

Ridge Landfill Expansion Environmental Assessment

Supporting Document #2

Alternatives to the Undertaking

Ridge Landfill Expansion Terms of Reference

December 2017

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1.0 Introduction and Background

Waste Connections of Canada (Waste Connections) is undertaking an Environmental Assessment (EA) pursuant to the *Environmental Assessment Act* with respect to the approaching exhaustion of the approved capacity at the Ridge Landfill (the Ridge). The Ridge, located near Blenheim, has been serving Ontario industrial, commercial and institutional (IC&I) waste generators since 1966 and is currently permitted to receive 1,300,000 million tonnes of waste per annum. The Ridge currently disposes of approximately 25% of all of the IC&I residual waste generated in southern and central Ontario each year. At the current waste disposal rate, the site is expected to reach its approved capacity in 2021.

Waste Connections operates the largest integrated IC&I waste collection, recycling, transfer and disposal business in Ontario. Waste Connections currently owns and operates 18 facilities (including the Ridge) servicing IC&I generators in the service area (i.e. southern and central Ontario). This efficient integrated collection, recycling, transfer and disposal business, of which the Ridge is a key part, is a major component of the Ontario IC&I waste management system. Waste Connections' operations in the service area have a total economic impact in Ontario of over \$200 million per year, including expenditures in direct employment and with third party vendors to Waste Connections. From a Waste Connections company-specific perspective, there is a clear opportunity to continue to utilize the significant investments the company has made in this integrated system after 2021 to continue to service approximately 25% of the IC&I residual waste market in southern and central Ontario and its host municipality of Chatham-Kent.

Waste Connections is proposing to undertake an EA to secure additional residual waste disposal capacity in order to continue providing integrated waste management services at the Ridge Landfill over the planning period (2022-2041). This purpose and opportunity for Waste Connections is supported by an assessment of projected annual quantities of residual IC&I waste requiring disposal (assuming the MOECC's diversion targets in the *Strategy for a Waste-Free Ontario* are achieved) compared to the estimated available annual waste disposal rates in the service area assuming all proposed new and expanded disposal facilities are approved (see Supporting Document #1, provided under separate cover).

The MOECC *Code of Practice for Preparing and Reviewing Environmental Assessment Terms of Reference* (2014) provides guidance for consideration of a reasonable range of alternatives. The Code of Practice recognizes that private companies may not be able to implement some alternative ways of managing waste and also provides guidance on focusing a Terms of Reference. Waste Connections has prepared a focused Terms of Reference under Section 6(2)(c) of the *Environmental Assessment Act*.

The purpose of this Supporting Document #2 is to describe the evaluation of alternative ways of addressing the identified opportunity to determine which alternative(s) to carry forward into the EA.

2.0

Identification of Alternatives to Address the Purpose/Opportunity

As noted in **Section 1** above and described in more detail in Supporting Document #1, there is an overall projected disposal capacity deficit for IC&I residual waste from southern and central Ontario over the planning period (2022-2041). This presents an opportunity for Waste Connections to continue to be in a position to offer an efficient integrated collection, recycling/processing and disposal service to its IC&I customers in southern and central Ontario during this planning period. To fulfill this opportunity, Waste Connections must address the impending exhaustion of the currently approved capacity of the Ridge, which is projected to occur by the end of 2021. As such, the purpose of this undertaking is to maintain and continue Waste Connections' role in providing IC&I residual waste disposal capacity in the service area of southern and central Ontario.

Waste Connections has identified the following alternatives for securing additional waste disposal capacity and thus addressing the above-described purpose/opportunity:

1. Do Nothing (i.e., benchmark or baseline condition for comparison);
2. Export Waste Out of the Service Area;
3. Thermal Treatment;
4. Increased Waste Diversion; and
5. Landfilling Within the Service Area.

The following subsections explain each of the alternatives and whether they meet the stated business opportunity.

2.1

Do Nothing

This alternative involves continuing landfill operations until the Ridge reaches capacity by the end of 2021 and then closing the Ridge and implementing an appropriate closure plan. Waste disposal is a key component of Waste Connections' efficient integrated waste management services business. The Do Nothing alternative is not acceptable to Waste Connections from a business perspective as exiting the waste disposal business at the Ridge would place Waste Connections at a significant competitive disadvantage in the southern and central Ontario marketplace, would likely drive costs up for its customers, and would materially impair the value and quality of the company's services in Ontario. Closure of the Ridge would lead to local job losses and a significant loss of revenue for the Municipality of Chatham-Kent and economic benefit for local surrounding communities. Chatham-Kent would be forced to seek an alternative waste management services provider at significant cost to the municipality and its residents. This alternative would effectively remove 25% of the IC&I disposal capacity in the service area and require Waste Connections to find an alternative way to address the need to safely dispose of residual waste generated by its customers.

Based on the above, Waste Connections does not intend to proceed with the Do Nothing or status quo alternative; however, the Do Nothing alternative will be carried forward into the EA as a benchmark or baseline against which advantages or disadvantages of the preferred alternative can be compared.

2.2 Export Waste Out of the Service Area

This alternative considers Waste Connections' options to dispose of the 1.3 million tonnes of waste that goes to the Ridge annually at other Waste Connections owned facilities outside of the Ridge service area. Other Waste Connections disposal facilities that were considered include Navan Landfill in Ottawa, Lachenaie Landfill in Quebec, and Brent Run Landfill in Michigan. The following speaks to each of these facilities.

