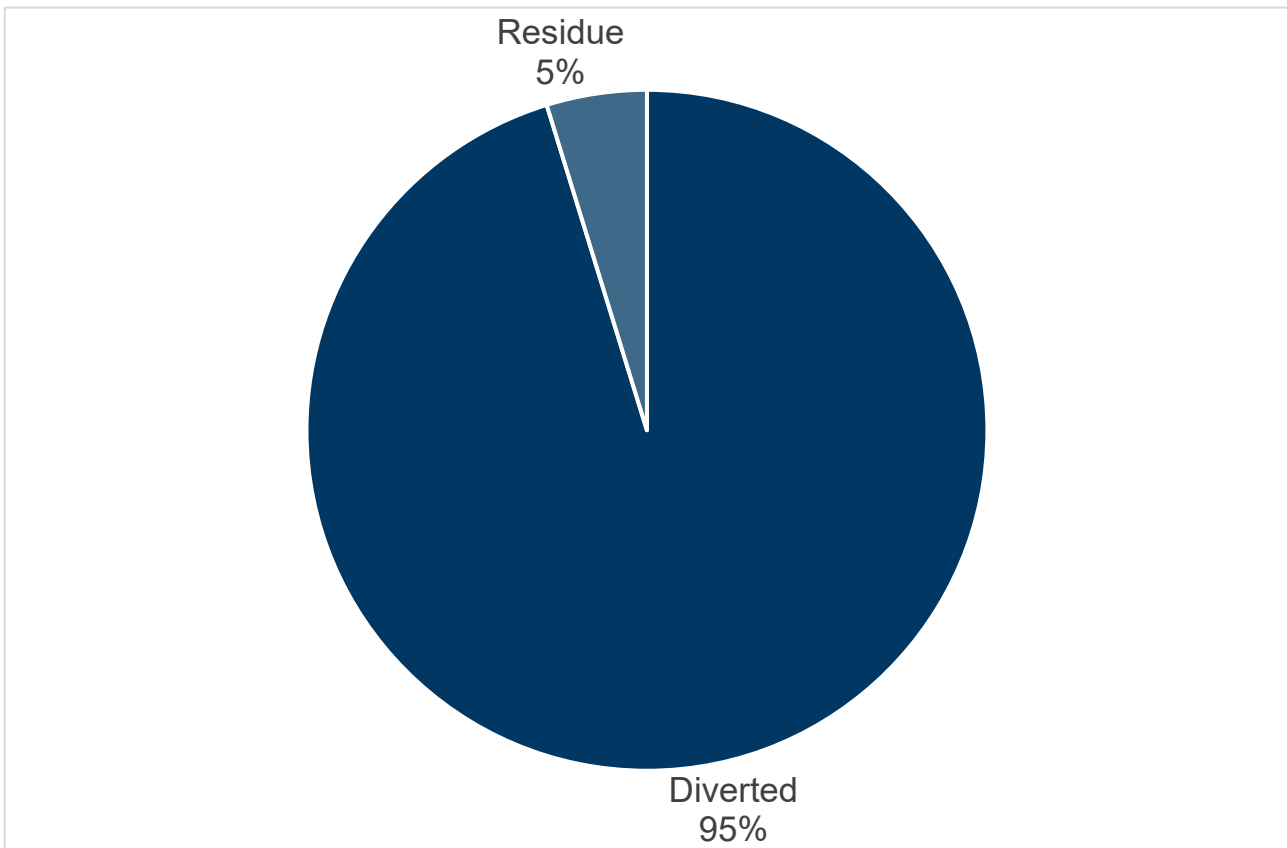
## 5.5 Residue

The tonnage of organics and recyclables<sup>101</sup> residue is dependent on the amount of contamination in the waste streams as well as the ability to recover materials at the processing/diversion facilities. Figure 5.8 shows the variability of organics residue seen between 2011 and 2022, which has ranged from approximately 1,200 tonnes to 4,800 tonnes.



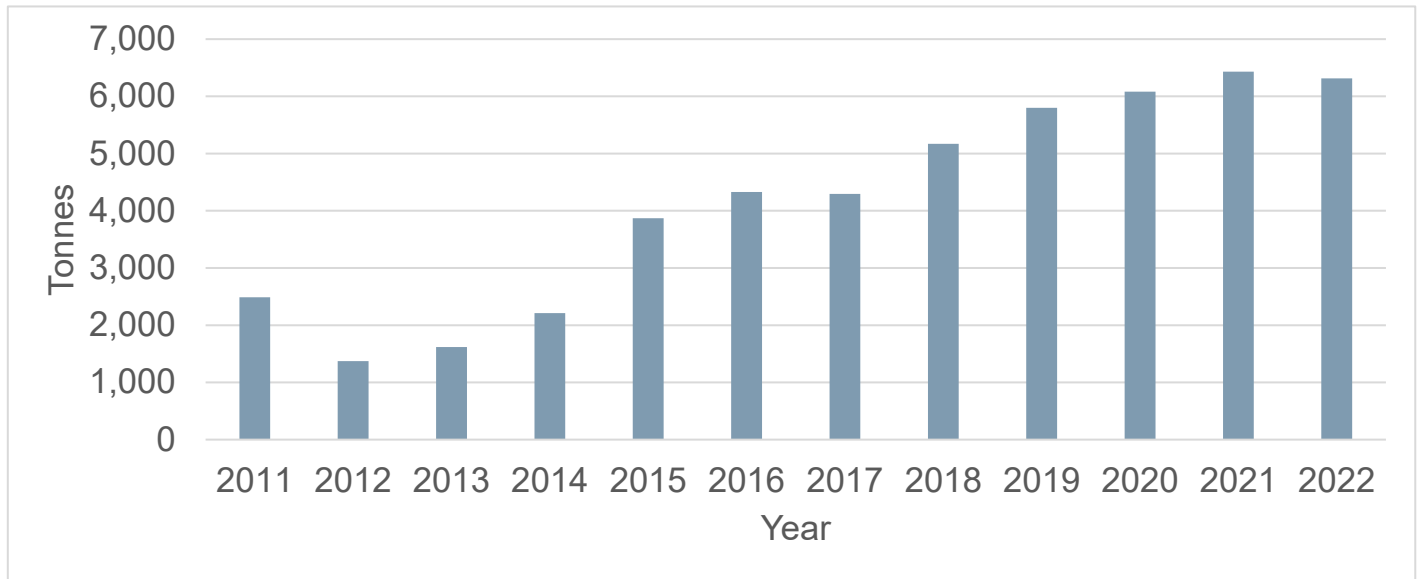
**Figure 5.8 Tonnes Organics Residue from 2011 to 2022<sup>102</sup>**

The tonnes of organics residue has decreased by 39 per cent since 2011. As seen in Figure 5.9, 95 per cent of the organics received at the landfill and drop-off depot facilities was diverted in 2022. For comparison, the diversion rate in 2011 for organics was 89 per cent.



**Figure 5.9 Percentage of Organics Residue and Diverted in 2022<sup>103</sup>**

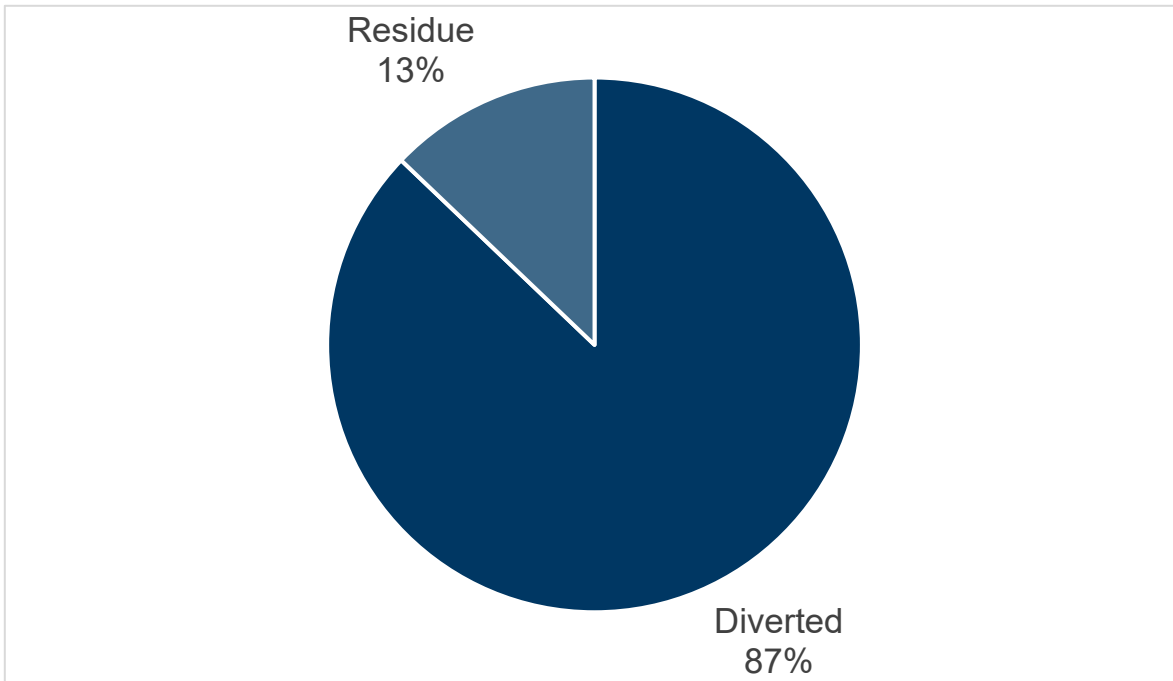
The recyclables residue has experienced the opposite trend from 2011 to 2022 which is illustrated in Figure 5.10.



**Figure 5.10 Tonnes Recyclables Residue from 2011 to 2022<sup>104</sup>**

The tonnes of recyclables residue has increased since 2011. Specifically, the tonnes of residue has increased by 154 per cent between 2011 and 2022. In addition, 87 per cent of the recyclables received at the Region’s landfills, drop-off depots, and MRF were diverted in 2022, with the remaining 13 per cent being sent for landfilling as residue (see Figure 5.11). It should be noted that as of January 1, 2024, the Region is no longer responsible for residential Blue-Grey Box recycling collection services and therefore, residual management for recyclables will be managed privately.





**Figure 5.11 Percentage of Recyclables Residue and Diverted in 2022<sup>105</sup>**

The Region’s 2020 to 2021 Waste Composition Study Report concluded that from 2020 to 2021, there was a combined blue box and grey box contamination rate of 10.18 per cent <sup>106</sup>. In the 2015 to 2016 Waste Composition Study, there was a 7.69 per cent contamination rate. Moreover, from 2020 to 2021, the blue box alone had a contamination rate of 20.49 per cent.

In addition, the WMS Frequently Asked Questions document<sup>107</sup> stated that the Region’s target for recyclables (blue box) residue is 4.0 per cent. While this is not the Region’s requirement, reducing residual tonnage can aid in the preservation of landfill space. This is therefore an opportunity for the Region.

The WMS Frequently Asked Questions document<sup>108</sup> also noted that part of this increase in contamination stemmed from a change in the residential habits and set-out materials at the onset of the COVID-19 pandemic. Since the COVID-19 pandemic, there has been an increase in the volume of bagged materials entering the MRF which leads to higher residue and contamination rates due to the increased challenge of removing the contaminants from the line. In addition, the China National Sword Policy in 2018 imposed a strict contamination policy which resulted in heightened measurement and reporting of blue box contamination.

Technical Memo 4 - Comparative Scan of Peer Municipalities

(<https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-4-comparative-scan-of-peer-municipal-better-practices.pdf>) prepared by Birett and Associates dated December, 2023 mentions how transitioning to clear bag collection policies with appropriate supporting stringent by-laws and bag limits can encourage the diversion of recyclables. However, with the EPR transition, the producers of recyclable materials are now the responsible authority for their end-of-life management.

Moreover, Birett and Associates also stated how many municipalities are transitioning to automated cart-based collection which does not support the use of clear bags as waste carts are needed for collection purposes. In the Technical Memo 5 – Trends in Alternative Technologies ([https://www.niagararegion.ca/projects/waste\\_management\\_strategic\\_plan/pdf/technical\\_memo\\_5\\_trends\\_in\\_alternative\\_technologies.pdf](https://www.niagararegion.ca/projects/waste_management_strategic_plan/pdf/technical_memo_5_trends_in_alternative_technologies.pdf)) study prepared by Birett and Associates dated December, 2023, they also mention how automated cart-based collection offers a 30 per cent increase in productivity compared to manual collection. In addition, it can offer savings in collections costs due to the reduced stoppage time at each household and reduced number of work-related injuries. However, as the Region currently offers bagged collection, this would impose significant capital costs as each unit collected from would need to switch over to a cart-based waste storage system. Moreover, cart-based collection is typically associated with significant contamination issues of recyclables (blue box specifically) and organics which the Region would need to manage.

Lastly, Technical Memo 3 – Demographic Trends ([https://www.niagararegion.ca/projects/waste\\_management\\_strategic\\_plan/pdf/technical\\_memo\\_3\\_demographic\\_trends.pdf](https://www.niagararegion.ca/projects/waste_management_strategic_plan/pdf/technical_memo_3_demographic_trends.pdf)) study from Birett and Associates dated December 2023 mentioned that studies have shown how the Millennial generation have a tendency to engage in “wish-cycling” which is defined as the practice of setting waste items out for recycling without having knowledge of whether or not the waste item is accepted in their local recycling program. The study also remarked that only 12 per cent of the Millennial generation check to confirm if given items are accepted in their local recycling program, despite the ease to which that information can be found through an internet search or phone app.

One of the current challenges and opportunities for the Region is to increase their recyclables diversion rate and to also decrease their contamination rate so that they achieve their target contamination rate of 4 per cent which may be done with enforcement, education, change in collection method, etc. The Region can also explore the use of clear bag or cart-based collection services.

## **6. Waste disposal**

For the final disposal of waste, the Region owns and operates three<sup>109</sup> active landfills and holds a contract with Walker Environmental Group for their Thorold landfill location.

### **6.1 Region-owned facilities**

#### **6.1.1 Active landfills**

The Region owns and operates the Humberstone Road and Niagara Road 12 active landfills. While the Bridge Street Landfill is closed, the facility is still open and receives waste at the residential recycling and waste drop-off depot. The waste collected at the Bridge Street Landfill is then transferred to the Humberstone Road Landfill.

The Bridge Street Landfill currently operates under Waste ECA number A120501 dated December 14, 2023. It is a closed 18-hectare waste landfilling site within a total site area of 65-hectares. The site is located at 1300 Bridge Street in the Town of Fort Erie, and currently operates as a waste transfer and compost facility. From the Region's Landfill Liability Model (LLM), the Bridge Street Landfill has no remaining disposal capacity, with waste last being deposited in 2016.

The Site Plan of the Bridge Street Landfill can be found in Figure 6.1.



Figure 6.1 Bridge Street Landfill Site Plan

The Humberstone Road Landfill currently operates under Waste ECA number A120401 dated September 16, 2022. It is an active landfill site with 37.76 hectares of landfilling area within a total site area of 62.14 hectares. It is located at 700 Humberstone Road in the City of Welland. The maximum volume of waste that may be accepted and deposited at the landfill is 4.6 million m<sup>3</sup>. The Region may receive and dispose up to 700 tonnes of non-hazardous waste per day that is generated within the boundaries of the Region.

The HHW depot is permitted to receive the following waste classes: 145, 147, 148, 212, 213, 221, 242, 252, 261, 262, 263, 312 (restricted to sharps and syringes only) and 331 as defined in Regulation 347. As mentioned in the WMS Frequently Asked Questions document, the estimated remaining life span as of January 1, 2023, is approximately 25 years based on the historical tonnages and previous landfilling practices and compaction. The estimated remaining capacity is 2.074 million m<sup>3</sup> (waste and daily cover). The LLM provided by the Region mentions that as of January 2023, 46.46 per cent of the overall capacity has been used and the projected date of last waste deposit is 2045.

The Site Plan of the Humberstone Road Landfill can be found in Figure 6.2.

