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WASTE CONNECTIONS CANADA

Review of Diversion Options Report

Ridge Landfill Environmental Assessment

DRAFT

December 24, 2018

December 24, 2018



Waste Connections of Canada
20262 Erieau Rd.
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Attention: Catherine Smith

Ridge Landfill EA – Review of Diversion Options Report

Dear Cathy:

Enclosed please find a draft of the Review of Diversion Options Report. This document represents a component of the environmental assessment process in addressing the commitment in the approved, amended Terms of Reference dated May 1, 2018 with regards to waste reduction. In doing so, it also presents opportunities for Waste Connections to enhance its existing waste diversion activities at the Ridge Landfill, and within Waste Connection's integrated waste management system.

Sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in blue ink, appearing to read "Bill Allison".

Bill Allison, P. Eng.
Project Manager

BA:knp

Enclosure

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Executive Summary

As committed to in the Amended Terms of Reference, approved by Ontario's Minister of the Environment and Climate Change on May 1, 2018, Waste Connections will assist the province in meeting its diversion goals and will consider opportunities to enhance its existing waste diversion activities. This report has been compiled to review different methods of enhancing waste diversion as outlined in the memo "Diversion Options for Evaluation in the Ridge Landfill EA" submitted to the Ministry of Environment, Conservation and Parks (MECP) in September 2018.

This review was carried out in accordance with best management practices, and in consideration of new and emerging technologies, health and safety measures, and in recognition of the goals and expectations set forth by the province of Ontario.

The conclusion of this review is that Waste Connections proposes to carry forward the following diversion initiatives, subject to input received from Indigenous Communities, agencies and the public:

- Consider a program for the beneficial reuse of source separated C&D waste at the Ridge Landfill.
- Continued collaboration with the Municipality of Chatham-Kent in the enhancement of its diversion programs.
- Move ahead with planning of an on-site drop-off depot at the Ridge Landfill for specific materials that would complement and enhance existing diversion opportunities in Chatham-Kent.
- Continue to evaluate opportunities to apply new and emerging diversion technologies to meet market needs.
- Consider constructing new and/or repurposing existing infrastructure in its normal course of business, in ways that could align with changes to Provincial policies and regulations.
- Assist customers in understanding changes to policies and regulations through the existing outreach program.
- Support the Province in waste data collection and management.
- Provide review and comment from an industry perspective to MECP on proposed waste management policies and regulations.

- Share current survey findings with Chatham-Kent Waste and Recycling Services.
- Promote recycling in both the IC&I and residential sectors in Chatham-Kent and across the wider waste management network.
- Continue to develop its recycling and waste diversion services in response to regulatory initiatives, customer needs and end-market needs.
- Continue to support educational scholarships in environmental management in general and waste management programs in particular.

Increased waste diversion is an important component of Waste Connections' efficient, integrated system. It will assist the Province in minimizing the amount of waste sent for landfilling. However, the additional diversion opportunities identified in this report will not reduce the need of the 1.3 million tonnes of capacity per year during the 20 year planning period for the Ridge Landfill.

The contents of this Review of Diversion Options report, subject to further revisions, will be included in the Environmental Assessment report.

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Forward

As noted in the Amended Terms of Reference document approved by the Ministry of Environment, Conservation and Parks (MECP) in May 2018:

Waste Connections will commit to assisting the province in meeting its diversion goals and will consider opportunities to enhance its existing waste diversion activities, either at-source, at the Ridge Landfill, or elsewhere in Waste Connections' integrated system.

The service area for the proposed expansion of the Ridge Landfill will be the Municipality of Chatham-Kent for residential waste and Southern and Central Ontario for Industrial, Institutional and Commercial (IC&I) waste. This service area is significant and forms the geographic scope of the various waste diversion initiatives identified in this document and associated program enhancements that will be considered in the context of Waste Connection's core business activities.

The first section of this report outlines its purpose and describes the consultation activities undertaken by Waste Connections to gain input into this review of diversion options. The consultation activities included on-line and in-person surveys of the public, landfill neighbours, stakeholders, and municipal officials in the Chatham-Kent area. A limited, two week visual survey of waste loads received at Waste Connections' transfer stations was also undertaken. The evaluation methodology for reviewing the diversion options is also described in the first section.

The second section of this report describes the options being evaluated. Options are grouped into one of two categories being either "at the Ridge Landfill" or "at-source or elsewhere in the system". Section 2 also contains the evaluation results of each option.

The third section contains a scoping summary of the diversion options that were evaluated.

Section 4 describes diversion promotion and education initiatives to be by Waste Connections.

1.1 Purpose

The purpose of this report is to review different methods of enhancing waste diversion as outlined in the memo "Diversion Options for Evaluation in the Ridge Landfill Environmental Assessment" submitted to the MECP on September 4, 2018 and clarified in response Table 1 and Table 2 provided to the MECP on September 20, 2018.

The review of diversion programs or measures in this report was carried out in accordance with best management practices, in consideration of new and emerging technologies, health and safety measures, and in recognition of the goals and expectations set forth by the stated public policies of the government.