Navan Landfill - Navan Landfill is located southeast of Ottawa. This site has less than 10 years of capacity based on its approved annual waste disposal rate of 234,750 tonnes. The landfill has reached its permitted annual waste disposal rate in 4 out of the last 5 years. The landfill is not permitted to receive putrescible waste or waste from the Greater Toronto Area. Expansion of the site would be required to accept the 1.3 million tonnes of waste from the Ridge service area annually over the next 20 years. It is noted that Waste Connections has reached an agreement with the MOECC and the community that there would be no further expansion of the Navan Landfill.

Given that this landfill is already receiving waste at its annual waste disposal rate, that it is not permitted to receive putrescible waste or waste from the Greater Toronto Area and that expansion will not be permitted, it is not considered feasible to transport waste from the Ridge service area to this facility. In addition, hauling 1.3 million tonnes of waste from the service area to the Navan Landfill would create an additional 8,800 tonnes CO₂e¹ of transportation-related emissions and would cost an additional \$27.6 million per year² compared to hauling it to the Ridge.

Lachenaie Landfill - This landfill is located in Terrebonne, Quebec, northeast of Montreal. This landfill accepts much of the waste from the City of Montreal. It is permitted to accept 1.3 million tonnes of waste annually. The landfill has less than 10 years of remaining capacity based on its approved annual waste disposal rate. Regulation 19 to the Province of Quebec Environmental Quality Act (Regulation respecting the landfilling and incineration of residual materials) does not permit the landfilling of residual materials generated outside of Quebec (item 4(1)).

Given that this landfill is already achieving its annual waste disposal rate and is not permitted to take waste from out of province, it is not considered feasible to transport waste from the Ridge service area

¹ Based on the difference between the distance from each Transfer Station to the Ridge and each Transfer Station to the Navan Landfill.

² Transportation cost based on what Waste Connections is charged from a third party transportation vendor.

to this facility. In addition, hauling 1.3 million tonnes of waste from the service area to the Lachenaie Landfill would create an additional 15,300 tonnes CO₂e³ of transportation-related emissions and would cost an additional \$48.2 million per year² compared to hauling it to the Ridge.

Brent Run Landfill - Brent Run landfill is located northeast of Flint, Michigan near the community of Montrose. The landfill has approximately 17 years of capacity remaining at a current fill rate of approximately 780,000 tonnes per year. Using this site for the waste currently going to the Ridge would require Waste Connections to find another disposal location for the customers currently using Brent Run landfill or to expand the landfill to accept an additional 1.3 million tonnes of waste annually over the 20-year planning period. Waste Connections does not have sufficient land to expand this site laterally. To expand the landfill, Waste Connections would have to apply for and receive approval from Michigan State Department of Environmental Quality.

The Brent Run landfill is approximately 245 km from the Ridge Landfill and approximately 145 km from the western boundary of the service area.⁴ Transporting waste to Brent Run would not be cost effective for Waste Connections. As much of the IC&I waste that goes to the Ridge comes from east of the site, continuing to Brent Run would add an additional 245 km to these trips. In addition, this travel would result in an additional 5,500 tonnes CO₂e⁵ of transportation-related emissions and would cost an additional \$17.3 million per year² compared to hauling it to the Ridge. It is also noted that transporting waste across an international border poses a potential risk should that border be closed for any reason.

Given the above, Brent Run does not have the capacity to address the business opportunity in the service area, and transport of waste to the Brent Run landfill in the U.S. would place Waste Connections at a competitive disadvantage in the Ontario market it is not considered to be feasible to transport waste from the Ridge service area to this facility.

Based on the above, exporting waste outside of the service area is not considered to be a feasible way to address the business opportunity identified in this Terms of Reference.

2.3 Thermal Treatment

Thermal treatment technologies involve applying heat to waste through complex industrial processes to significantly reduce volume and generate energy. Thermal treatment typically does not eliminate the

³ Based on the difference between the distance from each Transfer Station to the Ridge and each Transfer Station to the Lachenaie Landfill.

⁴ The distance to the western boundary of the service area is based on the distance between the landfill and Windsor, Ontario.

⁵ Based on the difference between the distance from each Transfer Station to the Ridge and each Transfer Station to the Brent Run Landfill.

need for landfill disposal; however the residual waste ash volume is significantly reduced. The following summarizes some of the key thermal technologies in use or reported to be available for waste disposal:

- Direct combustion or incineration: This involves burning sorted or unsorted waste under controlled conditions. It can be coupled with energy recovery through the creation of heat, steam or electricity. Combustion technologies result in bottom and top ash residues, with the latter often classified as a hazardous waste.
- Gasification: This process converts organic materials into a gas by applying high temperatures. The process produces a synthetic gas and an inert residue. The gas can be used to generate electricity.
- Pyrolysis: This process heats solid waste in an oxygen-free environment to produce a combustible gas or liquid and a carbon char residue.
- Plasma Arc Gasification: This process uses extremely high temperatures to break down organic waste and produce a synthetic gas.