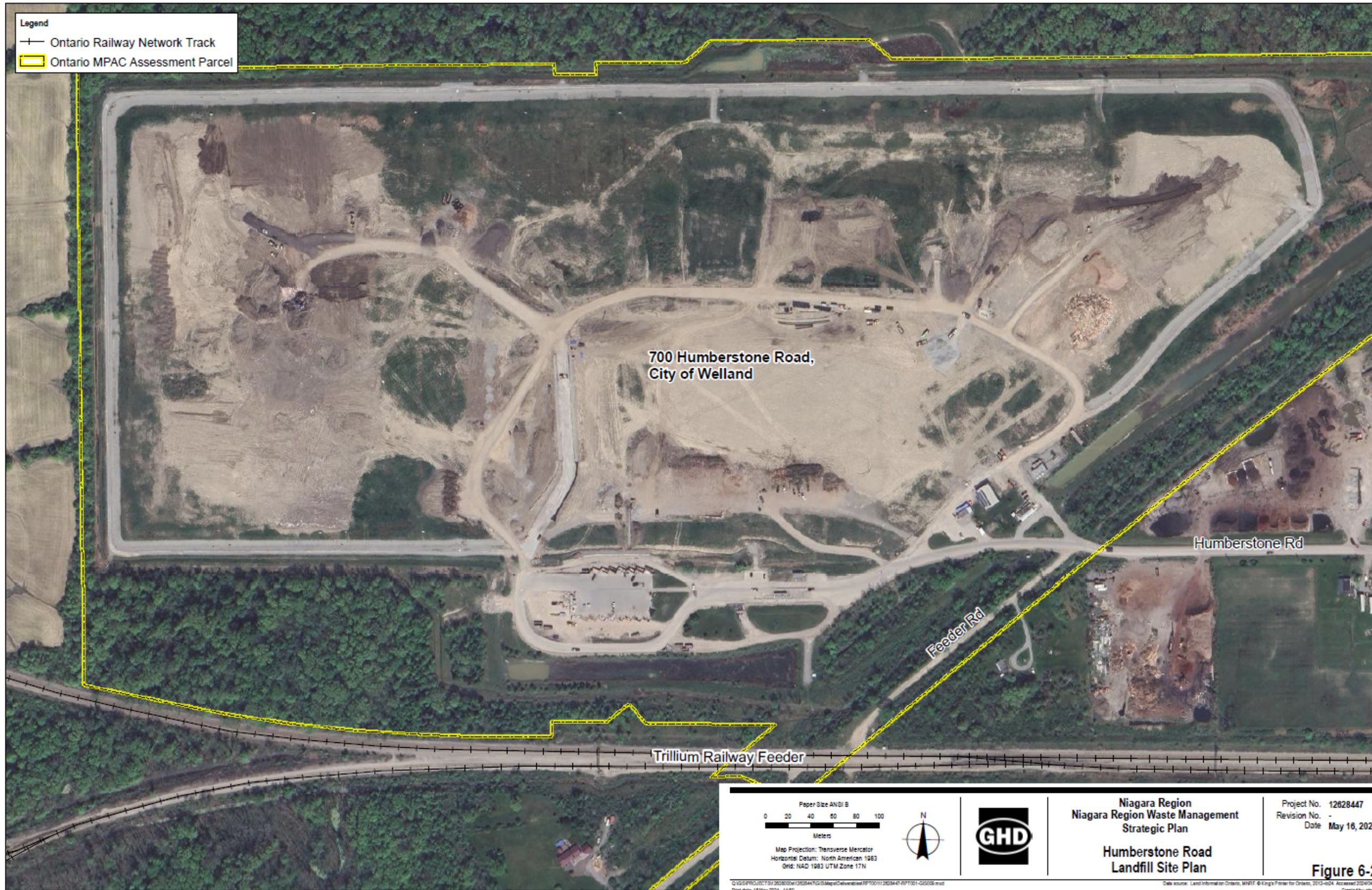


Figure 6.2 Humberstone Road Landfill Site Plan

The Niagara Road 12 Landfill currently operates under the Waste ECA number A121215 dated July 14, 2022. It is an active site that is 15.7 hectares of landfilling area and also contains a compost facility, as well as an HHW facility. The total site area is 41.73 hectares and is located on Concession 7, Lot 6 and 7 in the Township of West Lincoln. The site is approved for disposal of solid non-hazardous domestic, municipal, commercial, institutional and industrial waste generated within the boundaries of Grimsby, Lincoln, Pelham and West Lincoln. The total approved capacity is limited to 1.851 million m<sup>3</sup> of waste and daily, interim, and final cover. Recyclable materials are to be transferred off-site once their on-site storage bins are full. As mentioned in the WMS Frequently Asked Questions document, the estimated remaining life span as of January 1, 2023, is approximately 40 years based on the historical tonnages and previous landfilling practices and compaction. The estimated remaining capacity is 856,219 m<sup>3</sup> (waste and daily cover). The LLM provided by the Region states that the projected date of last waste deposit is 2060 and that 50.22 per cent of the capacity has been used as of January 1, 2023.

The Site Plan of the Niagara Road 12 Landfill can be found in Figure 6.3.

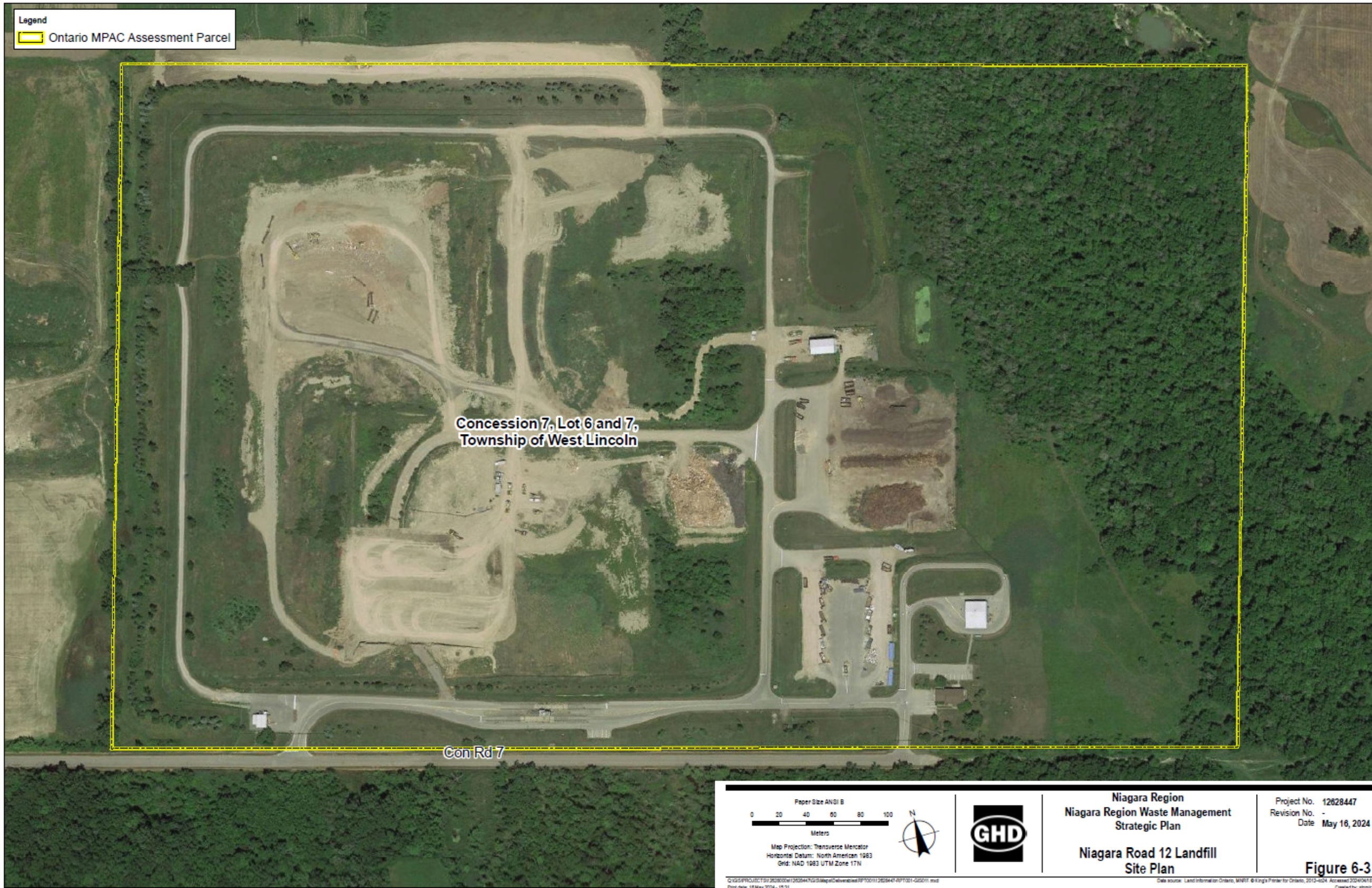


Figure 6.3 Niagara Road 12 Landfill Site Plan



## Technical Memo 6 - Review of Existing Disposal Capacity

([https://www.niagararegion.ca/projects/waste management strategic plan/pdf/technical memo 6](https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-6)) review of existing disposal capacity.pdf) prepared by Birett and Associates dated December, 2023 concluded that the landfill operations are optimized and that there is no immediate need or opportunities for improvement.

### 6.1.2 Closed landfills

As noted, the Region is also responsible for the post-closure inspection and maintenance at their 11 closed landfill sites, four of which were repurposed into naturalization sites and/or leash-free dog parks. The post-closure inspection and maintenance program is to provide assurance that the infrastructure installed at the closed landfill sites is operating as it is designed. The WMS Frequently Asked Questions documents notes that the program will continue at each site until the site no longer poses a significant risk to the environment or public health and safety<sup>110</sup>. The program assesses the final cover, perimeter ditches and stormwater management ponds, leachate collection system and pump stations, passive gas venting systems, landfill monitoring network and structures located on the site<sup>111</sup>.

In addition to the post-closure inspection and maintenance program, the Region also conducts a groundwater monitoring program. The purpose of this program is to determine if the landfill leachate is impacting the groundwater quality around the landfill. Due to results of this program, leachate collection systems have been installed at the Bridge Street, Elm Street, Glenridge Quarry, Humberstone Road, Line 5, Mountain Road, Niagara Road 12 and Park Road sites.

The Region currently has one landfill gas collection and control system installed at the Humberstone Road site. As stated in the WMS Frequently Asked Questions document, six out of the 14 total sites have gas monitoring wells<sup>112</sup>. Moreover, the Mountain Road site and Glenridge Quarry naturalization site both have passive gas collection systems installed to mitigate the migration of landfill gas. Depending on the volume of landfill gas collected, the Region can explore the idea of landfill gas utilization such as the creation of renewable natural gas.

## 6.2 Private facility

The Region has a partnership agreement with Walker Environmental Group to dispose of curbside collected waste from St. Catharines, Thorold, Niagara-on-the-Lake, and some collection routes/days in Niagara Falls at their Thorold landfill location. This partnership agreement also includes residential self-hauled waste received at their drop-off depot. Walker Environmental Group handles approximately 36,000 tonnes for the Region annually.

The Walker Environmental Group Thorold Landfill operates under two Waste ECAs for the south and east landfill cells. The east landfill operates under Waste ECA Number A120211 dated July 22, 2022. The Walker Environmental Group Thorold landfill is an active 69.8-hectare landfill. The total site area is 119 hectares and is located at 2800 Thorold Townline Road in the City of Niagara Falls. The Soil Temporary Storage Facility is limited to a 25,000 m<sup>2</sup> area located within the landfill

footprint and has capacity for up to 450,000 tonnes. The maximum annual rate of fill is 627,750 tonnes and the maximum daily rate of fill for the site is 5,000 tonnes. The site is approved to receive IC&I wastes including asbestos wastes from the Province of Ontario. The STSF is permitted to receive up to an annual average of 1,000 tonnes per day of STSF waste with an absolute maximum of 5,000 tonnes.

The southern landfill operates under Waste ECA Number 0084-78RKAM dated March 23, 2023. The active landfill is 53.9 hectares within a total site area of 85.68 hectares. The landfill has a maximum approved capacity of 17.7 million m<sup>3</sup> and is located at 3081 Taylor Road in the City of Niagara Falls. The landfill accepts solid nonhazardous waste including asbestos. No more than 10,000 tonnes of waste per day is to be accepted at the site and the maximum rate at which the site can receive waste is 1,100,000 tonnes of waste per year. The maximum allowance per year exclusively dedicated to the Region is 100,000 tonnes. From the WMS Frequently Asked Questions document, the minimum landfilling commitment to the Region began on February 28, 2011, is 25,000 tonnes annually<sup>113</sup>. The site also features a drop-off depot that accepts various household waste, L&Y, and recyclables<sup>114</sup>.

The Site Plan of the Walker Environmental Group Thorold Landfill can be found in Figure 6.4.

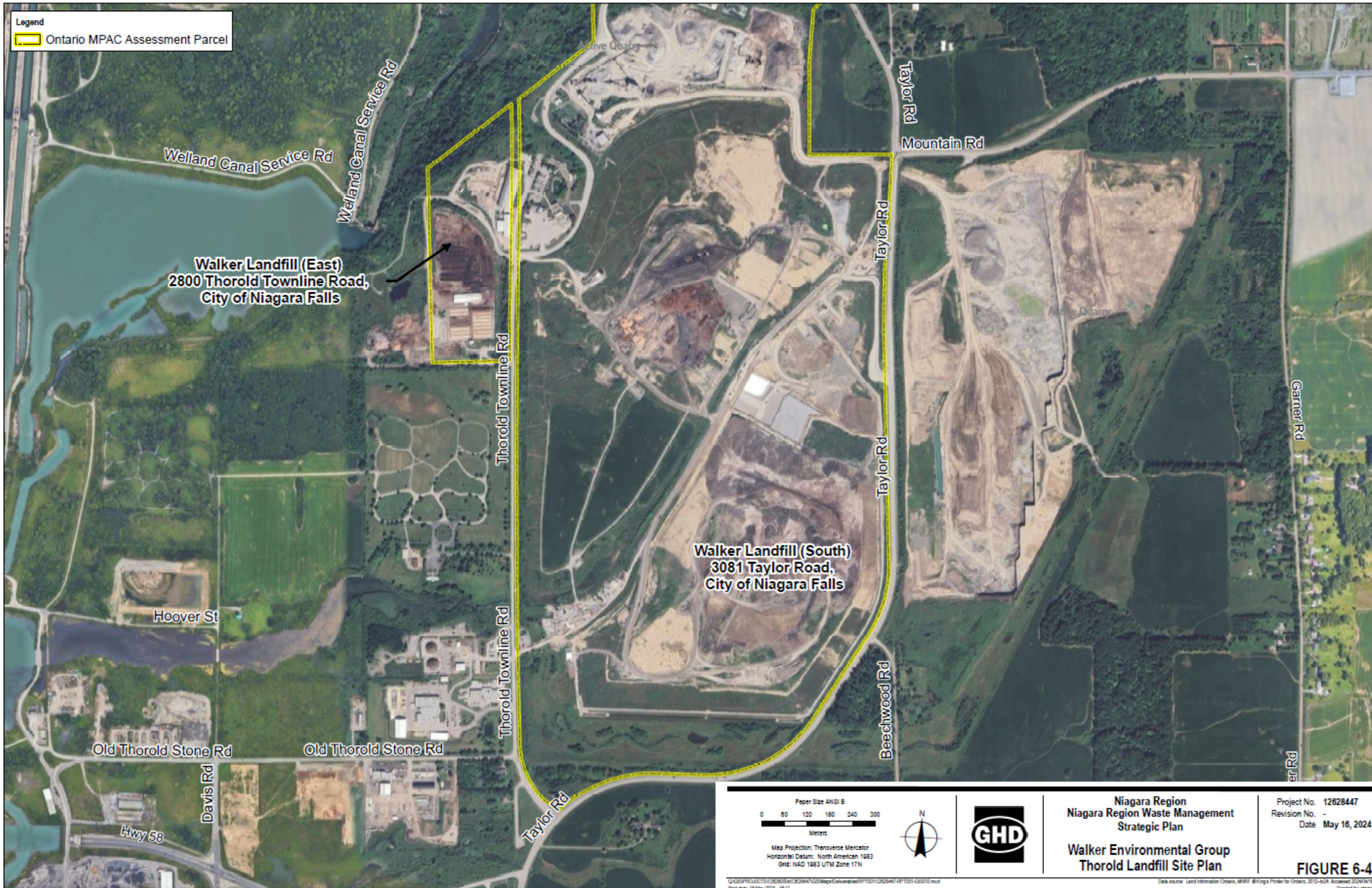


Figure 6.4 Walker Environmental Group Thorold Landfill Site Plan

## 6.3 Tonnage disposed

The Humberstone Road Landfill receives the waste from the curbside collection activities that occur in Welland, Fort Erie, Port Colborne, Pelham, and Wainfleet. The IC&I waste that is received at the Humberstone Road Landfill is mostly generated from the Welland and Port Colborne areas. As the Bridge Street site in Fort Erie is also still open for waste and recycling drop-off, the waste is then transferred to the Humberstone Road Landfill.

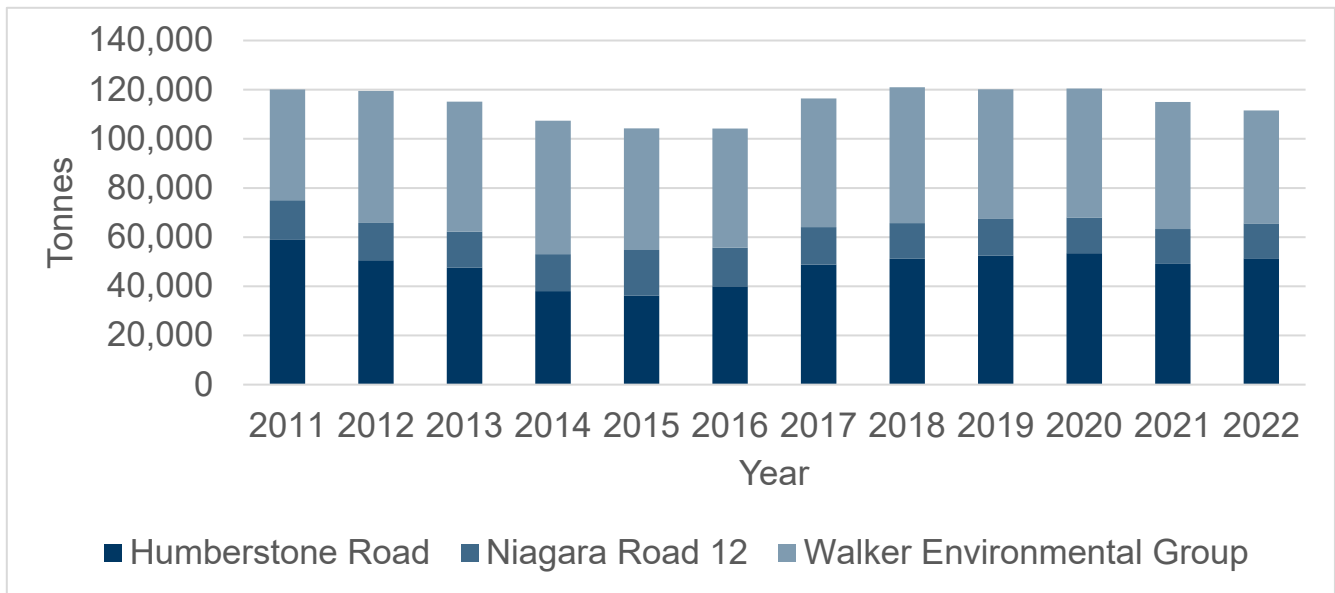
The Niagara Road 12 Landfill receives all waste from the curbside collection activities that occur in Grimsby, Lincoln, West Lincoln, and Pelham. IC&I waste, in addition to self-hauled from these four LAMs, is received at this location.

The Walker Environmental Group Thorold Landfill disposes of the curbside collected waste from St. Catharines, Thorold, Niagara-on-the-Lake, and Niagara Falls. Walker Environmental Group's drop-off depot receives the residential self-hauled waste from these LAMs and the waste gets managed at the Walker Environmental Group Thorold Landfill location.

Technical Memo 6 – Review of Existing Disposal Capacity

([https://www.niagararegion.ca/projects/waste management strategic plan/pdf/technical memo 6](https://www.niagararegion.ca/projects/waste_management_strategic_plan/pdf/technical_memo_6)) review of existing disposal capacity.pdf) prepared by Birett-and Associates dated December, 2023 mentioned that the hauling of waste from public drop-offs for disposal may warrant further examination to determine if it can be optimized through the use of compaction<sup>115</sup>. Reducing the number of hauling trips would reduce GHG emissions.