1.2 Consultation

Waste Connections committed to undertaking an extensive communications and consultation plan for the Ridge Landfill Expansion Environmental Assessment (EA) including workshops, open houses, newsletters and mail outs, one-on-one meetings and on-line approaches. For this Review of Waste Diversion Options Report, Waste Connections committed to gathering information from a variety of stakeholders, the public and key interest groups. This section outlines those consultation efforts.

A workshop was held in Blenheim on July 11, 2018 to which residents living within 1 km of the landfill were invited. Participants indicated that the existing depots in Chatham-Kent should be considered as the preferred location for drop-off of additional materials rather than establishing a new drop-off depot at the Ridge Landfill because of convenience, and avoiding additional traffic at the landfill. Participants were not supportive of on-site processing of waste materials of any type, as it has the potential to bring more traffic to the site and to potentially cause additional impacts (e.g., odours, noise, etc.). Details of the workshop are summarized in a memo contained in **Appendix E**.

Letters were sent to 99 residences and businesses within 1 km of the landfill and along the haul route offering an in-person interview to understand their perceptions of the landfill. Questions related to waste diversion perceptions and opportunities in the community were included in these interviews. 18 people expressed a desire for an interview. Most of the people interviewed, take their recyclables to one of the Municipal Transfer Stations and 12 of the 18 indicated that they were satisfied with this method, with two (2) noting that it would be closer/more convenient to bring recyclables to the landfill. The only waste material that was identified as having no opportunity for diversion was horse manure. One of the interview questions specifically asked what the site neighbours thought about the idea of additional diversion facilities at the landfill. Most respondents (14 of the 18) noted that increasing diversion is important. Nine (9) respondents indicated some degree of support for additional diversion facilities at the Ridge Landfill, while seven (7) of these respondents expressed concerns related to noise, dust, traffic, wildlife, and odour at the Ridge Landfill.

An on-line waste diversion and recycling survey was conducted between October 24th and November 16th, 2018, for the residents of Chatham-Kent. Advertisements were placed in local newspapers across the Municipality with a total circulation of over 60,000. Letters were also sent to 99 residents and businesses adjacent to the landfill requesting them to complete the on-line survey. In total, 31 residents responded to the on-line survey. Respondents indicated that a drop-off depot at the Ridge Landfill would be of benefit but they had concerns related to traffic increase, litter, noise, and odour. There was also a desire for increased Household Hazardous Waste (HHW) services, recycling, and garbage collection/depots across the Municipality. A complete description of the survey and supporting documentation is contained in **Appendix C**.

An on-line waste diversion and recycling survey was also conducted from October 26th to November 16th, 2018 for IC&I stakeholders in the Municipality. Invitations were e-mailed to 77 stakeholders requesting that they participate in the survey. A total of 9 stakeholders responded. The responses identified specific materials such as excess paint, furniture, pallets, organics (e.g., restaurant food waste) as having potential for diversion. As well, extended hours and/or days of operation at the Municipal Transfer Stations were requested, as were increased HHW, recycling, garbage collection/depots opportunities. A complete description of the survey and supporting documentation is contained in **Appendix D**.

A meeting was also held on August 1st, 2018 with staff from the Municipality of Chatham-Kent Waste Management Department to discuss potential diversion and recycling partnership opportunities with Waste Connections. Chatham-Kent staff recognized that the current HHW program in the Municipality is not frequent enough for residents to effectively manage their HHW materials. More frequent collection events were discussed as well as the possibility of establishing an HHW facility at another location in the Chatham area. Chatham-Kent staff also identified waste management education as a priority and that the potential for partnering with Waste Connections to enhance existing programs or to implement new educational programs should be explored. A copy of the meeting notes is included in **Appendix E**.

1.3 Waste Transfer Station Waste Load Surveys

An attempt to quantify the potential amount and type of material that could be diverted from the IC&I waste stream, high-level, random, visual waste surveys were carried out in the fall of 2018 over a two (2) week period at six (6) Waste Connections' waste transfer stations in Southern and Central Ontario. The surveys were completed with the assistance of seasoned Waste Connections' tipping floor operators to identify materials received at each site. The results of these high-level visual surveys provide some insight to the diversion potential of materials

received from Waste Connections' current customer base under current regulatory and market conditions.

The selection of transfer stations was based on obtaining a representative sampling of waste materials that are received across the Waste Connections' transfer station network that currently sends its waste to the Ridge Landfill. The two (2) week survey period was considered to be a representative sample of the majority of customers served by each transfer station. The goal of the survey was to provide a snapshot of individual loads being received at the transfer stations.

In reviewing the survey results by material composition, the potentially divertible materials at the transfer stations are construction and demolition materials (C&D) and wood waste. Waste Connections' staff reported that "there are de minimis amounts of organic material, inadvertently mixed with incoming waste by customers". Landscaping waste and cardboard were identified as being present in lower quantities. Details regarding this survey exercise are contained in Appendix B.