The most proven technology is direct combustion/incineration. The other technologies have not, to date been proven reliable or viable at a scale that would match that needed to accommodate the 1.3 million tonnes received annually at the Ridge. Waste Connections does not own or operate any thermal treatment facilities and has a corporate philosophy to not build a thermal treatment facility as it runs contrary to the waste diversion infrastructure that Waste Connections has built. Due to high capital and operating costs, Waste Connections also believes that thermal treatment will not provide a cost competitive way to provide disposal services to its IC&I customers. **Attachment A** provides further information on Waste Connections' consideration of thermal treatment.

Given the high capital and operating costs of thermal treatment and the fact that this is not part of Waste Connections' business, this alternative is not considered to be a feasible way for Waste Connections to realize the disposal opportunity identified in this Terms of Reference.

2.4 Increased Waste Diversion

Waste Connections proactively assists its generator customers to divert IC&I waste at source and further works to divert recyclable materials once waste is collected. **Attachment B** to this document provides an overview of Waste Connections' current diversion programs and activities.

The recent Waste-Free Ontario Act, 2016 and the subsequent MOECC document entitled *Strategy for a Waste-Free Ontario, Building a Circular Economy*, set out provincial objectives for increased diversion of waste, whether residential or IC&I, with a target of 50% diversion by 2030 and 80% diversion by 2050. Waste Connections is committed, as part of the Ridge Landfill Expansion EA, to consider opportunities to enhance diversion at source, at the landfill or elsewhere in its waste management system to achieve increased diversion from its IC&I customers in its southern and central Ontario service area. Some of the ongoing and enhanced diversion opportunities that Waste Connections is committed to implementing include:

- Continue to work with its customers to identify opportunities for the segregation of re-usable, recyclable and organic wastes and provide education materials to customers;
- Establish designated collection routes for segregated materials where there are sufficient materials generated at multiple generation sources;
- Proactively work to educate its customers on objectives of the Strategy and the requirements of the *Waste-Free Ontario Act*;
- Continue to inspect inbound loads at waste transfer stations and where noticeable volumes of materials that could be diverted are observed work with customers to help them to develop an at-source separation program;
- Remove recyclable materials received at the waste transfer stations/landfill to a dedicated pile if possible;
- Add an expanded resource recovery area (in the form of a drop-off facility) at the Ridge Landfill for Chatham-Kent customers; and
- Continue collaboration with the Ridge Landfill host community of Chatham-Kent to develop partnership opportunities to support their municipal waste diversion targets and their alignment with the objectives of the *Strategy for a Waste-Free Ontario*.

Increased waste diversion is an important component of Waste Connections' efficient, integrated system. It will assist the province in meeting the targets set out in the Strategy; however, this additional diversion will not reduce the need for the 1.3 million tonnes of capacity per year during the 20 year planning period.

2.5 Landfilling Within the Service Area

Waste Connections does not have the ability to expropriate land to site a new landfill; therefore its ability to develop landfill capacity is inherently constrained to properties owned by the company. New landfill capacity could be developed by expanding an existing landfill site(s) or constructing a new site on Waste Connection property. **Attachment C** to this Supporting Document #2 shows that the Ridge is the largest Waste Connections property in the service area at 340 ha. The remaining properties range from less than 1 ha to approximately 20 ha. A new landfill to accommodate 26 million tonnes of residual waste over the planning period would require sufficient land to accommodate the waste fill area; stormwater management ponds; on-site roads and storage areas; and an office, scale house and drop off areas. It is anticipated that the footprint to accommodate these facilities at a new site would be approximately 200 ha. The Ridge landfill is the only property large enough to accommodate the projected waste opportunity.

Expansion of the Ridge is considered reasonable for Waste Connections to pursue as it allows Waste Connections to continue to provide efficient and integrated waste management services to its customers and fully responds to the stated purpose/opportunity.

The Ridge has been operating successfully since 1966 and thus has a long and well-understood operating history. The site is located in a deep deposit of clay and silt overburden, consistent with the MOECC's Engineered Facilities policy, which expresses a MOECC preference for landfills to be sited in environments that have a high degree of natural protection for groundwater. Ground and surface water monitoring at the site has shown the site to be extremely effective in protecting ground and surface water. This is an important benefit for Waste Connections' customers as well as for the province.

Landfilling within the service area through an expansion of the Ridge is Waste Connections' preferred alternative to address the business purpose/opportunity identified in the Terms of Reference.

3.0

Conclusions

Overall it is concluded that Export of Waste Out of the Service Area, Thermal Treatment and Increased Waste Diversion are not reasonable or feasible alternatives to be considered for Waste Connections' stated business opportunity. These alternatives will not be carried forward in the EA. As noted in this Supporting Document, Waste Connections remains committed to considering opportunities to enhance diversion at source, at the landfill or elsewhere in its waste management system to achieve increased diversion from its IC&I customers in its southern and central Ontario service area and will explore these opportunities as part of the EA.

The "Do-Nothing" alternative will be carried forward into the EA and considered in relation to the assessment of the preferred undertaking as a base case for assessing potential effects.