Figure 6.5 demonstrates the breakdown of landfilled waste at each landfill location. In 2022, 46 per cent of landfilled waste was deposited at the Humberstone Road Landfill location, 41 per cent of landfilled waste was deposited at the Walker Environmental Group Thorold Landfill location, and the remaining 13 per cent was deposited at the Niagara Road 12 Landfill location. From 2011 to 2022, the total tonnage of landfilled waste decreased by 9 per cent.



**Figure 6.5 Tonnage of Waste Landfilled from 2011 to 2022 at each Active Landfill<sup>116</sup>**

The Humberstone Road Landfill currently accommodates almost half of the Region’s garbage. Based on current disposal rates the landfill has a remaining lifespan of approximately 25 years and is projected to close in 2045.

## 7. Waste management financial status

### 7.1 Current financial status – funding model

Birett and Associates prepared Technical Memo 7 - Financial Review ([https://www.niagararegion.ca/projects/waste\\_management\\_strategic\\_plan/pdf/technical\\_memo\\_7\\_financial\\_review.pdf](https://www.niagararegion.ca/projects/waste_management_strategic_plan/pdf/technical_memo_7_financial_review.pdf)) for the Region to inform decision making related to waste management matters. The Financial Review notes how the Region currently relies on landfill tipping fees to offset the waste management landfill operational costs. In 2022, the Region generated approximately \$3.6 million in landfill tipping fees. The specific landfill tipping fee rate varies depending on the type of material and the rate is reviewed by Region staff each year and revised accordingly with the goal of obtaining full cost recovery of operations. It should be noted that the Region has other sources of revenue in addition to the landfill tipping fees such as garbage bag tags.

In addition to the landfill tipping fee rate being reviewed each year, the garbage tag fee is reviewed each year by Region staff to ensure full cost recovery. Due to the increased cost of the Region’s current waste collection contract, the garbage tag fee increased to \$2.85 from \$2.00 in 2020.

Moreover, as part of the Municipal Special Tax Levy, the net portion of the Region’s waste management costs are allocated to each LAM annually. The costs are allocated to the LAMs

based on the percentage of the total residential units in the Region. The Region then allocates the cost based on property assessment value except for one LAM which uses a flat-rate-fee. An important item to highlight is that the Region provides services to both residential and IC&I customers and all property types in eleven of the twelve LAMs are assessed a share of the cost based on their individual property assessment. However, costs are allocated to the LAMs requisition on using residential units as the basis of the allocation.

The Financial Review also included the Region's three reserves that are maintained. The reserves are:

- Waste Management Capital Reserve: This is used by the Region to fund capital projects that are associated with the operating assets such as the Region's open landfill sites.
- Landfill Liability Reserve: This is used by the Region to fund capital projects associated with closed landfill sites.
- Waste Management Stabilization Reserve: This is used by the Region to fund unexpected operating deficits and one-time costs. Budget surpluses noted at the end of a year are typically deposited into this reserve.

The Financial Review stated that the Region's current financial approach illustrates a good mix of strategies for financing the WMS programs and should be maintained. It was noted that rate-based assessment is considered a better practice compared to property assessment where households are receiving standard service levels and that the Region should consider further discussions with LAMs about adopting this model. As a base service, as long as they can stay within the limits, IC&I properties receive base levels of service for collection, however, the cost to LAMs does not consider this i.e. only residential units are considered for the basis of allocation. Given the rising costs of services, the Region may wish to review the way it allocates costs for provision of services to non-residential properties to ensure the associated costs are accurately distributed. The use of rate-based assessment rather than property assessment is considered a better practice where households are receiving standard service levels. Further discussions with the LAMs about adopting this model should be considered, particularly if Niagara Region moves to standardized cart-based collection.

## **7.2 Operating budget**

The Regional budget is composed of two primary funding sources – tax levy supported services and rate supported services. Each of these includes an operating fund, capital fund and reserve funds. Tax supported services are levied on the assessed value of property. Rate supported services include water, wastewater, and waste management, which are billed separately to the LAMs. The Region's Budget Summary document<sup>117</sup> noted that Council approved a 5.5 per cent increase in the Waste Management special levy for 2023. The residents of the Region can therefore expect to pay between \$3.05 to \$7.99 more per year for waste management services on average in 2023.

The gross operating budget for the Public Works Waste Management Department in 2023 was \$63.452 million, which includes \$45.168 million from taxation, \$8.165 million from by-law charges and sales, \$6.753 million from other revenues, and \$3.366 million from reserves to either fund COVID/one-time costs or to mitigate the budget increase. With gross expenditures of \$61.705 million, the net direct expenditure of (\$1.747) million was indirect allocations for program support and capital financing.

The LLM provided by the Region includes the breakdown of the landfill liability for both active and closed landfill sites and is dated January 1, 2023. For the year 2022, the Region states that the year-end liability was \$77.7 million. The liability cost associated with each landfill can be found below in Table 7.1. The liability cost reflects the cost of the closure of the operational sites and post-closure care for the closed landfills.

**Table 7.1 Liability Cost Associated with Each Landfill in 2022**

<b>Landfill</b>	<b>Landfill Liability</b>	<b>Percentage of Total Liability</b>
Mountain Road	\$18,106,000	23%
Glenridge Quarry	\$14,518,000	19%
Quarry Road	\$7,007,000	9%
Line 5 Landfill	\$3,836,000	5%
Centre Street	\$720,000	1%
Caistor Road	\$457,000	1%
Perry Road	\$642,000	1%
Park Road	\$4,475,000	6%
Elm Street	\$6,289,000	8%
Station Road	\$1,179,000	2%
Winger Road	\$294,000	0%
Bridge Street	\$9,920,000	13%
Humberstone Road	\$7,812,000	10%
Niagara Road 12	\$2,451,000	3%

Table 7.1 demonstrates that Mountain Road (closed landfill) and Glenridge Quarry (naturalization site) contribute the highest percentages of liability at 23 per cent and 19 per cent respectively. The open sites, Bridge Street (closed landfill, open for residential recycling and waste drop-off depot) and Humberstone Road follow behind at 13 and 10 per cent respectively.

Table 7.2 illustrates the breakdown of the Region’s WMS expenses in 2022.

**Table 7.2 2022 Waste Management Operating Expenses Breakdown**

<b>Category</b>	<b>Gross Operating Costs</b>	<b>Percentage of Total Gross Operating Costs</b>
Administration	\$3,444,000	5.2%
Disposal Operations	\$13,712,000	20.8%
Organics Collection	\$6,973,000	10.6%
Recycling Collection	\$14,942,000	22.6%
Waste Collection	\$9,114,000	13.8%
Waste Diversion	\$17,879,000	27.1%
<b>Total</b>	<b>\$66,064,000</b>	<b>100.0%</b>

As demonstrated in Table 7.2, waste diversion, recycling collection and disposal operations account for majority of the WMS division gross operating costs. More information on the Region’s revenue strategy can be found in [Technical Memo 7 – Financial Review](https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-7-financial-review.pdf) (<https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-7-financial-review.pdf>).

## **8. Projections**

### **8.1 Population**

The Ministry of Ontario’s “A Place to Grow: Growth plan for the Greater Golden Horseshoe” long-term plan (2019, as amended) requires the Region to effectively prepare for a significant increase in population and employment by the year 2051.

The Minister of Municipal Affairs and Housing recently approved a projected population of 694,000 people by the year 2051 for the Niagara Region<sup>118</sup>. The Ontario Government reported that Niagara is included in the census division where population is projected to increase by 25 to 40 per cent over 2021 to 2046<sup>119</sup>. To respond to this growth, the Government of Ontario introduced legislation (*More Homes Built Faster Act, 2022*<sup>120</sup> through Bill 23) that includes a 2031 Housing Target of 1,229,000 homes for municipalities across Southern Ontario that will support Ontario’s Housing Supply Action Plan<sup>121</sup>. The Housing Supply Action Plan is part of a long-term strategy to increase housing supply and provide more attainable housing options in Southern Ontario. The overall total of 1,229,000 new homes in Southern Ontario includes 8,000 homes within the City of Niagara Falls and 11,000 homes within the City of St. Catharines<sup>122</sup>. These combined housing targets mean that at least 19,000 additional homes are expected to be built in Niagara Region in the coming years.



The Region's Official Plan includes the population and employment forecasts for each LAM. These forecasts can be seen in Table 8.1<sup>123</sup>.

**Table 8.1 Niagara Region's Official Plan 2051 Population and Employment Forecasts for each LAM**

<b>Municipality</b>	<b>Population</b>	<b>Employment</b>
<b>Fort Erie</b>	48,050	18,430
<b>Grimsby</b>	37,000	14,960
<b>Lincoln</b>	45,660	15,220
<b>Niagara Falls</b>	141,650	58,110
<b>Niagara-on-the-Lake</b>	28,900	17,610
<b>Pelham</b>	28,830	7,140
<b>Port Colborne</b>	23,230	7,550
<b>St. Catharines</b>	171,890	79,350
<b>Thorold</b>	39,690	12,510
<b>Wainfleet</b>	7,730	1,830
<b>Welland</b>	83,000	28,790
<b>West Lincoln</b>	38,370	10,480
<b>Niagara Region</b>	694,000	272,000

### 8.1.1 Residential customers

When looking at the Region’s TCM to obtain the forecasted population growth in the Region from 2023 to 2051 (Figure 8.1), it is predicted that the population will grow to approximately 673,000 residents. The 2051 total population projection, however, is lower than the above mentioned minimum approved projected population which is 694,000. Figure 8.1 also demonstrates that the majority of residents in the Region are located in Collection Area Two (Fort Erie, Niagara Falls, Niagara-on-the-Lake, Port Colborne, St. Catharines and Welland). In addition, the St. Catharines and Niagara Falls LAMs contain the largest populations, representing 44 per cent of the regional population in 2022.

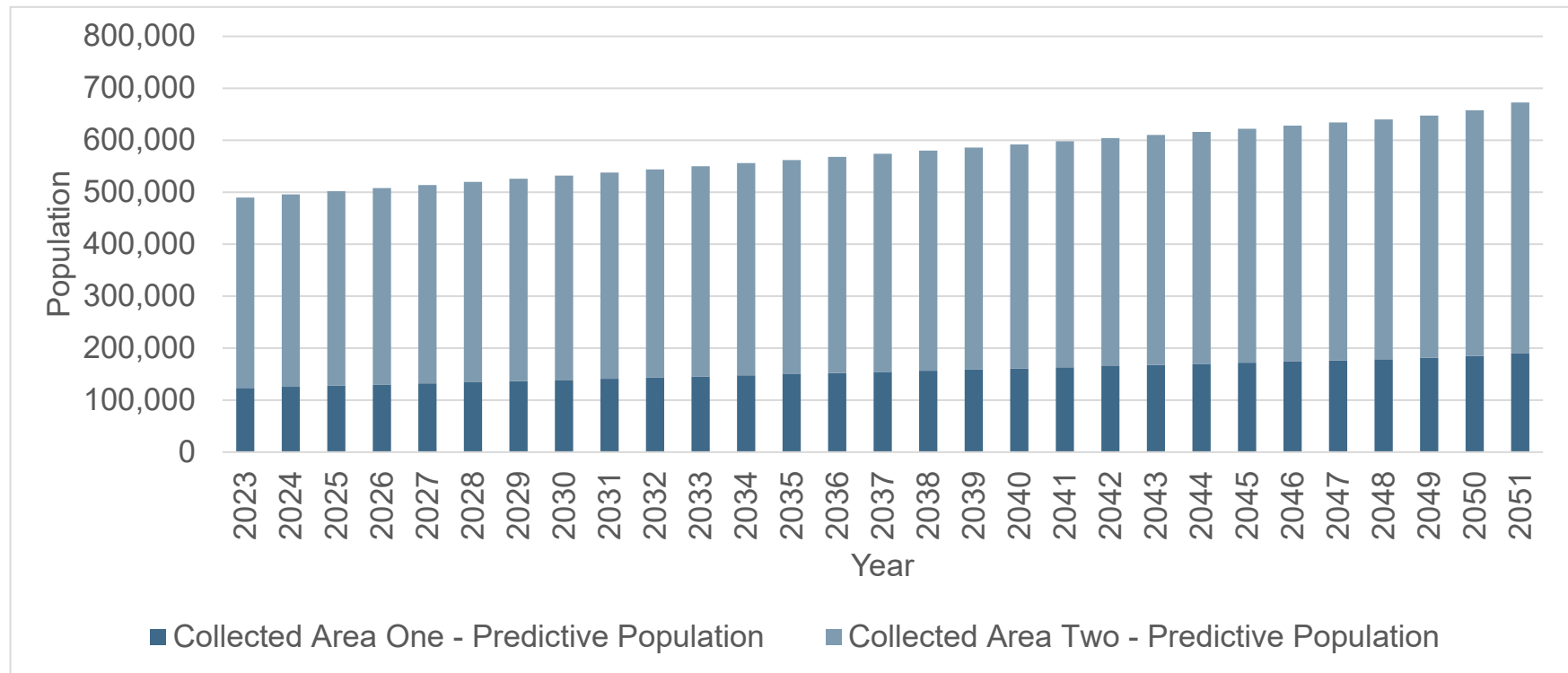


Figure 8.1 Niagara Region Population Forecast from 2023 to 2051<sup>124</sup>

Figure 8.2 provides the forecasted growth of residential housing. Based on the projections, 85 per cent of residents are predicted to reside in an LDR development. It should be noted that there is a margin of error noted on the Region’s TCM

model between how the population is calculated by using the housing type and municipality. The margin of error gradually increases over the projection years from 0.5 per cent in 2023 to 6.1 per cent in 2051.

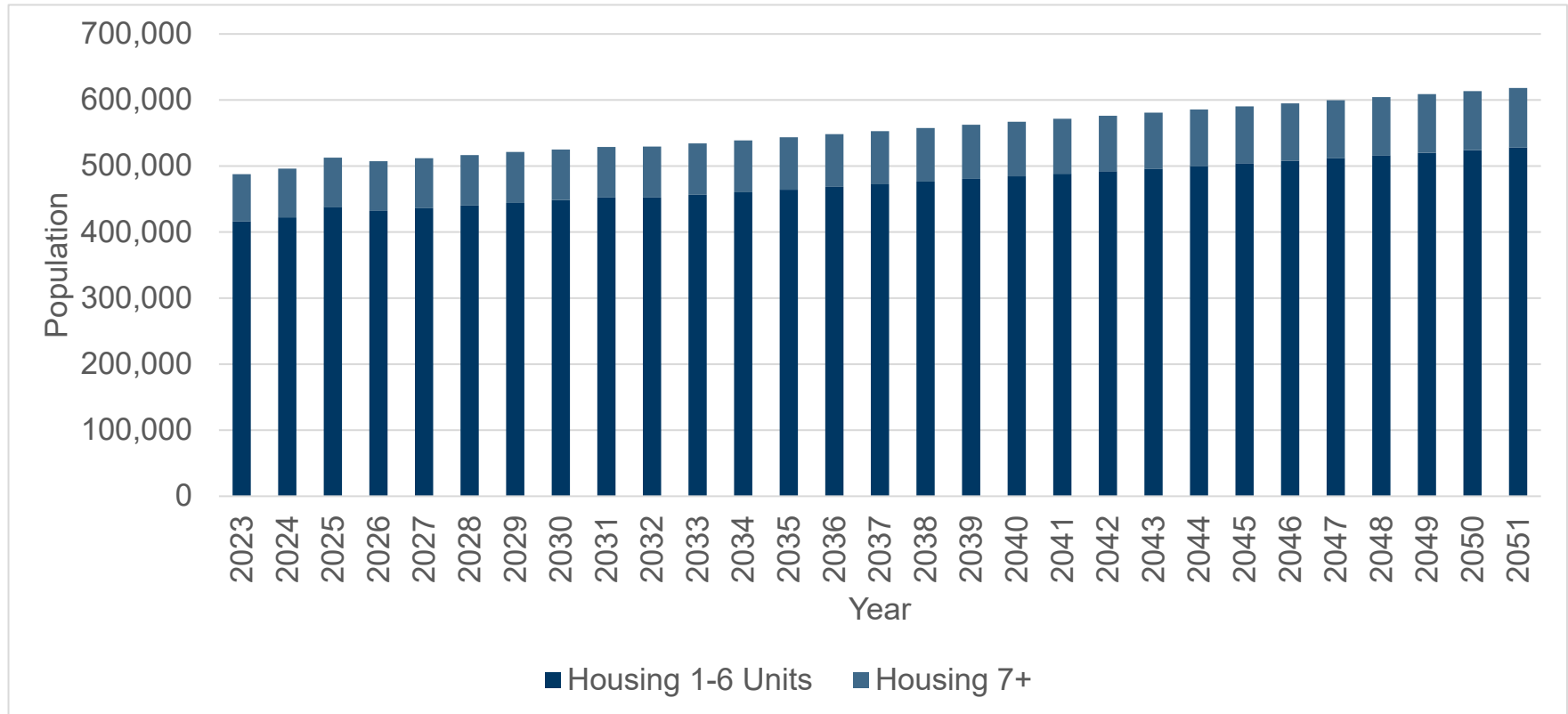
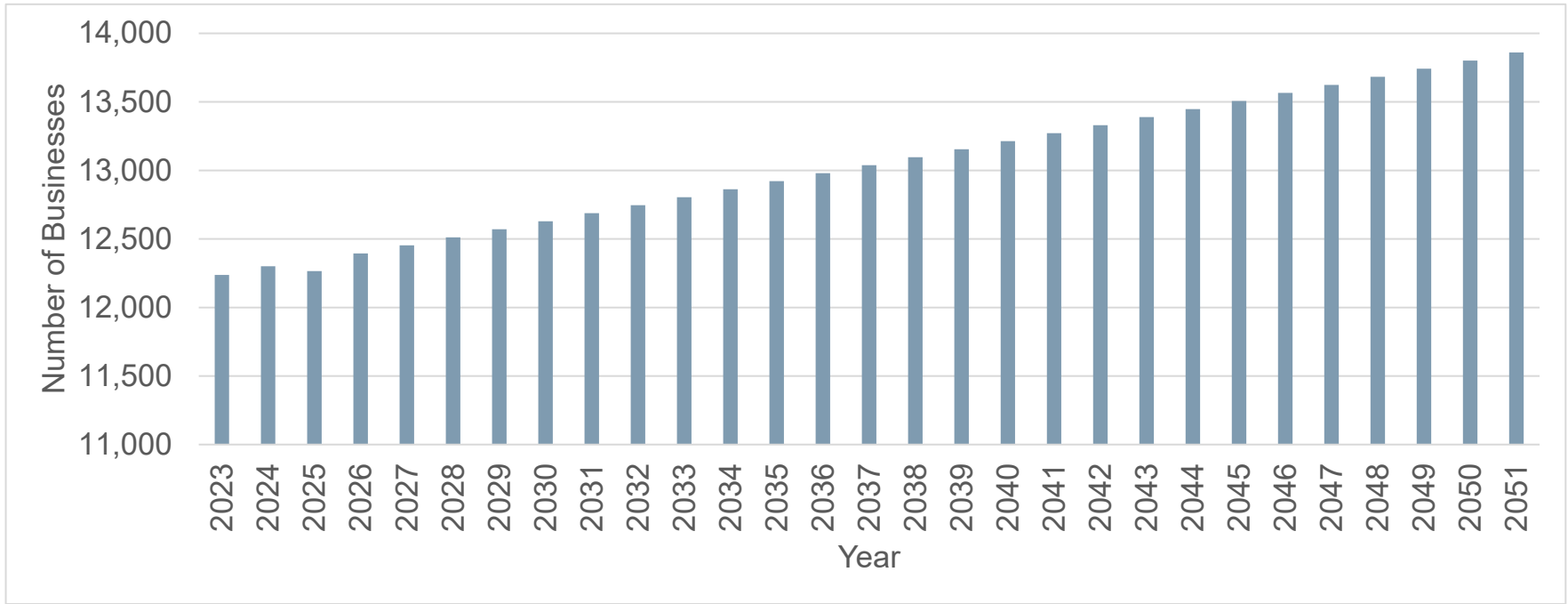


Figure 8.2 Residential Housing Projection from 2023 to 2051<sup>125</sup>

### 8.1.2 Business customers

The Region’s TCM model was also used to determine the projected number of IC&I customers which may also receive waste management services and utilize the Regions waste management resources. Figure 8.3 shows the projected growth from 2023 to 2051.