Landfilling within the service area through an expansion of the Ridge is considered the preferred way for Waste Connections to manage residual waste received by the company during the planning period used in this environmental assessment and to fulfill its desire to continue to provide an efficient and integrated waste management system to its IC&I customers and to its host municipality of Chatham-Kent. Landfilling within the service area through an expansion of the Ridge Landfill will be carried forward into the EA. The EA will consider the advantages and disadvantages of alternative methods of expanding the landfill. The potential effects of the expansion compared to the Do-Nothing alternative will also be addressed in the EA.

4.0

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Attachment A

Thermal Treatment

Types of Thermal Treatment

Thermal treatment technologies involve applying heat to waste through complex industrial processes to significantly reduce volume and generate energy. Thermal treatment typically does not eliminate the need for landfill disposal; however the residual waste ash volume is significantly reduced. The following summarizes some of the key thermal technologies in use or reported to be available for waste disposal:

- Direct combustion or incineration: This involves burning sorted or unsorted waste under controlled conditions. It can be coupled with energy recovery through the creation of heat, steam or electricity. Combustion technologies result in bottom and top ash residues, with the latter often classified as a hazardous waste.
- Gasification: This process converts organic materials into a gas by applying high temperatures. The process produces a synthetic gas and an inert residue. The gas can be used to generate electricity.
- Pyrolysis: This process heats solid waste in an oxygen-free environment to produce a combustible gas or liquid and a carbon char residue.
- Plasma Arc Gasification: This process uses extremely high temperatures to break down organic waste and produce a synthetic gas.

The most proven technology is direct combustion/incineration, which has been applied recently at the Durham York Energy Centre. The other technologies have not, to date been proven reliable or viable at the scale required and contain significant uncertainties/risks. A prominent recent example of these thermal treatment technologies not being an optimal pathway in Ontario is the now-defunct proposed Plasco facility in Ottawa.

Thermal Treatment and Provincial Policy

Thermal treatment is not fully aligned with public policy:

- A financial incentive that had been in place to help offset the costs of thermal treatment facilities was the Energy-from-Waste Standing Offer Program. However, this program was suspended effective September 2016 to save the Province in electricity system costs given that the Independent Electricity System Operator has forecasted that Ontario will have a robust supply of electricity over the coming decade to meet projected demands⁶. This policy decision was reiterated in the recently released *Long Term Energy Plan 2017*. While this policy change does not preclude the development of energy from waste facilities it removes the financial incentive for companies to implement this technology.
- Thermal treatment is not considered a step towards the goal of achieving a zero waste Ontario and zero greenhouse gas emissions from the waste sector. Achieving zero waste requires

⁶ <https://news.ontario.ca/mei/en/2016/09/ontario-suspends-large-renewable-energy-procurement.html>

diversion, which Waste Connections has invested in; however energy from waste, according to the *Strategy for a Waste-Free Ontario: Building the Circular Economy* is not considered as a form of waste diversion.

- The *Climate Change Action Plan* is intended to facilitate a low carbon economy. The only proven thermal treatment technology, direct combustion/incineration, still results in a number of emissions including CO₂ equivalents, which does not contribute to a low carbon economy.

Thermal Treatment and Waste Connections

Waste Connections does not own or operate any thermal treatment facilities and does not currently have experience with thermal technology; as such, it is not a core competency within Waste Connection's business.

Waste Connections has a corporate philosophy that is built on sustainability. The company is proud of the efforts it has made and the successes it has had in the areas of diversion and recycling, harvesting methane gas from landfills to generate renewable power, fleet optimization to minimize the carbon footprint related to transportation and giving back to their communities.⁷ Based on the company's corporate philosophy, waste diversion infrastructure has been built to service their IC&I clients. Implementing thermal treatment would run contrary to this investment Waste Connections has made in waste diversion infrastructure and abandoning this infrastructure investment would place a significant financial hardship on Waste Connections.

Capital and Operating Costs of Thermal Treatment

In terms of financial considerations, as the complexity of the thermal treatment technology increases, the capital and operating costs also increase. The median costs (in 2009\$ CDN) for conventional incineration is \$770/design tonne +/- 50% with operating costs of \$65/tonne +/- 30% compared to plasma arc technology which has a median cost of \$1,300/design tonne +/-45% and operating costs of \$120/tonne +/- 55%⁸.

Given the high capital and operating costs of direct combustion (the most proven thermal treatment technology for managing residual waste), the resulting net treatment costs per tonne of waste is higher compared to landfilling (typically at least twice the net cost of landfilling). In addition, the economic risk for waste incineration in case of project failure is high due to factors such as the high investment cost, complexity of the technical installations, special requirements in terms of quantity and composition and

⁷ <https://www.wasteconnectionscanada.com/sustainability>

⁸ Stantec Consulting Limited and Rambol Denmark A/S. Waste to Energy, A Technical review of Municipal Solid Waste Thermal Treatment Practices. March, 2011.

stable energy demand and prices⁹. As noted above, with the removal of the Energy-from-Waste Standing Offer Program, there is limited financial incentive to implement thermal technologies.

The following are three examples that we feel demonstrate the economic challenges of thermal treatment within the service area and support Waste Connections decision not to move in this direction:

- In 2006, the City of Toronto purchased the Green Lane Landfill at a cost of \$220 million. The director of solid waste for the City of Toronto had indicated that the capital cost to build an incineration plant would be approximately \$300 million. The cost per tonne to send residual waste to landfill at Green Lane was under \$70 compared to the costs of incineration which could be between \$120 - \$150 per tonne¹⁰.
- The Durham York Energy Centre cost approximately \$255 million (gross) to construct and the gross annual operating costs are approximately \$15 million (based on 2010 dollars)¹¹. The incineration facility was designed to process 140,000 tonnes per year of municipal solid waste. The proposed annual waste disposal rate of the Ridge is over nine times the quantity of the Durham York Energy Centre.
- Peel Region was in the process of planning for an incineration facility that would handle 300,000 tonnes per year. Initially, the capital cost estimate was about \$500 million but as the project progressed the cost estimate rose to over \$600 million. In January 2016, Peel Regional Council voted in favour of cancelling the Peel Energy Recovery Centre project in part due to the escalating costs¹².

Other Considerations

There are two other considerations that influence Waste Connections assessment of the desirability of thermal treatment technologies:

- There is frequently expressed opposition to thermal treatment facilities by the public as they are seen to discourage waste diversion activities and programs.
- Thermal treatment typically requires long-term waste disposal contracts to supply a steady and reliable source of fuel. The IC&I waste collection and disposal business is quite competitive with contracts typically being short term.

⁹ Haukol, J., Rand, T., and Marxen, U. 2000. Municipal Solid Waste Incineration: Requirements for a Successful Project. World Bank Technical paper. Project 462. Chapter 4.

¹⁰ https://www.thestar.com/news/gta/2013/03/12/landfill_or_incinerator_whats_the_future_of_torontos_trash.html

¹¹ <https://www.durhamyorkwaste.ca/FAQ/FAQ.aspx#cost>

¹² <https://www.thestar.com/news/gta/2016/01/05/peel-region-says-no-to-incineration.html>

Conclusion

In considering the applicability of thermal treatment to Waste Connections integrated waste management system it is concluded that thermal treatment is not a disposal option that Waste Connections sees as feasible to pursue for the following reasons:

1. The suspension of Energy-from-Waste Standard Offer Program in 2016 removes the financial incentive to consider thermal treatment;
2. The proven thermal treatment technology, direct combustion or incineration, can be controversial and all others are unproven and not viable at the scale required;
3. Thermal treatment is in contradiction of a number of government policies;
4. Building an EFW facility runs contrary to waste diversion infrastructure Waste Connections has built;
5. Abandoning recent company diversion direction to pursue an unknown pathway would place Waste Connections in a fiscally precarious situation;
6. The higher capital and operating costs of thermal treatment could impact Waste Connections customer base;
7. Waste Connections has a corporate philosophy to support diversion which could be seen as contrary to building thermal treatment; and
8. Thermal treatment is not a core competency within Waste Connection's business.

Attachment B

Waste Connections Current Division System and Opportunities

This attachment describes the role Waste Connections plays in diverting materials from landfill and supporting the provincial vision of a waste-free Ontario.

Waste Connections Alignment with Provincial Policy

In June 2016, the Government of Ontario passed the *Waste-Free Ontario Act* and in February 2017 released the *Strategy for a Waste Free Ontario (2017)* which outlines a resource recovery and waste reduction road map for Ontario. It targets greater diversion of waste from landfills through policies such as Full Extended Producer Responsibility (EPR), and amendment of the 3Rs Regulations. The Strategy has defined waste diversion targets and is striving for zero waste and zero greenhouse gas emissions (GHG) from the waste management sector by creating a circular economy where the production of waste is decreased as much as possible through the superior design of materials, products, systems and business models.

Since before the *Waste-Free Ontario Act*, Waste Connections has been committed to providing the customers and communities it serves with responsible and cost-effective waste diversion solutions. On an annual basis the company diverts an average of 262,000 metric tonnes of Industrial, Commercial, Institutional (IC&I) sector material away from disposal sites in Ontario; approximately 180,000 of this diverted material is in the service area (see Table B-1). These diverted tonnes create a two-fold benefit that aligns with the province's resource recovery and waste reduction road map. First, these diverted tonnes directly impact the circular economy in a positive way by reducing the amount of virgin materials that would be needed as inputs for the production of new products. Secondly, by diverting these materials away from landfill a reduction in transportation related greenhouse gas is achieved on an annual basis.

However, the *Strategy for a Waste-Free Ontario (2017)* acknowledges the need for additional waste disposal capacity, stating "while Ontario works towards its goal of zero waste there will still be a need for landfill space." The size of landfills would also be considered to ensure there is adequate capacity, reducing the need for multiple new landfills. Waste Connections is confident that a Ridge expansion aligns with this initiative in that if approved, we would provide additional disposal capacity at an existing facility rather than the establishment of a new site.

The *Waste-Free Ontario Act* represents an important change in the approach to waste management with a new philosophy toward diversion efforts. A continued and increased emphasis on diversion is of stated importance to the Province of Ontario and also represents a potential opportunity for Waste Connections to support the province in achieving its waste diversion targets, particularly with respect to those targets for the IC&I sector.