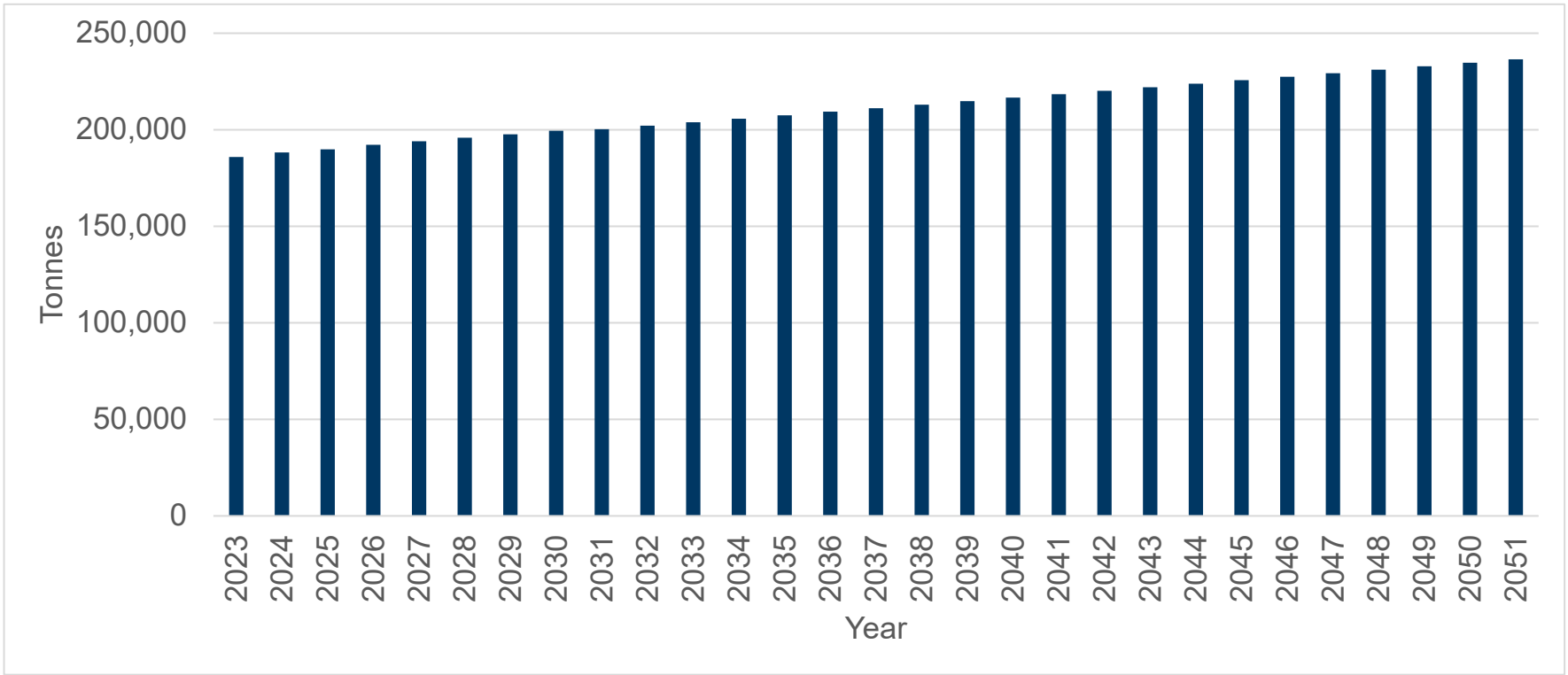


**Figure 8.3 Total Number of Businesses Projection from 2023 to 2051<sup>126</sup>**

A 13 per cent increase in the number of businesses is expected to be seen from 2023 to 2051. Typically, IC&I developments are correlated to lower participation rates and higher contamination rates in diversion programs. The Region would need to manage this ICI&I waste increase while continuing to realize diversion targets. In addition, the TCM model projects approximately 236,000 employees in 2051 which is less than the Region’s Official Plan 2051 target of 272,000.

## 8.2 Tonnage

The Region’s TCM also provides projected values for the waste tonnage that is expected to be managed through their facilities (i.e. Bridge Street Landfill, Humberstone Road Landfill, Niagara Road 12 Landfill and Walker Environmental Group Thorold Landfill). Figure 8.4 shows the anticipated growth in waste tonnage that will need to be managed by the Region.



**Figure 8.4 Predictive Total Managed from 2023 to 2051<sup>127</sup>**

As seen in Figure 8.4, a steady increase is expected in the total tonnage of waste that the Region will have to manage. This can be correlated to the growth the Region will experience in terms of population and number of businesses.

The projected breakdown between tonnage landfilled and tonnage diverted can be seen in Figure 8.5. The tonnage diverted was calculated by subtracting the tonnage landfilled from the total tonnage managed (includes curbside collection and self-hauled activities and is net of residue).

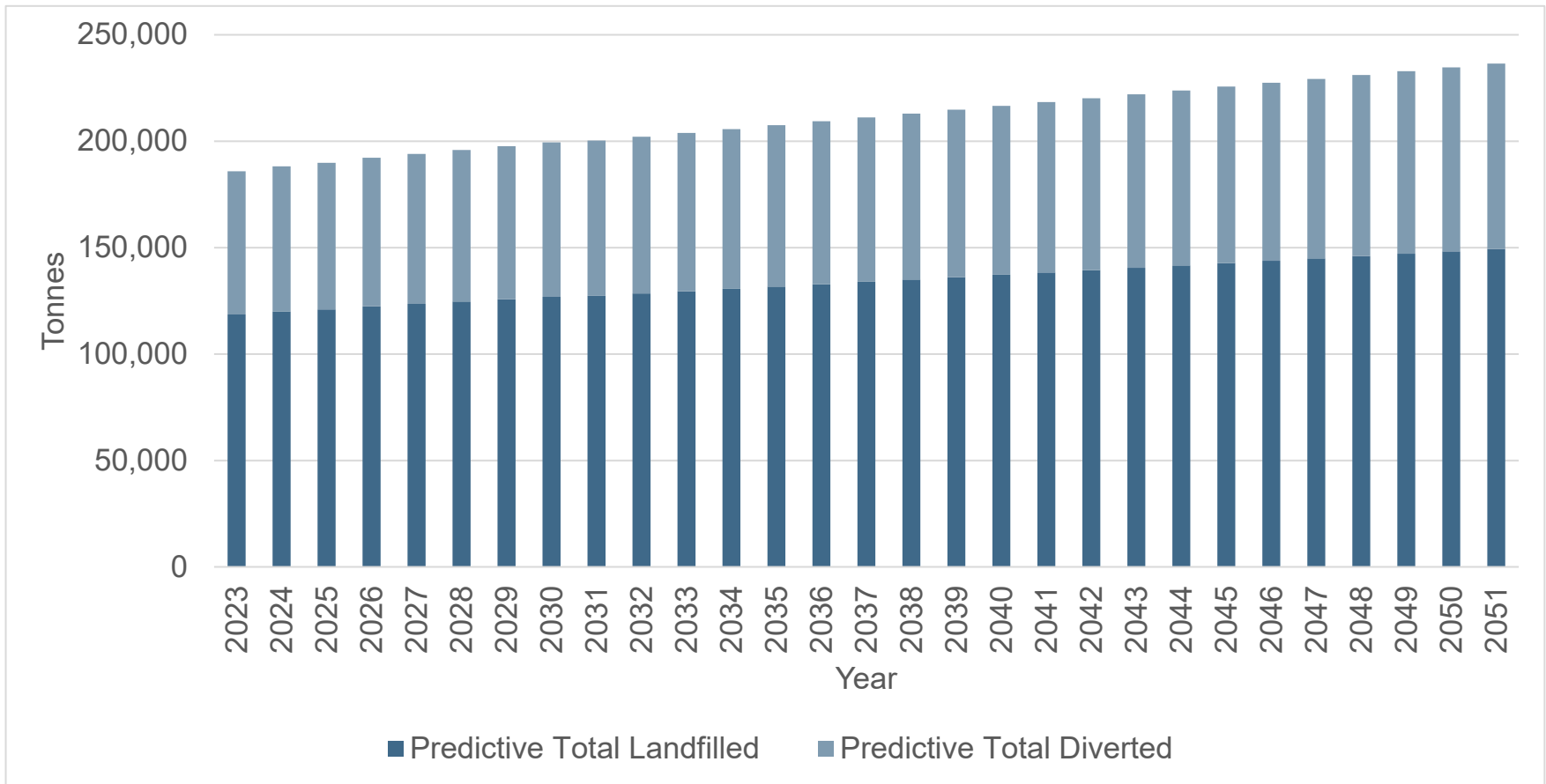


Figure 8.5 Predictive Total Landfilled and Diverted from 2023 to 2051<sup>128</sup>

### 8.2.1 Landfill capacities

With respect to the remaining lifespans of the Region owned and operated active landfills, the LLM provides a forecast on the projected remaining capacity for both the Humberstone Road and Niagara Road 12 landfills. Figure 8.6 demonstrates that the Humberstone Road Landfill is projected to last deposit waste in 2046 and Figure 8.7 demonstrates that the Niagara Road 12 Landfill is projected to last deposit waste in 2061.