Further Alignment with Provincial Policy

Additional Waste Connections initiatives, such as our natural gas-powered truck fleet, demonstrate our commitment and alignment with other MOECC policies like the Climate Action Plan. In Ontario, and

specifically in Barrie and the Region of Peel, Waste Connections has invested significantly in large sized truck fleets that are powered by clean burning compressed natural gas (CNG) to service those communities. These vehicles represent a significant reduction in GHG emissions compared to a conventional diesel engine. The current Waste Connections CNG fleet represents 21% of its total fleet of almost 800 vehicles in Ontario. Additionally, the company is active in the replacement of its older diesel trucks with newer trucks equipped with new Diesel Particulate Filters to greatly reduce emissions when compared to older diesel engines. The use of routing technology and GPS tracking further allows the company to run more efficiently, use less fuel and ultimately reduce its carbon footprint. Another example of Waste Connections commitment to the development and use of clean fuels is its \$44 million landfill gas plant built in 2015 at its Lachanaie Landfill in Quebec where landfill gas is processed to pipeline quality before injection into the TransCanada gas distribution network. A similar project is currently being investigated for the Ridge Landfill and an assessment of landfill gas treatment or utilization alternatives for the expansion will be incorporated into the EA.

The Waste Connections Ontario Diversion System

Waste Connections has twenty-four (24) stand-alone operating facilities in Ontario that are responsible for local IC&I and/or residential curbside collection; the operation of Material Recovery Facilities (MRFs) and waste transfer stations; including two (2) landfills, the Ridge Landfill and the Navan Landfill in Ottawa. Districts work with their IC&I and residential customers to find at-source solutions for segregation of wastes that have a beneficial end-use. Where at-source separation is not practical, segregation of wastes for recovery occurs at district transfer stations or processing facilities where feasible and prior to shipment for final residual disposal.

The Ridge Landfill is Waste Connections' receiving facility for post-diversion residual waste from its system of integrated collection services, materials recovery and transfer facilities, as well as 3rd party facilities in the service area of southern and central Ontario. These 3rd party facilities are owned and operated by others but who also ship post-residual waste to the Ridge Landfill.

The Waste Connections operating facilities that send their residual waste to the Ridge Landfill have well established waste segregation programs and continually source local facilities for recycling of asphalt, brick, concrete, clean fill, organics, wood, roofing, drywall, paper fibres, comingled containers, metals, separately collected cardboard and other materials. There are continuous efforts to increase both the types and amount of these materials being diverted. Waste Connections Windsor District, for example, has recently (2015) partnered with Seaclyffe Energy in Leamington and now diverts over 11,000 tonnes of IC&I sourced organic waste materials every year to their anaerobic digestion facility. Waste Connections Windsor also diverts COCO product from greenhouse cleanouts to farms. COCO product is a plant growth by-product from greenhouses that is sought by farmers for its exceptional water retention, good drainage and aeration. Another unique program is the diversion of over 9,000 tonnes of ash material that is recycled into concrete by St. Mary's Cement. **Table B-1** shows the current breadth of waste diversion programs delivered by Waste Connections for the IC&I sector in Ontario. In addition to

the diverted materials shown in **Table B-1**, Waste Connections also re-uses in the order of 160,000 tonnes per year of autofluff, wood chips, glass and asphalt for use in the construction and maintenance of roads at both the Ridge and the Navan landfills. This displaces the use of virgin materials like aggregate and soils. At the Navan landfill in Ottawa, there is an extensive contaminated soil treatment operation in place and treated soil is used for final cover and buffer construction. Recently, Waste Connections invested in TerraCycle, and thus is supporting the recycling of hard to recycle materials.

Based on the Statistics Canada Waste Management Industry survey (2014) it is estimated that approximately 995,000 tonnes of waste from the IC&I sector in Ontario was diverted from landfill. In the last five (5) years Waste Connections has been directly involved in the diversion of over 1,300,000 tonnes of materials from disposal in Ontario of which just over 900,000 tonnes were diverted from within the service area of southern and central Ontario. Diversion efforts at Waste Connections have averaged 262,000 tonnes per year for Ontario with just over 180,000 tonnes diverted from the service area. It is evident that the company plays a significant role in IC&I waste diversion in this province.

While residential tonnage is not included in **Table B-1**, Waste Connections also provides residential recycling and/or organics collection programs to its municipal clients which include recycling collection for the District of Muskoka for processing at the Waste Connections Materials Recovery Facility (MRF) in Bracebridge, and the collection of recycling and organics for parts of Peel Region using a CNG powered fleet. Waste Connections also provides residential collection of recyclables for its Ridge host community, the Municipality of Chatham-Kent.

Waste Connections understands that no one knows the needs of a community better than those who live and work in it and Waste Connections' philosophy of local managerial empowerment allows their district managers to find local solutions to increase waste diversion activity. Waste Connections strongly believes in local community partnering, local purchase of goods and services, local employment and support for local tax bases. Where possible, beneficial end use materials are marketed or managed locally. This helps make diversion programs economically viable for customers and minimizes GHG emissions that would result from longer haul distances to markets. Many districts have partnered with local farms for use of some unique waste materials like the grapes residuals, vines, as well as other organics and sawdust.

Waste Connections has numerous business arrangements in place in Ontario for the diversion and reuse of numerous waste material types. The company structure, philosophy and track record facilitate continued expansion of existing programs as well as the addition of new diversion programs for the IC&I sector. Waste Connections can and is willing to respond quickly to support initiatives mandated as part of the *Waste-Free Ontario Act*.

Waste Connections is the largest publicly traded waste management company in Canada and the third largest in North America. The company has the financial resources and desire to invest in infrastructure

that supports its business which includes waste diversion initiatives in Ontario. In 2013 an investment of \$14 million was made to construct a mixed construction and demolition recycling facility in Vaughan to divert what could have been substantial IC&I tonnage from disposal. Unfortunately, at the time the facility was unsuccessful due to an absence of regulatory support/enforcement programs, however, the *Strategy for a Waste-Free Ontario: Building the Circular Economy* may enable Waste Connections to explore the re-commissioning of this facility.

Waste Connections Commitment to Increased Waste Diversion

Notwithstanding Waste Connections' comprehensive at-source, at-transfer and at-MRF waste diversion programs there are opportunities to further support the objectives of *Strategy for a Waste-Free Ontario* and the Climate Change Action Plan and to enhance the Waste Connections diversion system.

Waste Connections is committed, as part of the Ridge Landfill Expansion EA, to consider opportunities to enhance diversion at source, at the landfill or elsewhere in its waste management system to achieve increased diversion from its IC&I customers in its southern and central Ontario waste shed. Generally future IC&I sector waste diversion opportunities would be focused on additional materials segregation at-source and at transfer stations to avoid unnecessary trucking and associated GHG emissions with bringing material to the Ridge Landfill. Future IC&I diversion is anticipated to include items that could have beneficial end uses including those materials that may be ultimately designated under the *Waste-Free Ontario Act*. The following summarizes the ongoing and enhanced diversion opportunities the Waste Connections is committed to:

- Waste Connections will continue its current practice to work with its customers to identify opportunities for the segregation of re-usable, recyclable and organic wastes. Waste Connections provides educational materials as necessary to ensure segregation activities meet receiving facility or end-market standards and assesses and provides appropriate containers and container sizes at-source for the optimum capture of materials. Where there are sufficient materials generated at multiple generation sources then designated collection routes are established. This provides cost-effective collection for the customer and can serve to increase waste diversion initiatives at source and to reduce GHG emissions through reduced transportation distances.
- With the implementation of the *Strategy for a Waste-Free Ontario*, Waste Connections will proactively work to educate its customers on objectives of the Strategy and the requirements of the *Waste-Free Ontario Act*. Waste Connections has the tools necessary to support its customers in the implementation of programs for mandated segregation where applicable, e.g. organics, or for segregation of various other designated materials as they are specified. This would again include the establishment of dedicated collection routes as appropriate.
- Waste Connections will continue its current practice of routinely inspecting inbound loads from both its own collection fleet and the fleet of third party haulers to its waste transfer stations. Where noticeable volumes of materials that could be diverted are observed attempts are made to identify the customer and to work with them to develop an at-source separation program. In

the case of third party haulers, they are notified to work with their own customers. If recyclable materials received at waste transfer stations can safely be segregated from the waste stream (e.g. wood, metal) they are removed to a dedicated pile and loaded for shipment to a processing facility. These current practices will be augmented with the implementation of the *Strategy for a Waste-Free Ontario* whereby Waste Connections will proactively work with its customers and third-party haulers to support segregation of materials mandated or designated for segregation.

For Chatham-Kent and IC&I customers, Waste Connections is committed to adding an expanded resource recovery area (in the form of a drop-off facility) at the Ridge Landfill. Resources recovered could include municipal hazardous or special waste (MHSW) (including batteries and fluorescent bulbs and tubes that are designated under the *Resource Recovery and Circular Economy Act, 2016*). Other resources could also include small appliances, electrical tools, mattresses, carpets, clothing and other textiles, furniture and other bulky items that may also be designed under the *Act* and/or where local markets exist for these items. Other conventional materials could be received at an expanded recovery area including wood, cardboard, Blue Box materials etc., and as the Ridge is in a predominantly agricultural area, there may be farm-sourced resource recovery opportunities (e.g., plastic wrap) that could also be assessed.

Waste Connections is committed to continued collaboration with the Ridge Landfill host community of Chatham-Kent to develop partnership opportunities to support their municipal waste diversion targets and their alignment with the objectives of the *Strategy for a Waste-Free Ontario*. Programs will be developed in collaboration with the Municipality of Chatham-Kent to compliment and augment services already provided. Chatham-Kent currently operates eight (8) transfer stations that receive large item waste, regular waste, recyclables, appliances, scrap metal, and electronics.

Conclusion

In summary, Waste Connections has demonstrated a significant role in waste diversion, particularly for the IC&I sector, across Ontario. Waste Connections has an established network of waste management facilities as well as a strong customer base that can impact the anticipated future changes in waste diversion in Ontario. Waste Connections is committed to assisting the province in meeting its diversion goals and opportunities for Waste Connections to enhance its existing waste diversion activities, either at source, at the Ridge or elsewhere in Waste Connections' integrated system will be examined further in the environmental assessment.