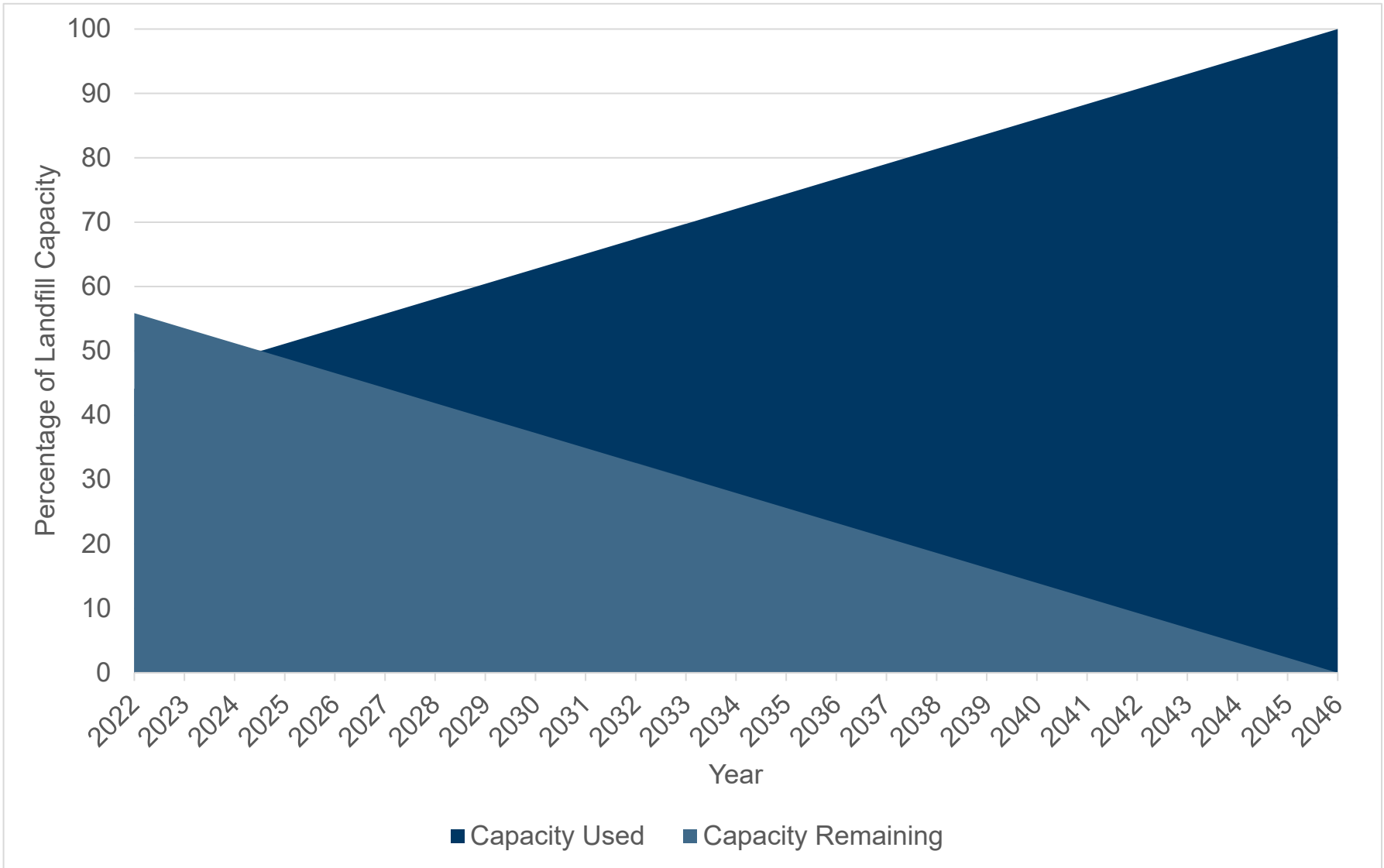


Figure 8.6 Humberstone Road Landfill Remaining Capacity<sup>129</sup>

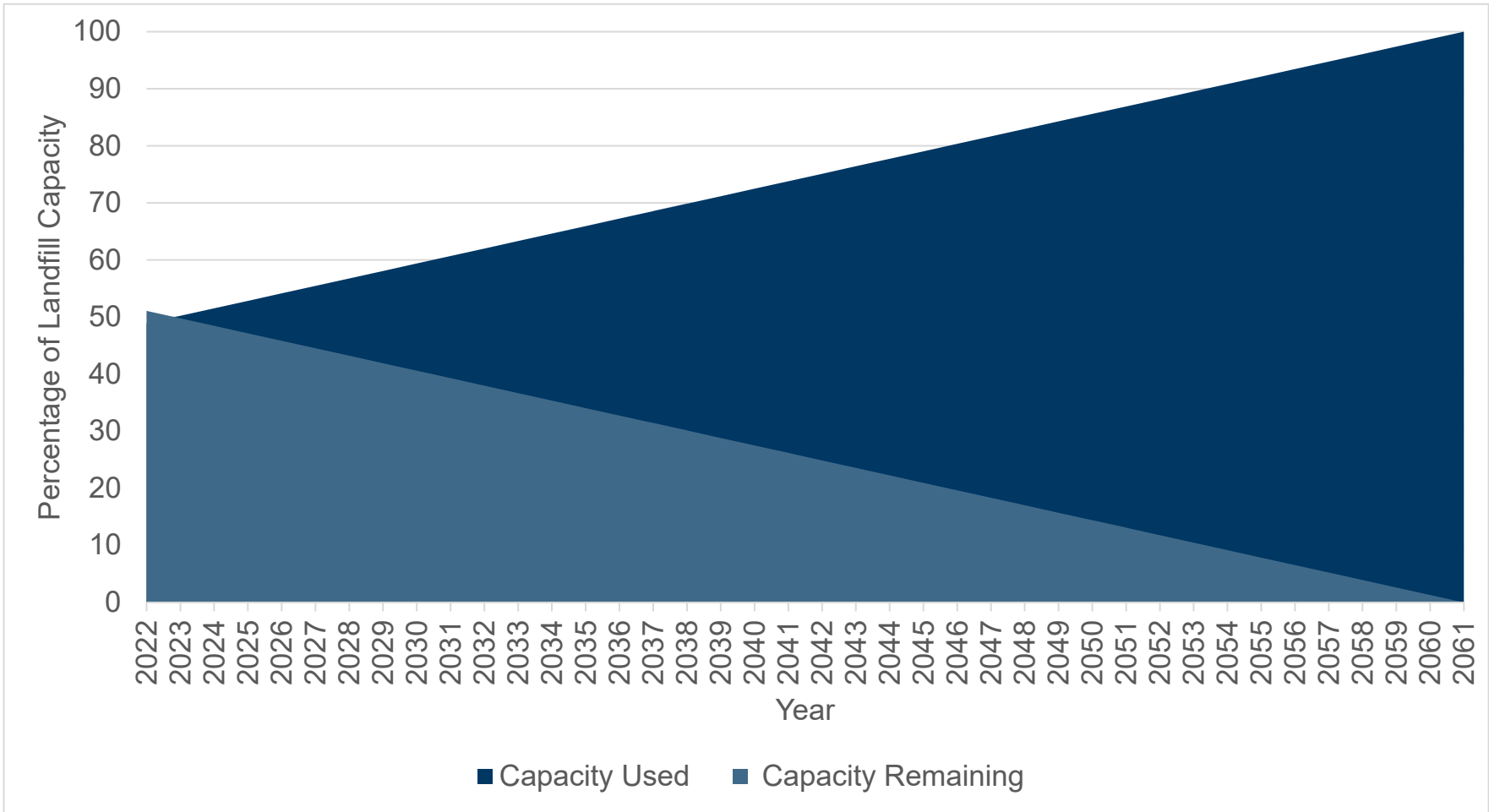
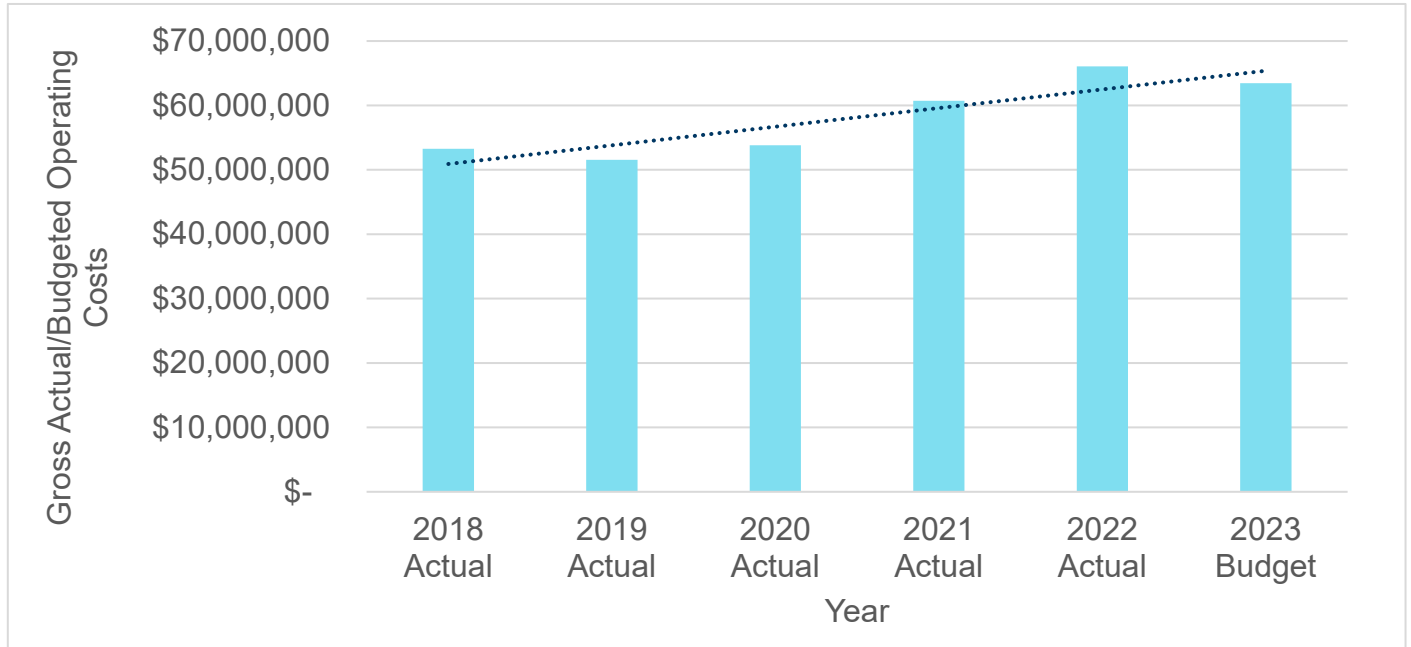


Figure 8.7 Niagara Road 12 Landfill Remaining Capacity<sup>130</sup>



### 8.3 Financial

Figure 8.8 shows the Waste Management actual gross operating costs from 2018 to 2022 and budgeted 2023 gross operating costs. Actual operating costs can differ compared to those that are budgeted due to many known and/or unanticipated factors.



**Figure 8.8 Gross Actual Operating Costs from 2018 to 2022 and Budgeted Operating Costs for 2023** <sup>131</sup>

The gross actual operating costs for waste management services has increased from 2018 to 2022 by 24 per cent. The 2023 waste management operating budget represents a four per cent decrease from the 2022 actual operating costs. Figure 8.9 demonstrates the projected landfill liability/asset retirement obligation costs from 2023 to 2031. It should be noted that the Region’s accounting policy was changed in 2023 from a Landfill Liability Model (LLM) to an Asset Retirement Obligation (ARO) model. The increase between 2022 and 2023 is reflective of the change in accounting policy. The large increase in the obligation following the change in accounting policy is due to the LLM looking at the landfill post closure care costs for 40 years, whereas the ARO model is a complete lifespan model, not constricted for 40 years, and reflects both the open and closed landfill sites.



**Figure 8.9 Forecasted Total Landfill Liability/Asset Retirement Obligation from 2022 to 2031<sup>132</sup>**

### 8.3.1 Waste management related development charges

Watson and Associates Economists LTD. prepared a Development Charges Background Study for the Region in May of 2022<sup>133</sup>. The following needs were identified by the Region’s Waste Management Division:

- Improvements at three drop-off depots
- Undertake a waste management long-term strategic plan
- Expand the Walker Environmental Group Organics Facility
- Build an organics transfer station

Table 8.2 provides a summary of the Development Charge Calculations.

**Table 8.2 Waste Management Development Charge Calculations<sup>134</sup>**

<b>Increased Service Needs Attributable to Anticipated Development</b>	<b>Timing</b>	<b>Gross Capital Cost Estimate (\$ million)</b>	<b>Net Cost Funded by Region (\$ million)</b>	<b>Other Funding Sources (\$ million)</b>	<b>Potential Development Charge Cost Recovery (\$ million)</b>
<b>Bridge Street Public Drop-off Depot Improvement</b>	2023 to 2026	\$1.6	\$0.5	\$0.0	\$1.1

<b>Increased Service Needs Attributable to Anticipated Development</b>	<b>Timing</b>	<b>Gross Capital Cost Estimate (\$ million)</b>	<b>Net Cost Funded by Region (\$ million)</b>	<b>Other Funding Sources (\$ million)</b>	<b>Potential Development Charge Cost Recovery (\$ million)</b>
<b>Niagara Road-12 – Drop-off Depot Improvements (dump pad, access improvements and one rehab of one bunker currently out of service)</b>	2023 to 2026	\$0.4	\$0.3	\$0.0	\$0.1
<b>Humberstone Road – Drop-off Depot Improvements (including grading and functional improvements to the Depot)</b>	2023	\$0.4	\$0.0	\$0.0	\$0.4
<b>Waste Management Long-term Strategic Plan</b>	2023 to 2025	\$1.5	\$1.1	\$0.0	\$0.4
<b>Walker Environmental Group Organics Facility Expansion</b>	2022 to 2029	\$3.5	\$0.0	\$0.0	\$3.5
<b>Provision for Additional Facilities (i.e. Organics Transfer Station)</b>	2022 to 2031	\$7.0	\$0.0	\$0.0	\$7.0
<b>Provision for Vehicles and Equipment</b>	2022 to 2031	\$2.0	\$0.0	\$0.0	\$2.0
<b>Provision for Additional Equipment</b>	2022 to 2031	\$2.0	\$0.0	\$0.0	\$2.0
<b>Provision for Additional Containers</b>	2022 to 2031	\$1.0	\$0.0	\$0.0	\$1.0

## 8.4 Waste management goals

The Region's WMS division's overarching long-term goals are to:

- Transition to a circular economy

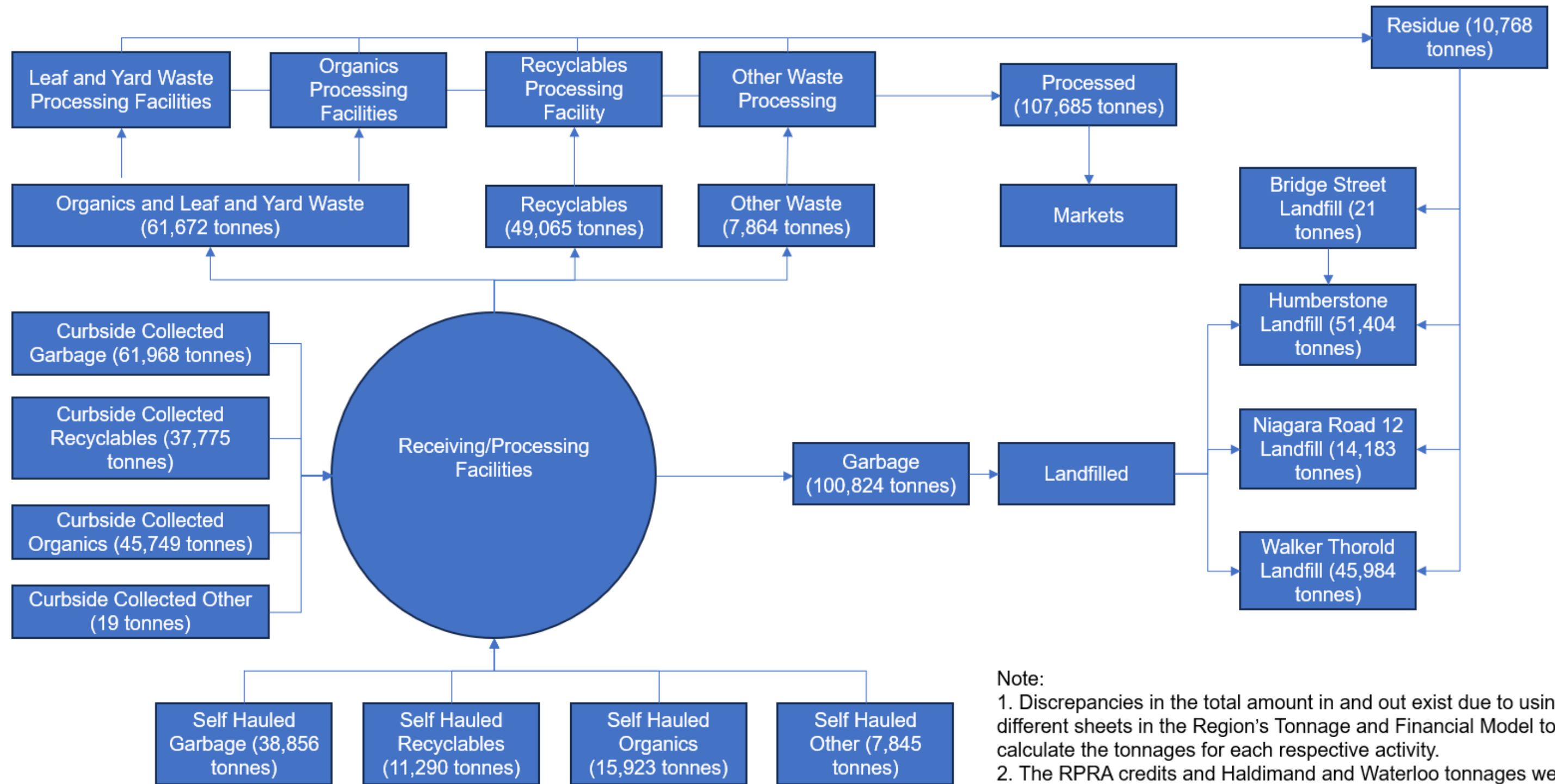
- Reduce the carbon footprint of their waste management operations
- Support the Council approved goal of net-zero GHG emissions by 2050

A key driver behind this directive also stems from the *Waste-Free Ontario Act, 2016* which is comprised of the *RRCEA, 2016* and the *Waste Diversion Transition Act, 2016* and repeals the *Waste Diversion Act, 2002*<sup>135</sup>. As mentioned previously, this legislation focuses on increasing resource recovery of waste and moving towards a circular economy. The “Strategy for a Waste-Free Ontario: Building the Circular Economy” (The Strategy) set a goal to achieve a zero waste and greenhouse gas emissions from the waste sector with interim targets of 30 per cent diversion by 2020; 50 per cent diversion by 2030; and 80 per cent diversion by 2050<sup>136</sup>. The Strategy mentions that energy from waste and alternative fuels do not count towards diversion in Ontario despite being permitted as a waste management option. Although anaerobic digestion produces biogas (a renewable fuel), recovery of nutrients through digestate production via anaerobic digestion is considered diversion under the Strategy<sup>137</sup>.

The Region’s current short-term goals are to lead three consultation series to obtain feedback on the current and future waste management system and services offered as well as to create a Plan that will provide the strategic direction that the Region should consider for the next 25 years. The Plan will also guide the Region with developing innovative ways to manage waste, including viewing waste as a resource in a circular economy, demonstrating leadership in sustainability, and mitigating environmental impacts. Cost-effective and accessible waste management services while also considering the environment (triple bottom line analysis) will also be highlighted in the Plan.

## 9. Findings and recommendations

An overview of the Region’s waste network diagram is illustrated on Figure 9.1 to demonstrate the linkages, tonnage flow and complexities of the overall system.



Note:  
 1. Discrepancies in the total amount in and out exist due to using different sheets in the Region's Tonnage and Financial Model to calculate the tonnages for each respective activity.  
 2. The RPRC credits and Haldimand and Waterloo tonnages were also excluded for the purpose of this analysis.

Figure 9.1 Niagara Region's Waste Network Diagram<sup>138, 139</sup>

It can therefore be concluded that the Region’s diversion rate experienced from activities occurring at their landfill sites, drop-off depots and processing facilities is approximately 50 per cent<sup>140</sup>. However, it should be noted that the 2022 residential diversion rate from Municipal Benchmarking Network (MBN) Canada was 61 per cent<sup>141</sup>. Table 9.1 also provides a summary of the key social, economic, participation and environmental impact findings along with the associated gaps, challenges, and opportunities that can aid in the development of increasing the rate of diversion and achieving a circular economy.

**Table 9.1 Key Social, Economic and Environmental Impact Findings from the Analysis**

<b>Indicator Type</b>	<b>Category</b>	<b>Key Finding</b>
Social	Gap/Opportunity	While the Region offers base collection services to all property types, organic and recyclable tonnages are unavailable for the Region’s TCM from 2011 to 2022 for MR property types. In addition, data collection on residential recycling and diversion efforts will become increasingly difficult for the Region with the implementation of O. Reg. 391/21 (Blue Box). Given these potential gaps in data, the Plan will need to consider different ways for the Region to measure success/performance going forward.
	Challenge/Opportunity	Increase curbside participation and reduce self-hauled tonnages particularly of the garbage, recyclables and organics streams. This could reduce GHG emissions due to less trips to the Drop-off depots but may also result in a higher participation rate and better utilization of curbside programs. However, this behavioural change may also result in budget impacts.
	Challenge	Increase focus on promotion, education, outreach and enforcement to reduce cross-contamination in the material streams. This is particularly relevant for materials under the Region’s programs (i.e. green bin and non-eligible recycling). It also applies to the residential blue (and grey) box recycling program managed through Circular Materials <sup>142</sup> .
	Opportunity	Obtain a higher participation and capture rate in the GBO program.

Indicator Type	Category	Key Finding
	Opportunity	To increase the diversion practices in MR buildings by providing education, outreach and enforcement to residents. Education, outreach and enforcement can also be provided to developers and property managers to ensure that waste collection services can be properly performed at the MR building.
	Opportunity	Increase outreach and education to the Millennial generation. It was noted that only 12 per cent of this generation confirm materials are accepted in their local recycling program before they recycle.
	Opportunity	Receive feedback from the Region's interested parties on the current waste management services and system to aid in the development of the Plan and ensuring the interested parties' participation and buy-in.
	Opportunity	Advocate to the Province for better certainty/clarity on producer responsibility programs (e.g. blue box, Municipal Hazardous or Special Waste [MHSW], Waste Electrical and Electronic Equipment [WEEE], etc.) with respect to materials, costs, contamination rates and funding.
Economic	Challenge/Opportunity	Opportunity to transition to clear bag collection and apply stringent bylaws and bag limits to encourage diversion.
	Challenge/Opportunity	Opportunity to transition to automated cart collection which would require carts and does not support the use of clear bags. Automated cart-based collection can offer collection cost savings from reduced stoppage time and reduced number of work-related injuries. However, there would be initial capital costs related to providing the carts. Contamination issues have also been seen with cart-based collection.

Indicator Type	Category	Key Finding
	Challenge	<p>The Region will need to consider impacts to current service levels as a result of changes to recycling with the implementation of producer responsibility, such as whether to continue to service the IC&amp;I non-eligible sources post 2025 as the new legislation does not require producers to provide recycling services to businesses and other non-residential sources</p> <p>Producers have advised municipalities that they do not intend to continue offering this service after December 31, 2025. This poses challenges related to realizing economies of scale when providing services to IC&amp;I non-eligible sources.</p>
	Challenge	<p>The Region may foresee an increase in costs beyond what is currently projected. For example, the Region noted that collection contract costs (despite no longer collecting residential recycling) may increase and that 50 to 110 per cent increases are being seen in other municipalities.</p>
	Opportunity	<p>Given the rising costs of services, the Region may wish to review the way it allocates costs for provision of waste management services to non-residential properties (e.g. IC&amp;I) to ensure the associated costs are fairly distributed when considering the allocation of waste management services costs to LAMs.</p>
	Opportunity	<p>Potential to investigate the implementation of processes/facilities that would reduce costs and/or increase revenues (e.g. the sale of digestate and biogas from anaerobic digestion).</p>



Indicator Type	Category	Key Finding
Participation	Challenge	<p>Increasing the participation in the recyclable's diversion program. The total tonnes of recyclables curbside collected<sup>143</sup> and self-hauled has decreased by 12 per cent from 2011 to 2022 most likely due to 'lightweighting' of recyclables products and a decline in newsprint.</p> <p>Although the residential Blue Box program is no longer the Region's responsibility, material from the stream can end up in the landfill, for example through incorrect sorting practices, therefore impacting the Region.</p>
	Opportunity	<p>Increasing participation in other diversion programs offered by the Region such as the textiles program and Broken Spoke program to preserve landfill space and promote the act of reuse.</p>
Environmental	Challenge/Opportunity	<p>Decreasing the tonnes of garbage that the Region has to manage. In 2022, approximately 22 per cent of the waste curbside collected and self-hauled to drop-off depots was garbage.</p>
	Challenge/Opportunity	<p>Achieve the Council approved goal of net-zero emissions by 2050 and transition to a circular economy.</p>
	Challenge/Opportunity	<p>Achieve The Strategy goals of achieving a zero waste Ontario and zero GHG emissions from the waste sector with the interim goals of 30 per cent diversion by 2020; 50 per cent diversion by 2030; and 80 per cent diversion by 2050.</p>
	Challenge/Opportunity	<p>Explore the idea of landfill gas capture and utilization. The Humberstone Road Landfill is currently the only landfill with a landfill gas collection system installed. Moreover, the Region is constrained from insufficient landfill gas from the Humberstone Road Landfill.</p>
	Challenge	<p>The Humberstone Road Landfill landfilled just under half of the Region's waste in 2022 and is also projected to be filled by 2045.</p>

Indicator Type	Category	Key Finding
	Challenge	Improve management of materials that are currently occupying landfill space such as soils and construction and demolition (C&D) materials.
	Opportunity	Implement processes/facilities that provide the act of recovering from nutrients such as digestate from anaerobic digestion. These types of actions classify as diversion in Ontario.
	Opportunity	Increase the number of reuse and repair programs the Region offers to help preserve landfill space.

Based a review of the Region’s current system, legislative scan and future outlook (population projections, forecasted waste generation, etc.), GHD identified the following risks:

- **Population Growth:** Niagara Region is expected to experience significant growth in the next 30 years with some areas expected to grow by 25 to 40 per cent. The projected population of 694,000 people by the year 2051 will lead to an increase in residential waste generation and the required management of it. Proper planning now for future infrastructure needs will be critical to ensuring that the projected increases in population and waste generation do not strain the Region’s waste management infrastructure and level of services.
- **Increase in Housing and Change in Housing Type:** The introduction of the More Homes Built Faster Act, 2022, which includes a 2031 Housing Target of 8,000 new homes in St. Catharines and 11,000 new homes in Niagara Falls, will increase densities, resulting in more MR type housing. Typically, this housing type has lower waste diversion participation rates and higher contamination rates, which would increase wastes requiring disposal. Further, the increase in housing starts will result in an increase in construction and demolition waste. This could require additional resources and infrastructure to manage.
- **Increase in Businesses:** A 13 per cent increase in the number of businesses is expected from 2023 to 2051. This could lead to an increase in IC&I waste, which typically has lower participation rates and higher contamination rates requiring additional resources and infrastructure to manage.
- **Increase in Waste Tonnage for processing/disposal:** As identified above, a steady increase is expected in the total tonnage of waste that the Region will have to manage. This could require additional landfill capacity and waste management resources. While the Region has remaining capacity at their existing landfills, the Region relies on private waste disposal capacity (approximately 41 per cent to private facilities). The Province as a whole is rapidly running out of capacity. Given the recent changes to the Environmental Assessment Act with respect to giving municipalities more say on the development of new landfills (Bill 197, Host Municipal Support provisions), it has become increasingly difficult to permit a new landfill in the

Province. The Region will need to review waste disposal capacity data over the long term to ensure sufficient private capacity is available. The Region should consider reviewing a potential scenario where 100 per cent of waste is sent to Region owned and operated facilities.

- **Reliance on Landfill Tipping Fees:** The Region heavily relies on landfill tipping fees to offset waste management operational costs. Any fluctuations in these fees could impact the financial stability of the system.
- **Increased Waste Collection Costs:** The cost of the Region’s current waste collection contract has increased, leading to a rise in the garbage tag fee. This could potentially lead to higher costs for residents and businesses. Further, with the collection contract expiring in the next four years (2028) and with the uncertainty around post-transition of the Blue Box program (i.e. program evaluation, changes requested by PRO including material types, contamination levels, reporting requirements by the Region, etc.) there may be an increased financial and administrative burden.
- **Allocation of Costs:** The Region currently allocates costs to the LAMs based on the percentage of total residential units. However, the Financial Review suggests that IC&I units should also be considered when allocating costs. This could lead to changes in the funding model and potential resistance from interested parties.
- **Reserve Funds:** The Region maintains two reserves to fund capital projects and a stabilization reserve to stabilize waste management program requirements due to unanticipated changes in operational requirements, or for budgeted, one-time, non-recurring operating requirements. If these reserves are not adequately maintained, it could impact the Region’s fiscal responsibility in managing unanticipated costs/operating deficits or the ability to adequately fund the capital program.
- **Landfill Assessment Retirement Obligation (ARO):** The Region has significant liability associated with both active and closed landfill sites. Any changes in regulations or unexpected issues with these sites could lead to increased costs.
- **Operating Budget:** The Council approved a 5.5 per cent increase in the Waste Management special levy for 2023. This could lead to increased costs for residents and potential pushback from the community.
- **Post-Closure Maintenance:** The Region is responsible for post-closure inspection and maintenance at 11 closed landfill sites. Ongoing maintenance and monitoring are required to ensure these sites do not pose a risk to the environment or public health and safety.
- **Data Management:** The Region may be required to provide data to RPRA regarding resource recovery and reduction efforts at landfills. This necessitates a coherent plan for internal data management.
- The Region may choose to provide service for the collection of recyclables from non-eligible sources (Circular Materials), which could become more and more less cost-effective without residential Blue Box Material collection.

- **Food and Organic Waste:** The Region will need to plan for the eventual implementation of an Ontario-wide food and organic waste ban to landfill. This could affect the volume and composition of the Region’s organics waste stream. Further, with the push for the inclusion of compostable plastics, the Region should review what this material may mean from an existing contract review perspective. There is a risk that non-compostable plastics are added to the organics stream by residents, increasing contamination and residue requiring disposal. The Region and LAMs should also review their respective by-laws and land use planning instruments (i.e. Official Plan) to ensure they are in compliance with the amendments.
- **Single Use Plastics Ban:** The ban on certain single-use plastics would impact the volume of such material in the Region’s residual waste stream.

These risks, along with the challenges, opportunities and constraints, will be utilized to help formulate the long-list and short-list recommendations to be developed and evaluated in Phase 2 (Ideation – Options Evaluation and Selection Technical Memo).

# Appendices

# **Appendix A**

## **MPAC Unit Count Data**



Regional Municipality of Niagara Waste Management MPAC Unit Count For Loading Year 2023-EAI	Type	Prop Codetxt	Collection Type	Fort Erie - Res Units	Fort Erie - Prop Cnt	Grimsby - Res Units	Grimsby - Prop Cnt	Lincoln - Res Units	Lincoln - Prop Cnt	Niagara Falls - Res Units	Niagara Falls - Prop Cnt	Niagara-on-the-Lake - Res Units	Niagara-on-the-Lake - Prop Cnt	Pelham - Res Units	Pelham - Prop Cnt	Port Colborne - Res Units	Port Colborne - Prop Cnt	St. Catharines - Res Units	St. Catharines - Prop Cnt	Thorold - Res Units	Thorold - Prop Cnt	Wainfleet - Res Units	Wainfleet - Prop Cnt	Welland - Res Units	Welland - Prop Cnt	West Lincoln - Res Units	West Lincoln - Prop Cnt	Grand Total - Res Units	Grand Total - Prop Cnt
340 - Multi-residential, with 7 or more self-contained units (excludes row-housing)	6+	340	Multires	683	22	373	12	198	8	3,631	117	262	3	296	10	775	33	6,740	176	467	26	8	1	2,227	69	89	4	15,749	481
341 - Multi-residential, with 7 or more self-contained residential units, with small commercial unit(s)	6+	341	Multires	15	1			1	1					13	2			932	18	529	9			119	4			1,609	35
367 - Service Or Amenity Unit (Condominium Or Freehold Title, Owned By A Condo Corporation)	Condo	367	Multires			0	2	0	2	1	14	0	3					15	19					0	3			16	43
370 - Residential Condominium Unit	Condo	370	Multires	105	105	2,122	2,122	846	846	2,768	2,767	413	419	259	259	100	100	6,641	6,640	64	64			919	918	197	197	14,434	14,437
371 - Life Lease - No Redemption. Property where occupants have either no or limited redemption amounts. Typically Zero Balance or Declining Balance Life Lease Types.	6+	371	Multires									79	1					278	5									357	6
372 - Life Lease - Return on Invest. Property where occupants can receive either a guaranteed return or a market value based return on the investment. Typically, represented by Fixed Value, Indexed-Based, or Market Value Life Lease Types.	6+	372	Multires			100	1	42	4					30	1			465	6					85	2			722	14
374 - Cooperative housing - non-equity - Non-equity Co-op corporations are not owned by individual shareholders, the shares are often owned by groups such as unions or non-profit organizations which provide housing to the people they serve. The members who occ	6+	374	Multires	101	2			42	2	381	6					53	3	1,140	22					370	7	24	1	2,111	43
376 - Condominium locker unit - separately deeded.	Condo	376	Multires			0	5	0	1	0	10							0	5									0	21
377 - Condominium parking space/unit - separately deeded.	Condo	377	Multires			0	8	0	2	0	15			0	1	0	1	0	12					0	1			0	40
380 - Residential common elements condominium corporation - consists only of the common elements not units.	Condo	380	Multires	0	1	2	16	0	5			0	4					0	1					0	1	0	1	2	29
<b>Total</b>				<b>904</b>	<b>131</b>	<b>2,597</b>	<b>2,166</b>	<b>1,129</b>	<b>871</b>	<b>6,781</b>	<b>2,929</b>	<b>754</b>	<b>430</b>	<b>598</b>	<b>273</b>	<b>928</b>	<b>137</b>	<b>16,211</b>	<b>6,904</b>	<b>1060</b>	<b>99</b>	<b>8</b>	<b>1</b>	<b>3,720</b>	<b>1,005</b>	<b>310</b>	<b>203</b>	<b>35,000</b>	<b>15,149</b>



Regional Municipality of Niagara Waste Management MPAC Unit Count For Loading Year 2023-EAI	Type	Prop Codetxt	Collection Type	Fort Erie - Res Units	Fort Erie - Prop Cnt	Grimsby - Res Units	Grimsby - Prop Cnt	Lincoln - Res Units	Lincoln - Prop Cnt	Niagara Falls - Res Units	Niagara Falls - Prop Cnt	Niagara-on- the-Lake - Res Units	Niagara-on- the-Lake - Prop Cnt	St. Catharines - Res Units	St. Catharines - Prop Cnt	Thorold - Res Units	Thorold - Prop Cnt	Welland - Res Units	Welland - Prop Cnt	Grand Total - Res Units	Grand Total - Prop Cnt
383 - Bed and breakfast establishment	B&B	383	B&B	1	1	1	1	9	8	77	64	226	219	12	10	3	3	1	1	330	307
<b>Total</b>				<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>9</b>	<b>8</b>	<b>77</b>	<b>64</b>	<b>226</b>	<b>219</b>	<b>12</b>	<b>10</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>330</b>	<b>307</b>





Regional Municipality of Niagara Waste Management MPAC Unit Count For Loading Year 2023-EAI	Type	Prop Codetxt	Collection Type	Fort Erie - Res Units	Fort Erie - Prop Cnt	Grimsby - Res Units	Grimsby - Prop Cnt	Lincoln - Res Units	Lincoln - Prop Cnt	Niagara Falls Res Units	Niagara Falls Prop Cnt	Niagara-on- the-Lake - Res Units	Niagara-on- the-Lake - Prop Cnt	Pelham - Res Units	Pelham - Prop Cnt	Port Colborne - Res Units	Port Colborne - Prop Cnt	St. Catharines - Res Units	St. Catharines - Prop Cnt	Thorold - Res Units	Thorold - Prop Cnt	Wainfleet - Res Units	Wainfleet - Prop Cnt	Welland - Res Units	Welland - Prop Cnt	West Lincoln Res Units	West Lincoln Prop Cnt	Grand Total - Res Units	Grand Total - Prop Cnt
303 - Residence with a commercial unit	Mixed	303	Mixed Use	56	42	24	22	26	26	28	25	11	12	13	13	21	19	99	91	7	7	8	7	28	23	13	11	334	298
304 - Residence with a commercial/ industrial use building	Mixed	304	Mixed Use	16	14	10	6	9	7	17	15	13	12	3	3	6	5	24	20	4	4	4	4	2	2	24	24	132	116
470 - Multi-type complex - defined as a large multi-use complex consisting of retail/office and other uses (multi res/condominium/hotel)	Mixed	470	Mixed Use							0	1	0	1					0	2									0	4
471 - Retail or office with residential unit(s) above or behind - less than 10,000 s.f. gross building area (GBA), street or onsite parking, with 6 or less apartments, older downtown core	Mixed	471	Mixed Use	177	102	66	39	78	37	422	195	51	33	67	31	140	77	395	192	113	43	12	9	304	151	21	17	1,846	926
472 - Retail or office with residential unit(s) above or behind - greater than 10,000 s.f. GBA, street or onsite parking, with 7 or more apartments, older downtown core	Mixed	472	Mixed Use	14	7	3	1	31	6	60	9	10	3	0	1	8	1	299	37	56	4			47	8	7	3	535	80
<b>Total</b>				<b>263</b>	<b>165</b>	<b>103</b>	<b>68</b>	<b>144</b>	<b>76</b>	<b>527</b>	<b>245</b>	<b>85</b>	<b>61</b>	<b>83</b>	<b>48</b>	<b>175</b>	<b>102</b>	<b>817</b>	<b>342</b>	<b>180</b>	<b>58</b>	<b>24</b>	<b>20</b>	<b>381</b>	<b>184</b>	<b>65</b>	<b>55</b>	<b>2,847</b>	<b>1,424</b>

# **Appendix B**

**Waste Collection Areas and Routes**

**Fort Erie**

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Thursday	Fort Erie	1	Week One	Area Two	Urban
Friday	Fort Erie	1	Week One	Area Two	Urban
Monday	Fort Erie	1a	Week One	Area Two	Mostly Urban
Tuesday	Fort Erie	1a	Week One	Area Two	Mostly Urban
Wednesday	Fort Erie	1a	Week One	Area Two	Part Urban
Monday	Fort Erie	1b	Week One	Area Two	Rural
Tuesday	Fort Erie	1b	Week One	Area Two	Rural
Wednesday	Fort Erie	1b	Week One	Area Two	Rural
Wednesday	Fort Erie	2	Week One	Area Two	Part Urban
Thursday	Fort Erie	2	Week One	Area Two	Part Urban
Friday	Fort Erie	2	Week One	Area Two	Urban
Tuesday	Fort Erie	2a	Week One	Area Two	Small Part Urban
Monday	Fort Erie	2a	Week One	Area Two	Mostly Urban
Monday	Fort Erie	2b	Week One	Area Two	Rural
Tuesday	Fort Erie	2b	Week One	Area Two	Small Part Urban

## Grimsby

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Friday	Grimsby	1	Week Two	Area One	Half Urban
Tuesday	Grimsby	1	Week Two	Area One	Urban
Thursday	Grimsby	1	Week Two	Area One	Urban
Wednesday	Grimsby	1	Week Two	Area One	Part Urban
Thursday	Grimsby	2	Week Two	Area One	Urban
Wednesday	Grimsby	2	Week Two	Area One	Urban
Tuesday	Grimsby	2a	Week Two	Area One	Urban
Friday	Grimsby	2a	Week Two	Area One	Rural
Tuesday	Grimsby	2b	Week Two	Area One	Urban
Friday	Grimsby	2b	Week Two	Area One	Rural

## Lincoln

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Thursday	Lincoln	1	Week Two	Area One	Part Urban
Tuesday	Lincoln	1	Week Two	Area One	Urban
Wednesday	Lincoln	1a	Week Two	Area One	Urban
Friday	Lincoln	1a	Week Two	Area One	Small Part Urban
Wednesday	Lincoln	1b	Week Two	Area One	Urban
Friday	Lincoln	1b	Week Two	Area One	Small Part Urban
Friday	Lincoln	1c	Week Two	Area One	Small Part Urban
Wednesday	Lincoln	2	Week Two	Area One	Rural
Friday	Lincoln	2	Week Two	Area One	Rural
Thursday	Lincoln	2	Week Two	Area One	Rural
Tuesday	Lincoln	2	Week Two	Area One	Mostly Urban



## Niagara Falls

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Tuesday	Niagara Falls	1	Week Two	Area Two	Urban
Friday	Niagara Falls	1	Week Two	Area Two	Urban
Thursday	Niagara Falls	1	Week Two	Area Two	Mostly Urban
Wednesday	Niagara Falls	1	Week Two	Area Two	Urban
Monday	Niagara Falls	1a	Week Two	Area Two	Rural
Monday	Niagara Falls	1b	Week Two	Area Two	Part Urban
Tuesday	Niagara Falls	2	Week Two	Area Two	Urban
Thursday	Niagara Falls	2	Week Two	Area Two	Urban
Wednesday	Niagara Falls	2	Week Two	Area Two	Urban
Friday	Niagara Falls	2a	Week Two	Area Two	Urban
Monday	Niagara Falls	2a	Week Two	Area Two	Rural
Monday	Niagara Falls	2b	Week Two	Area Two	Small Part Urban
Friday	Niagara Falls	2b	Week Two	Area Two	Urban
Monday	Niagara Falls	2c	Week Two	Area Two	Small Part Urban
Monday	Niagara Falls	3	Week Two	Area Two	Urban
Thursday	Niagara Falls	3	Week Two	Area Two	Urban
Wednesday	Niagara Falls	3	Week Two	Area Two	Urban
Tuesday	Niagara Falls	3	Week Two	Area Two	Urban
Friday	Niagara Falls	3	Week Two	Area Two	Urban
Monday	Niagara Falls	4	Week Two	Area Two	Urban
Friday	Niagara Falls	4	Week Two	Area Two	Urban
Tuesday	Niagara Falls	4	Week Two	Area Two	Urban
Wednesday	Niagara Falls	4	Week Two	Area Two	Urban
Thursday	Niagara Falls	4a	Week Two	Area Two	Mostly Urban
Thursday	Niagara Falls	4b	Week Two	Area Two	Mostly Urban
Monday	Niagara Falls	5	Week Two	Area Two	Small Part Urban
Friday	Niagara Falls	5	Week Two	Area Two	Urban
Tuesday	Niagara Falls	5	Week Two	Area Two	Urban
Wednesday	Niagara Falls	5a	Week Two	Area Two	Urban
Thursday	Niagara Falls	5a	Week Two	Area Two	Urban
Wednesday	Niagara Falls	5b	Week Two	Area Two	Urban
Thursday	Niagara Falls	5b	Week Two	Area Two	Mostly Urban