Table B-1: Waste Connections Ontario - Summary of IC&I Waste Diversion Activity 2012 - 2016 (in metric tonnes)

Material Type	2012		2013		2014		2015		2016		Total	Total Ontario
	Proposed Service Area	All of Ontario	Proposed Service Area	All of Ontario	Proposed Service Area	All of Ontario	Proposed Service Area	All of Ontario	Proposed Service Area	All of Ontario	Proposed Service Area	
OCC	83,043	94,957	91,900	105,399	86,700	99,693	82,568	98,278	69,591	82,025	413,802	480,352
Mixed Paper	22,767	55,794	16,994	26,022	9,600	27,119	7,820	29,028	6,701	16,456	63,882	154,419
Mixed Recycle	27,462	30,927	25,149	30,077	24,037	32,260	30,056	37,677	26,680	28,418	133,384	159,359
Metal	3,296	4,865	3,557	5,420	5,674	7,242	11,408	13,451	15,194	18,932	39,129	49,910
Wood	18,635	25,756	18,788	30,272	21,520	29,197	20,430	27,732	21,142	31,190	100,515	144,147
Source Separated Organics	16,984	47,516	13,137	13,591	6,384	6,442	7,347	8,276	11,937	12,662	55,789	88,487
Blended Organics	-	241	5,408	5,408	3,890	3,890	2,170	2,170	1,132	1,132	12,600	12,841
Farm Composting	-	-	2,084	2,084	4,808	4,808	6,959	6,959	2,440	2,440	16,291	16,291
Pomace (Grapes Residual)	129	129	203	203	148	148	200	200	108	108	788	788
Straw Manure	326	326	371	371	274	274	149	149	145	145	1,265	1,265
Diatomaceous Earth	236	236	244	244	181	181	210	210	148	148	1,019	1,019
Concrete	2,942	9,087	3,558	27,986	2,021	26,555	2,258	19,949	2,274	7,495	13,053	91,072
Brick	358	943	-	4,546	46	3,021	268	3,268	160	2,678	832	14,456
Marble	9	9	13	13	250	250	233	233	28	28	533	533
Clean Fill, Soil, Aggregate	2,037	3,507	1,038	4,082	1,157	1,276	337	452	829	1,601	5,398	10,918

Table B-1: Waste Connections Ontario - Summary of IC&I Waste Diversion Activity 2012 - 2016 (in metric tonnes)

Sand	1,826	1,826	7,204	7,204	6,691	6,691	3,282	3,282	3,585	3,585	22,588	22,588
Asphalt	95	735	64	432	10	425	53	480	69	402	291	2,474
Glass	137	13,932	240	4,116	1,394	4,846	1,360	4,766	1,304	4,844	4,435	32,504
Shingles	344	1,035	533	779	869	869	694	718	749	749	3,189	4,150
Tires	331	341	199	205	250	258	250	272	196	196	1,226	1,272
Drywall	239	643	372	643	10	183	6	154	297	605	924	2,228
Shrinkwrap	68	68	133	133	77	77	47	47	59	59	384	384
Ash	-	-	-	-	-	-	61	61	9,676	9,676	9,737	9,737
Sawdust	392	392	161	161	265	265	147	147	377	377	1,342	1,342
Ewaste	616	708	1,119	1,140	2,264	2,277	1,588	1,598	1,231	1,253	6,818	6,976
Total	182,272	293,973	192,469	270,531	178,520	258,247	179,901	259,557	176,052	227,204	909,214	1,309,512
										Average	181,843	261,902

Attachment C

Consideration of Other Waste Connections Site

Table C-1 presents a list of all the Waste Connection's properties in Ontario. To assess whether any of these locations would be suitable for a landfill to accommodate 26 million tonnes, the following primary screening criterion was considered:

Site Size- A new landfill to accommodate 26 million tonnes of residual waste would require sufficient land to accommodate the waste fill area; stormwater management ponds; on-site roads and storage areas; and an office, scale house and drop off areas. It is anticipated that the footprint to accommodate these facilities at a new site would be approximately 200 ha.

Table C-1: Waste Connections Owned Properties in Ontario

Municipality	Approximate Parcel Size (in hectares)	Notes
Within the Ridge Service Area		
Vaughan	2.8	Site size insufficient
Vaughan	2.4	Site size insufficient
Brampton	1.6	Site size insufficient
Hamilton	4.7	Site size insufficient
Brant	2.3	Site size insufficient
Kitchener	1.6	Site size insufficient
Chatham - Kent	20	Site size insufficient
Chatham - Kent	340	Ridge Landfill Property
Tecumseh	5	Site size insufficient
Sarnia	2	Site size insufficient
Cavan - Millbrook - North Monaghan	1.9	Site size insufficient
Brockville	2	Site size insufficient
Barrie	5	Site size insufficient
Orillia	1.5	Site size insufficient
Bracebridge	4.7	Site size insufficient
Outside of the Ridge Service Area		
Ottawa	2.7	Site size insufficient
Ottawa	1.6	Site size insufficient
Ottawa	70	Navan Landfill Property ¹³
Ottawa	14	Site size insufficient

¹³ The Navan landfill in Ottawa is restricted to non-putrescible waste, and by contractual agreement with the local community, cannot be further expanded once the currently approved capacity at that site is exhausted, which is predicted to occur in approximately 2025 at current fill rates.

Municipality	Approximate Parcel Size (in hectares)	Notes
Ottawa	7.5	Site size insufficient
Oliver Paipoonge	1.4	Site size insufficient

It is clear from the data provided in **Table C-1** that Ridge is the only property large enough to manage 1.3 million tonnes annually.