### Niagara-on-the-Lake

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Friday	Niagara-on-the-Lake	2	Week One	Area Two	Urban
Friday	Niagara-on-the-Lake	1	Week One	Area Two	Urban
Monday	Niagara-on-the-Lake	1	Week One	Area Two	Small Part Urban
Thursday	Niagara-on-the-Lake	1	Week One	Area Two	Urban
Thursday	Niagara-on-the-Lake	2b	Week One	Area Two	Rural
Thursday	Niagara-on-the-Lake	2a	Week One	Area Two	Rural
Monday	Niagara-on-the-Lake	2b	Week One	Area Two	Small Part Urban
Wednesday	Niagara-on-the-Lake	1	Week One	Area Two	Part Urban
Wednesday	Niagara-on-the-Lake	2b	Week One	Area Two	Rural
Wednesday	Niagara-on-the-Lake	2a	Week One	Area Two	Part Urban
Monday	Niagara-on-the-Lake	2a	Week One	Area Two	Rural

## Pelham

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Monday	Pelham	1	Week One	Area One	Mostly Urban
Thursday	Pelham	1	Week One	Area One	Mostly Urban
Tuesday	Pelham	1a	Week One	Area One	Part Urban
Tuesday	Pelham	1b	Week One	Area One	Part Urban
Monday	Pelham	2a	Week One	Area One	Small Urban Part
Tuesday	Pelham	2a	Week One	Area One	Rural
Monday	Pelham	2b	Week One	Area One	Small Urban Part
Tuesday	Pelham	2b	Week One	Area One	Rural
Monday	Pelham	3	Week One	Area One	Urban

### Port Colborne

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Tuesday	Port Colborne	1b	Week Two	Area Two	Rural
Tuesday	Port Colborne	1a	Week Two	Area Two	Mostly Urban
Wednesday	Port Colborne	2	Week Two	Area Two	Urban
Wednesday	Port Colborne	1	Week Two	Area Two	Urban
Thursday	Port Colborne	1	Week Two	Area Two	Urban
Tuesday	Port Colborne	2	Week Two	Area Two	Urban
Thursday	Port Colborne	2	Week Two	Area Two	Mostly Urban
Monday	Port Colborne	1a	Week Two	Area Two	Mostly Urban
Monday	Port Colborne	1b	Week Two	Area Two	Rural
Friday	Port Colborne	1b	Week Two	Area Two	Rural
Friday	Port Colborne	1a	Week Two	Area Two	Rural

### St. Catharines

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Thursday	St. Catharines	7	Week One	Area Two	Urban
Wednesday	St. Catharines	7	Week One	Area Two	Urban
Tuesday	St. Catharines	2	Week One	Area Two	Urban
Tuesday	St. Catharines	3	Week One	Area Two	Urban
Tuesday	St. Catharines	4	Week One	Area Two	Urban
Tuesday	St. Catharines	5	Week One	Area Two	Urban
Tuesday	St. Catharines	1	Week One	Area Two	Urban
Monday	St. Catharines	7	Week One	Area Two	Urban
Tuesday	St. Catharines	7	Week One	Area Two	Urban
Tuesday	St. Catharines	6	Week One	Area Two	Urban
Monday	St. Catharines	5	Week One	Area Two	Urban
Monday	St. Catharines	6	Week One	Area Two	Urban
Monday	St. Catharines	2	Week One	Area Two	Urban
Friday	St. Catharines	3	Week One	Area Two	Urban
Wednesday	St. Catharines	1	Week One	Area Two	Urban
Wednesday	St. Catharines	5	Week One	Area Two	Urban
Wednesday	St. Catharines	3	Week One	Area Two	Urban
Friday	St. Catharines	4	Week One	Area Two	Urban
Friday	St. Catharines	6	Week One	Area Two	Urban
Friday	St. Catharines	2a	Week One	Area Two	Urban
Friday	St. Catharines	1	Week One	Area Two	Urban
Monday	St. Catharines	1	Week One	Area Two	Mostly Urban
Friday	St. Catharines	2b	Week One	Area Two	Urban
Thursday	St. Catharines	1a	Week One	Area Two	Small Part Urban
Friday	St. Catharines	7	Week One	Area Two	Urban
Thursday	St. Catharines	3	Week One	Area Two	Mostly Urban
Thursday	St. Catharines	2	Week One	Area Two	Mostly Urban
Thursday	St. Catharines	4	Week One	Area Two	Urban
Wednesday	St. Catharines	6	Week One	Area Two	Urban
Wednesday	St. Catharines	4	Week One	Area Two	Urban
Thursday	St. Catharines	6	Week One	Area Two	Urban
Thursday	St. Catharines	5	Week One	Area Two	Urban
Thursday	St. Catharines	1b	Week One	Area Two	Rural
Wednesday	St. Catharines	2	Week One	Area Two	Urban
Friday	St. Catharines	5	Week One	Area Two	Urban
Monday	St. Catharines	4	Week One	Area Two	Urban
Monday	St. Catharines	3	Week One	Area Two	Urban

## Thorold

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Wednesday	Thorold	1	Week One	Area One	Half Urban
Thursday	Thorold	1	Week One	Area One	Urban
Friday	Thorold	1	Week One	Area One	Urban
Monday	Thorold	1a	Week One	Area One	Urban
Tuesday	Thorold	1a	Week One	Area One	Part Urban
Tuesday	Thorold	1b	Week One	Area One	Part Urban
Monday	Thorold	1b	Week One	Area One	Urban
Wednesday	Thorold	2	Week One	Area One	Half Urban
Monday	Thorold	2a	Week One	Area One	Part Urban
Tuesday	Thorold	2a	Week One	Area One	Rural
Monday	Thorold	2b	Week One	Area One	Part Urban
Tuesday	Thorold	2b	Week One	Area One	Rural

## Wainfleet

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Monday	Wainfleet	1	Week One	Area One	Rural
Monday	Wainfleet	2	Week One	Area One	Rural
Monday	Wainfleet	3	Week One	Area One	Rural

## Welland

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Monday	Welland	1	Week Two	Area Two	Mostly Urban
Friday	Welland	1	Week Two	Area Two	Urban
Tuesday	Welland	3	Week Two	Area Two	Urban
Tuesday	Welland	2	Week Two	Area Two	Urban
Wednesday	Welland	3	Week Two	Area Two	Urban
Thursday	Welland	3	Week Two	Area Two	Urban
Friday	Welland	2	Week Two	Area Two	Urban
Thursday	Welland	2	Week Two	Area Two	Urban
Wednesday	Welland	1b	Week Two	Area Two	Urban
Wednesday	Welland	2a	Week Two	Area Two	Urban
Tuesday	Welland	1	Week Two	Area Two	Urban
Thursday	Welland	1	Week Two	Area Two	Urban
Wednesday	Welland	2b	Week Two	Area Two	Urban
Wednesday	Welland	1a	Week Two	Area Two	Urban
Monday	Welland	2a	Week Two	Area Two	Mostly Urban
Monday	Welland	2b	Week Two	Area Two	Urban
Friday	Welland	4	Week Two	Area Two	Urban
Friday	Welland	3	Week Two	Area Two	Urban
Monday	Welland	3a	Week Two	Area Two	Part Urban
Monday	Welland	3b	Week Two	Area Two	Rural



### West Lincoln

Collection Day	Municipality	Route	Collection Week	Collection Area	Waste Management Urban Rural Designation
Tuesday	West Lincoln	1a	Week One	Area One	Rural
Wednesday	West Lincoln	1a	Week One	Area One	Rural
Thursday	West Lincoln	1a	Week One	Area One	Small Urban Part
Friday	West Lincoln	1a	Week One	Area One	Rural
Wednesday	West Lincoln	1b	Week One	Area One	Rural
Friday	West Lincoln	1b	Week One	Area One	Rural
Thursday	West Lincoln	1b	Week One	Area One	Small Urban Part
Tuesday	West Lincoln	1b	Week One	Area One	Rural
Thursday	West Lincoln	2	Week One	Area One	Urban



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<sup>1</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services.

<sup>2</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services.

<sup>3</sup> Statistics Canada, 2023. *Regional Municipality of Niagara Census Profile, 2021 Census of Population*. Retrieved April 9, 2024 from: [Niagara Region 2021 Census of Population \(https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?DGUIDlist=2021A00033526&GENDERlist=1&HEADERlist=0&Lang=E&STATISTIClist=1&SearchText=Niagara\)](https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?DGUIDlist=2021A00033526&GENDERlist=1&HEADERlist=0&Lang=E&STATISTIClist=1&SearchText=Niagara)

<sup>4</sup> Regional Municipality of Niagara, 2022. *Making Our Mark: Niagara Official Plan*. Retrieved April 9, 2024 from: [Niagara Official Plan: Making our Mark \(https://www.niagararegion.ca/official-plan/pdf/2022-niagara-official-plan.pdf\)](https://www.niagararegion.ca/official-plan/pdf/2022-niagara-official-plan.pdf)

<sup>5</sup> Regional Municipality of Niagara, 2023. *Council Strategic Priorities 2023-2026*. Retrieved April 9, 2024 from: [Growing Better Together: Council Strategic Priorities 2023 to 2026 \(https://www.niagararegion.ca/priorities/\)](https://www.niagararegion.ca/priorities/)

<sup>6</sup> Regional Municipality of Niagara, 2024. *Niagara Priority Profiles – Age Groups*. Retrieved April 9 from: [Niagara Region’s Priority Profiles for Age Groups \(https://www.niagararegion.ca/health/equity/pdf/priority-profile-age.pdf\)](https://www.niagararegion.ca/health/equity/pdf/priority-profile-age.pdf)

<sup>7</sup> Regional Municipality of Niagara, 2024. *Niagara Priority Profiles – Age Groups*. Retrieved April 9 from: [Niagara Region’s Priority Profiles for Age Groups \(https://www.niagararegion.ca/health/equity/pdf/priority-profile-age.pdf\)](https://www.niagararegion.ca/health/equity/pdf/priority-profile-age.pdf)

<sup>8</sup> Regional Municipality of Niagara, 2024. *Niagara Priority Profiles – Ethno-Racial & Immigration*. Retrieved April 9 from: [Niagara Priority Profiles for Ethno Racial and Immigration \(https://www.niagararegion.ca/health/equity/pdf/priority-profile-immigration.pdf\)](https://www.niagararegion.ca/health/equity/pdf/priority-profile-immigration.pdf)

<sup>9</sup> Regional Municipality of Niagara, 2024. *Niagara Priority Profiles – Ethno-Racial & Immigration*. Retrieved April 9 from: [Niagara Priority Profiles for Ethno Racial and Immigration \(https://www.niagararegion.ca/health/equity/pdf/priority-profile-immigration.pdf\)](https://www.niagararegion.ca/health/equity/pdf/priority-profile-immigration.pdf)

<sup>10</sup> Regional Municipality of Niagara, 2024. *Niagara Priority Profiles – Ethno-Racial & Immigration*. Retrieved April 9 from: [Niagara Priority Profiles for Ethno Racial and Immigration \(https://www.niagararegion.ca/health/equity/pdf/priority-profile-immigration.pdf\)](https://www.niagararegion.ca/health/equity/pdf/priority-profile-immigration.pdf)

<sup>11</sup> Regional Municipality of Niagara, 2024. *Niagara Priority Profiles – Ethno-Racial & Immigration*. Retrieved April 9 from: [Niagara Priority Profiles for Ethno Racial and Immigration \(https://www.niagararegion.ca/health/equity/pdf/priority-profile-immigration.pdf\)](https://www.niagararegion.ca/health/equity/pdf/priority-profile-immigration.pdf)

<sup>12</sup> Regional Municipality of Niagara, 2024. *Niagara Priority Profiles – Low Income*. Retrieved April 9 from: [Niagara Priority Profiles for Low Income \(https://www.niagararegion.ca/health/equity/pdf/priority-profile-low-income.pdf\)](https://www.niagararegion.ca/health/equity/pdf/priority-profile-low-income.pdf)

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- <sup>13</sup> Regional Municipality of Niagara, 2024. *Niagara Priority Profiles – Low Income*. Retrieved April 9 from: [Niagara Priority Profiles for Low Income \(https://www.niagararegion.ca/health/equity/pdf/priority-profile-low-income.pdf\)](https://www.niagararegion.ca/health/equity/pdf/priority-profile-low-income.pdf)
- <sup>14</sup> Regional Municipality of Niagara, 2024. *Workforce, Niagara Economic Development*
- <sup>15</sup> Regional Municipality of Niagara, 2024. *Economic Development Strategy*
- <sup>16</sup> Government of Canada, 2021. *2021 Census of Population – Niagara, Regional municipality*
- <sup>17</sup> Regional Municipality of Niagara, 2019. *Niagara Economic Update*
- <sup>18</sup> Regional Municipality of Niagara, 2024. *Economic Trade Corridor*
- <sup>19</sup> Regional Municipality of Niagara, 2024. *Economic Development Strategy*
- <sup>20</sup> Regional Municipality of Niagara, 2020. *CAO 18-2020 Appendix 10 – Organizational Charts – The Present Years*. Retrieved April 9, 2024 from [Niagara Region’s Organizational Chart \(https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=10379\)](https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=10379)
- <sup>21</sup> Statistics Canada, 2023. *Census Profile, 2021 Census of Population*. Retrieved April 9, 2024 from: [Niagara Region 2021 Census of Population \(https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?DGUIDlist=2021A00033526&GENDERlist=1&HEADERlist=0&Lang=E&STATISTIClist=1&SearchText=Niagara\)](https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?DGUIDlist=2021A00033526&GENDERlist=1&HEADERlist=0&Lang=E&STATISTIClist=1&SearchText=Niagara)
- <sup>22</sup> Municipal Property Assessment Corporation, 2023. *Unit Count Data - Regional Municipality of Niagara Waste Management*.
- <sup>23</sup> Statistics Canada, 2011. *Regional Municipality of Niagara Census Profile, 2011 Census of Population*. Retrieved April 9, 2024 from: [Niagara Region 2011 Census Profile \(https://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CD&Code1=3526&Geo2=PR&Code2=35&Data=Count&SearchText=niagara&SearchType=Begin&SearchPR=01&B1=All&Custom=&TABID=1\)](https://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CD&Code1=3526&Geo2=PR&Code2=35&Data=Count&SearchText=niagara&SearchType=Begin&SearchPR=01&B1=All&Custom=&TABID=1)
- <sup>24</sup> Statistics Canada, 2021. *Regional Municipality of Niagara Census Profile, 2016 Census of Population*. Retrieved April 9, 2024 from: [Niagara Region 2016 Census Profile \(https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CD&Code1=3526&Geo2=PR&Code2=35&SearchText=Niagara&SearchType=Begin&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=3526&TABID=1&type=0\)](https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CD&Code1=3526&Geo2=PR&Code2=35&SearchText=Niagara&SearchType=Begin&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=3526&TABID=1&type=0)
- <sup>25</sup> Statistics Canada, 2023. *Regional Municipality of Niagara Census Profile, 2021 Census of Population*. Retrieved April 9, 2024 from: [Niagara Region 2021 Census of Population \(https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?DGUIDlist=2021A00033526&GENDERlist=1&HEADERlist=0&Lang=E&STATISTIClist=1&SearchText=Niagara\)](https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?DGUIDlist=2021A00033526&GENDERlist=1&HEADERlist=0&Lang=E&STATISTIClist=1&SearchText=Niagara)
- <sup>26</sup> Regional Municipality of Niagara, 2023. *Council Strategic Priorities 2023-2026*. Retrieved April 9, 2024 from: [Growing Better Together: Council Strategic Priorities 2023-2026 - Niagara Region, Ontario \(https://www.niagararegion.ca/priorities/\)](https://www.niagararegion.ca/priorities/)
- <sup>27</sup> Regional Municipality of Niagara, 2022. *Making Our Mark: Niagara Official Plan*. Retrieved April 9, 2024 from: [Niagara Official Plan: Making our Mark \(niagararegion.ca\) \(https://www.niagararegion.ca/official-plan/pdf/2022-niagara-official-plan.pdf\)](https://www.niagararegion.ca/official-plan/pdf/2022-niagara-official-plan.pdf)

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- <sup>29</sup> Regional Municipality of Niagara, 2022. To Regulate the Use of the Waste Management System, By-Law No. 2022-32
- <sup>30</sup> Town of Fort Erie, 2008. To Prescribe Standards for the Maintenance and Occupancy of Property, By-Law No. 186-08
- <sup>31</sup> Town of Grimsby, 2021. Clean Yards, By-Law No. 21-70
- <sup>32</sup> Town of Lincoln, 2018. Clean Yards, By-Law No. 2018-92
- <sup>33</sup> City of Niagara Falls, 2007. To Regulate the Maintaining of Land in a Clean and Clear Condition, By-Law No. 2007
- <sup>34</sup> Town of Niagara-on-the-Lake, 2020. By-Law No. 5190-19, For Maintaining Land in a Clean and Clear Condition, By-Law No. 5190-19
- <sup>35</sup> Town of Pelham, 2022. To Regulate the Cleaning, Clearing and Maintenance of Land, By-Law No. 4496 (2022)
- <sup>36</sup> City of Port Colborne, 2002. For the Maintenance and Occupancy of Property, By-Law No. 4299/135/02
- <sup>37</sup> City of St. Catharines, 2020. To Prohibit the Use of Certain Lands for the Disposal of Waste and Establish Standards Respecting Their Maintenance, By-Law No. 2020-106
- <sup>38</sup> City of Thorold, 2019. Respecting Litter, Yard Waste, and the Maintenance of Property, By-Law No. 146-2019
- <sup>39</sup> Township of Wainfleet, 2021. For Maintenance of Yards, By-Law No. 016-2021
- <sup>40</sup> City of Welland, 2019. To Provide Regulations for Maintaining Land in A Clean and Clear Condition, By-Law No. 2019-135
- <sup>41</sup> Township of West Lincoln, 2019. Respecting Litter, Yard Waste, and the Maintenance of Property, By-Law No. 2019-38
- <sup>42</sup> Government of Ontario, 2016. *WasteFree- Ontario Act, 2016*, S.O.2016, c. 12-Bill 151
- <sup>43</sup> Government of Ontario, 2016. *Resource Recovery and Circular Economy Act, 2016*, S.O.2016, C. 12, Sched. 1
- <sup>44</sup> Government of Ontario, 2016. *Waste Diversion Transition Act, 2016*, S.O. 2016, C. 12, Sched. 2
- <sup>45</sup> Government of Ontario, 2017. *Strategy for a Waste-Free Ontario: Building the Circular Economy*. Ministry of the Environment and Climate Change, pp.1-45.
- <sup>46</sup> Rpra.ca. 2024. *The Resource Productivity and Recovery Authority*. Retrieved April 9, 2024 from: [RPRRA Webpage \(https://rpra.ca/\)](https://rpra.ca/)
- <sup>47</sup> Government of Ontario, 2018. Food and Organic Waste Framework
- <sup>48</sup> Government of Ontario, 2018. The Food and Organic Waste Policy Statement
- <sup>49</sup> Government of Ontario, 1990. *Environmental Assessment Act*, R.S.O. 1990, c. E.18
- <sup>50</sup> Government of Ontario, 2020. *COVID-19 Economic Recovery Act, 2020*, S.O. 2020, c. 18
- <sup>51</sup> Ontario Waste Management Association [now Waste To Resource Ontario], 2021. State of Waste in Ontario: Landfill Report, January 2021

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<sup>52</sup> Ibid.

<sup>53</sup> Government of Canada, 2020. *A Proposed Integrated Management Approach to Plastic Products to Prevent Waste and Pollution*. Gatineau: Environment and Climate Change Canada, pp.3-20.

<sup>54</sup> Government of Canada, 2020, updated 2024. *Single-use Plastics Prohibition Regulations*

<sup>55</sup> Government of Canada, 2018. *Canada-Wide Strategy on Zero Plastic Waste, 2018*

<sup>56</sup> Government of Canada, 2018. *Ocean Plastics Charter*

<sup>57</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix G – Niagara Region Waste Management Curbside Collection Services Summary*.

<sup>58</sup> Regional Municipality of Niagara, 2024. *Residential Blue Box/Grey Box Transition*. Retrieved April 9, 2024 from [Niagara Region's Residential Blue Box/Grey Box Transition \(https://www.niagararegion.ca/projects/blue-box-transition/default.aspx\)](https://www.niagararegion.ca/projects/blue-box-transition/default.aspx)

<sup>59</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix H – Enhanced Level of Service*.

<sup>60</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F - Waste Management Services Frequently Asked Questions*.

<sup>61</sup> Closed in 2016, waste and recycling Drop-off is still open and it gets transferred to Humberstone landfill

<sup>62</sup> 'Other items' refers to commonly accepted materials at the Drop-off Depots and includes residential/commercial waste, tires, electronics and fats, oils and grease.

<sup>63</sup> Regional Municipality of Niagara, 2021. *2021 Corporate Asset Management Plan*. Retrieved April 9, 2024 from: [Niagara Region's 2021 Corporate Asset Management Plan \(https://niagararegion.ca/projects/asset-management/pdf/asset-management-plan.pdf\)](https://niagararegion.ca/projects/asset-management/pdf/asset-management-plan.pdf)

<sup>64</sup> Port Colborne High School. *The "Broken Spoke" Bike Program*. Retrieved on May 14, 2024, from: [Port Colborne - Broken Spoke Bike Program \(dsbn.org\) \(https://porthigh.dsb.org/clubs/broken-spoke-bike\)](https://porthigh.dsb.org/clubs/broken-spoke-bike)

<sup>65</sup> Regional Municipality of Niagara. *Textile Donation/ Recycling Programs*. Retrieved on May 14, 2024 from: [Textile Donation/Recycling Programs - Niagara Region, Ontario \(https://www.niagararegion.ca/waste/disposal/items/textile.aspx\)](https://www.niagararegion.ca/waste/disposal/items/textile.aspx)

<sup>66</sup> Regional Municipality of Niagara. *Textile Donation/ Recycling Programs*. Retrieved on May 14, 2024 from: [Textile Donation/Recycling Programs - Niagara Region, Ontario \(https://www.niagararegion.ca/waste/disposal/items/textile.aspx\)](https://www.niagararegion.ca/waste/disposal/items/textile.aspx)

<sup>67</sup> Regional Municipality of Niagara, 2023. *Garbage, Recycling and Organics*. Retrieved April 9, 2024 from [Garbage, Recycling and Organics \(https://niagararegion.ca/waste/\)](https://niagararegion.ca/waste/)

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<sup>68</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F - Waste Management Services Frequently Asked Questions.*

<sup>69</sup> Regional Municipality of Niagara. *Items Picked Up on your Collection Day.* Retrieved on March 28, 2024 from: Items Picked Up on your Collection Day in Niagara Region Webpage (<https://niagararegion.ca/waste/collection/items/default.aspx?landing=1>)

<sup>70</sup> Regional Municipality of Niagara. *Items Picked Up on your Collection Day.* Retrieved on March 28, 2024 from: Items Picked Up on your Collection Day in Niagara Region Webpage (<https://niagararegion.ca/waste/collection/items/default.aspx?landing=1>)

<sup>71</sup> This information was pulled from *Appendix G – Niagara Region Waste Management Curbside Collection Services Summary* of the RFP in conjunction with the final Tonnage and Financial Model provided by the Region.

<sup>72</sup> No curbside collection for garbage, recycling and organics to any IC&I buildings greater than three storeys excluding Regional and Municipal facilities, Regional agencies, boards and commissions and mixed used properties with residential components. IC&I collection is available to properties inside the designated business areas and outside the designated business areas including commercial farms. IC&I curbside collection also includes municipal and regional agencies.

<sup>73</sup> Residue was included in the garbage tonnages value.

<sup>74</sup> This estimate is based on the TCM model provided by the Region and is based off tonnages documented in the “TONNAGES” sheet. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>75</sup> This estimate is based on the TCM model provided by the Region and is based off tonnages documented in the “TONNAGES” sheet. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>76</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F - Waste Management Services Frequently Asked Questions.*

<sup>77</sup> Residue was included in the garbage tonnages value.

<sup>78</sup> This estimate is based on the TCM model provided by the Region and is based off tonnages documented in the “TONNAGES” sheet. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>79</sup> Regional Municipality of Niagara. *Waste Collection Areas.* Retrieved on April 2, 2024 from: Niagara Region’s Data Hub for Waste Collection Areas (<https://open.niagararegion.ca/datasets/NiagaraRegion::waste-collection-areas/explore?location=43.035973%2C-79.376658%2C11.56>)

<sup>80</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services. The non-eligible and IC&I sources still remain the Region’s responsibility. The Region also still does accept residential recycling at Drop-off depots.

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<sup>81</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services. The non-eligible and IC&I sources still remain the Region's responsibility. The Region also still does accept residential recycling at drop-off depots.

<sup>82</sup> Miller Waste Systems, 2020. *A new Partnership with Niagara Region*. Retrieved on April 4, 2024 from: [Miller Waste's partnership with Niagara Region](#)

(<https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=11786>)

<sup>83</sup> Municipal Property Assessment Corporation, 2023. Unit Count Data [Regional Municipality of Niagara Waste Management

<sup>84</sup> Municipal Property Assessment Corporation, 2023. Unit Count Data [Regional Municipality of Niagara Waste Management

<sup>85</sup> Regional Municipality of Niagara, 2021. *WMPSC-C 34-2021*. Retrieved on April 4, 2024, from: [Overview of 2020 to 2021 Curbside Waste Composition Study Results](#)

(<https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=19540>)

<sup>86</sup> This estimate is based on the TCM model provided by the Region and is based off tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road and Walker Environmental Group sites. As stated in Section 1.3, Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>87</sup> This estimate is based on the TCM model provided by the Region and is based off curbside collected tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group and MRF sites. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>88</sup> This estimate is based on the TCM model provided by the Region and is based off curbside collected tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group and MRF sites. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>89</sup> This estimate is based on the TCM model provided by the Region and is based off self-hauled collected tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group and MRF sites. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>90</sup> This estimate is based on the TCM model provided by the Region and is based off self-hauled collected tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group and MRF sites. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>91</sup> This estimate is based on the TCM model provided by the Region and is based off self-hauled collected tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group and MRF sites. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>92</sup> 'Other' includes: MHSW, white goods, C&D, scrap metal, tires, electronics, textiles, reuse, carpets/underpads, mattresses, fats/oils/grease, mixed plastics, bikes and porcelain.



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<sup>93</sup> Regional Municipality of Niagara, 2023. 2023RFP209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F – Waste Management Services Frequently Asked Questions.

<sup>94</sup> Regional Municipality of Niagara, 2021. PW 37-2021. Retrieved on April 9, 2024 from: [Expansion of the Walker Environmental Group Composting Facility Committee Meeting Minutes \(https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=17951\)](https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=17951)

<sup>95</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F – Waste Management Services Frequently Asked Questions.*

<sup>96</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services. Currently the non-eligible sources still remain the Region's responsibility and the Region continues to accept residential recycling at Drop-off depots.

<sup>97</sup> This estimate is based on the TCM model provided by the Region and is based off diverted tonnages of organics documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group Thorold and MRF sites. As stated in Section 1.3, the Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>98</sup> This estimate is based on the TCM model provided by the Region and is based off diverted tonnages of recyclables documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group Thorold and MRF sites. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>99</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services. The non-eligible and IC&I sources still remain the Region's responsibility. The Region also still does accept residential recycling at Drop-off depots.

<sup>100</sup> This estimate is based on the TCM model provided by the Region and is based off total diverted tonnages of recyclables, organics, MHSW, white goods, C&D, scrap metal, tires, electronics, textiles, reuse, carpets/underpads, mattresses/box springs, fats/oils/grease, mixed plastics, recycled bicycles, porcelain and bulky materials and the total landfilled tonnages. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>101</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services. The non-eligible and IC&I sources still remain the Region's responsibility. The Region also still does accept residential recycling at Drop-off depots.

<sup>102</sup> This estimate is based on the TCM model provided by the Region and is based off organics residue tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road and Walker Environmental Group Thorold sites. As stated in Section 1.3, the Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>103</sup> This estimate is based on the TCM model provided by the Region and is based off organics residual and diverted tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road and Walker Environmental Group sites. As stated in Section 1.3, the Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

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<sup>104</sup> This estimate is based on the TCM model provided by the Region and is based off recyclables residue recycling tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group Thorold and MRF sites. As stated in Section 1.3, the Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>105</sup> This estimate is based on the TCM model provided by the Region and is based off residual and diverted recycling tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group Thorold and MRF sites. As stated in Section 1.3, the Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>106</sup> Regional Municipality of Niagara, 2021. *WMPSC-C 34-2021*. Retrieved on April 4, 2024, from: [Overview of 2020 to 2021 Curbside Waste Composition Study Results](#)

**(<https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=19540>)**

<sup>107</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F – Waste Management Services Frequently Asked Questions*.

<sup>108</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F – Waste Management Services Frequently Asked Questions*.

<sup>109</sup> It is important to note that landfilling activities only occur at the Humberstone Road and Niagara Road 12 landfills.

<sup>110</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F – Waste Management Services Frequently Asked Questions*.

<sup>111</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F – Waste Management Services Frequently Asked Questions*.

<sup>112</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F – Waste Management Services Frequently Asked Questions*.

<sup>113</sup> Regional Municipality of Niagara, 2023. *2023-RFP-209 Consultation Services for Stakeholder Engagement, Research and Report Development of the Waste Management Strategic Plan (WMSP), Appendix F - Waste Management Services Frequently Asked Questions*.

<sup>114</sup> The list of household waste, leaf and yard waste and recyclables accepted at the Walker Drop-off depot site is available at [Niagara - Walker Industries \(https://walkerind.com/niagara/\)](https://walkerind.com/niagara/)

<sup>115</sup> Regional Municipality of Niagara, 2023. *Public Drop-off and Disposal System Review*. Retrieved on April 9, 2024 from: [Technical Memo 6 - Review of Existing Disposal Capacity \(https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-6-review-of-existing-disposal-capacity.pdf\)](https://www.niagararegion.ca/projects/waste-management-strategic-plan/pdf/technical-memo-6-review-of-existing-disposal-capacity.pdf)

<sup>116</sup> This estimate is based on the TCM model provided by the Region and is based off tonnages landfilled documented at the Niagara Road 12, Humberstone Road, Walker Environmental Group

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Thorold and MRF sites. As stated in Section 1.3, the Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>117</sup> Regional Municipality of Niagara, 2023. *Budget Summary*. Retrieved on April 9, 2024 from: [Niagara Region 2023 Budget Summary](#)

(<https://www.niagararegion.ca/government/budget/pdf/budget-summary-2023.pdf>)

<sup>118</sup> Regional Municipality of Niagara, 2023. *PDS 17-2022*. Retrieved on April 15, 2024, from: [Niagara Region Official Plan Adoption Recommendation](#)

(<https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=26749>)

<sup>119</sup> Government of Ontario, 2021. *Ontario population projections*. Retrieved on April 9, 2024, from: [Ontario population projections](#) (<https://www.ontario.ca/page/ontario-population-projections>)

<sup>120</sup> Government of Ontario. *More Homes Built Faster Act, 2022, S.O. 2022, c. 21 - Bill 23*.

Retrieved April 9, 2024, from: [More Homes Built Faster Act, 2022, S.O. 2022, c. 21 - Bill 23](#)

(<https://www.ontario.ca/laws/statute/s22021>.)

<sup>121</sup> Government of Ontario. *More Homes, More Choice: Ontario's Housing Supply Action Plan*.

Retrieved April 9, 2024, from: [Archived - More Homes, More Choice: Ontario's Housing Supply Action Plan](#)

(<https://www.ontario.ca/page/more-homes-more-choice-ontarios-housing-supply-action-plan>)

<sup>122</sup> Environmental Registry of Ontario, 2022. *2031 Housing Target, Ministry of Municipal Affairs and Housing*. Retrieved April 9, 2024, from: [2031 Municipal Housing Targets from Environmental Registry of Ontario](#) (<https://ero.ontario.ca/notice/019-6171>)

<sup>123</sup> Regional Municipality of Niagara, 2023. *Niagara Official Plan*. Retrieved on April 11, 2024, from: [Niagara Official Plan: Making our Mark](#)

(<https://www.niagararegion.ca/official-plan/pdf/2022-niagara-official-plan.pdf>)

<sup>124</sup> This projection is based on the TCM model provided by the Region.

<sup>125</sup> This projection is based on the TCM model provided by the Region.

<sup>126</sup> This is based on the ratio of 17 employees per business which is the ratio utilized in 2019 and 2022 in the Region's TCM. The projected number of employees also comes from the TCM model.

<sup>127</sup> This estimate is based on the TCM model provided by the Region and is based off tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road and Walker Environmental Group Thorold and is net of residue. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis. In addition, the predictive tonnage recyclables tonnages were removed due to the producer responsibility transition.

<sup>128</sup> This estimate is based on the TCM model provided by the Region and is based off tonnages documented at the Bridge Street, Niagara Road 12, Humberstone Road, Walker Environmental Group Thorold and MRF sites. As stated in Section 1.3, the RPRA credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>129</sup> Projection of capacity used and remaining is from LLM provided by the Region.

<sup>130</sup> Projection of capacity used and remaining is from LLM provided by the Region.

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<sup>131</sup> Projection is from TCM provided by the Region and contains expenses and revenues for each program except costs for recyclables since the Region is no longer managing the program.

<sup>132</sup> Projection comes from the Regions LLM. Due to change in accounting policy effective for the December 31, 2023 year end, the Landfill Liability Model (LLM) was replaced with the Asset Retirement Obligation (ARO). The increase between 2022 and 2023 is reflective of the change in accounting policy. The large increase in the obligation following the change in accounting policy is due to the LLM looking at the landfill post closure care costs for 40 years, whereas the ARO model is complete lifespan model, not constricted for 40 years, and reflects both the open and closed landfill sites.

<sup>133</sup> Regional Municipality of Niagara, 2023. *Development Charges Background Study*. Retrieved on April 11, 2024, from: [Niagara Region Development Charges Report \(https://www.niagararegion.ca/business/property/pdf/2022-dc-background-study.pdf\)](https://www.niagararegion.ca/business/property/pdf/2022-dc-background-study.pdf)

<sup>134</sup> Regional Municipality of Niagara, 2021. *2021 Corporate Asset Management Plan*. Retrieved on April 11, 2024, from: [2021 Corporate Asset Management Plan \(https://niagararegion.ca/projects/asset-management/pdf/asset-managment-plan.pdf\)](https://niagararegion.ca/projects/asset-management/pdf/asset-managment-plan.pdf)

<sup>135</sup> Government of Ontario, 2016. *WasteFree- Ontario Act, 2016, S.O. 2016, c. 12 – Bill 151*. Retrieved on April 11, 2024, from: [WasteFree- Ontario Act, 2016, S.O. 2016, c. 12 - Bill 151 \(https://www.ontario.ca/laws/statute/s16012\)](https://www.ontario.ca/laws/statute/s16012)

<sup>136</sup> Government of Ontario, 2016. *Strategy for a Waste-Free Ontario: Building the Circular Economy*. Retrieved on April 11, 2024, from: [Strategy for a WasteFree- Ontario: Building the Circular Economy \(https://www.ontario.ca/page/strategy-waste-free-ontario-building-circular-economy\)](https://www.ontario.ca/page/strategy-waste-free-ontario-building-circular-economy)

<sup>137</sup> Government of Ontario, 2016. *Strategy for a Waste-Free Ontario: Building the Circular Economy*. Retrieved on April 11, 2024, from: [Strategy for a WasteFree- Ontario: Building the Circular Economy \(https://www.ontario.ca/page/strategy-waste-free-ontario-building-circular-economy\)](https://www.ontario.ca/page/strategy-waste-free-ontario-building-circular-economy)

<sup>138</sup> This estimate is based on the TCM model provided by the Region and as stated in Section 1.3, the RPRC credits and Haldimand and Waterloo tonnages were also excluded for the purposes of this analysis.

<sup>139</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services. The noneligible and IC&I sources still remain the Region's responsibility. The Region also still does accept residential recycling at Drop-off- depots.

<sup>140</sup> This estimate is based on exclusion of Haldimand tonnages, Waterloo tonnages and other material tonnages not managed by the Region with the exception of the Walker Environmental Group facilities. As stated in Section 1.3, the RPRC credits were also excluded.

<sup>141</sup> Data was provided by the Region.

<sup>142</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services.

<sup>143</sup> As of January 1, 2024, Niagara Region is no longer responsible for residential Blue/Grey Box recycling collection services.