1.4 A Made in Ontario Environment Plan

In November of 2018, the MECP released its Environment Plan. The plan identified a number of waste related initiatives and goals that Waste Connections is well poised to support. The key portions of the Environment Plan that pertain to waste diversion and landfill operations are to reduce waste, however, as the Made-In-Ontario Environment Plan states "while we work to reduce the amount of waste we produce, it is recognized that there will be a need for landfills in the future". Some of the additional actions being proposed by the MECP in the Environment Plan include:

- Develop regulations for designated material recovery.
- Expand green bin or similar collection systems in large cities and to relevant businesses.
- Educate the public and business about reducing and diverting recoverable materials.
- Develop best practices for safe food recovery and donation.
- Work with other provinces, territories and the federal government to develop a plastics strategy to reduce plastic waste and limit micro-plastics that can end up in our lakes and rivers.
- Seek federal commitment to implement national standards that address recyclability and labeling for plastic products and packaging to reduce the cost of recycling in Ontario.

- Work to ensure the Great Lakes and other inland waters are included in national and international agreements, charters and strategies that deal with plastic waste in the environment.

Waste Connections supports the initiative in the plan that states that the MECP will be exploring opportunities to recover resources of value from waste through the application of new technologies and increased recycling initiatives, before final disposal.

In order to increase opportunities for Ontarians to participate in waste reduction efforts, the MECP is proposing to:

- Work with municipalities to provide more consistency across the province regarding what can and cannot be accepted in the Blue Box program.
- Explore additional opportunities to reduce and recycle waste in our businesses and institutions.

The key messages taken from the Environment Plan in relation to Waste Connections' EA is that all reasonable means will be explored to achieve the Province's goals to increase the recovery of materials of value from the waste stream, recognizing that there will still be a need for landfills in the future.

Evaluation Methodology

The evaluation of opportunities to enhance waste diversion activities, either at the Ridge Landfill, or at-source and elsewhere in Waste Connections' integrated waste management system has been undertaken as presented in the memo "Diversion Options for Evaluation in the Ridge Landfill EA" submitted to the MECP (September 4, 2018). Key elements of the evaluation are discussed in this section.

First and foremost, the number one core value of Waste Connections is safety, which states:

We strive to assure complete safety of our employees, our customers and the public in all of our operations. Protection from accident or injury is paramount in all we do.

As such, the evaluation of all opportunities for added waste diversion activities will prioritize public and worker safety above all else. Other considerations for each option include but are not necessarily limited to:

- Does it minimize GHG emissions?
- Is there sufficient material for processing?
- Is the opportunity supported by regulation?

- Is there demand and support for the service locally, at-source and/or elsewhere in the system?
- Is it compatible with other existing services?
- Are there infrastructure/space limitations to providing the service?
- Is it economically viable?
- Is it advantageous to provide the services at other location(s)?

The assessment of the diversion options and/or measures will be carried out in accordance with best management practices, in consideration of new and emerging technologies, health and safety and business viability and sustainability.

2.0 Potential Diversion Options

This section of the report provides an evaluation of the options based on their preliminary descriptions in the Memo 'Diversion Options for the Evaluation' dated September 4th, 2018. The evaluation is reflective of the responses to the comments provided by the MECPC dated September 20th 2018 contained in **Appendix E**.

Various options are examined that can be carried out at:

- The Ridge Landfill
- At-source and elsewhere in the system including Waste Connections' transfer stations in Southern and Central Ontario.

A description of each option is provided and an evaluation undertaken utilizing the methodology described in Section 1.5 above. A summary of the evaluation is provided for each option. Section 3 provides a subsequent scoping of the diversion options.

2.1 At Ridge Landfill Options

The options in this section are all located specifically at the Ridge Landfill. Waste Connections is committed to examining and evaluating the feasibility and viability of implementing on-site diversion services as part of the preferred site development alternative method, including the consideration and assessment of a reasonable number of ways in which to divert the types of waste materials received at the site. On-site processing is defined as waste diversion activities occurring within the boundaries of the Ridge Landfill property for waste materials received from

Waste Connections' proposed service area (i.e., Southern and Central Ontario IC&I waste and waste materials received from local sources within the Municipality of Chatham-Kent).

According to Statistics Canada, between 2010 and 2018 there was approximately 7 million tonnes of IC&I waste produced in the Province each year. This waste is generated by a wide range of businesses and industries that require a variety of collection methods and frequency of service, and include waste streams that are unique to particular industries. The material disposed (residuals) at the Ridge Landfill is generated from Waste Connections customer base of approximately 30,000 businesses and industries from all sectors, via nine transfer stations operated by Waste Connections, and third party transfer stations operated by others. Local waste in the Municipality of Chatham-Kent is direct-hauled from the point of generation to the Ridge Landfill. In 2017, of the 1.3 million tonnes of material received at the Ridge Landfill for disposal, approximately 53% was transferred through Waste Connections' processing/transfer stations. These transfer stations are located in Southern and Central Ontario and the waste they handle represents about 9% of the province's total IC&I waste stream based on the annual provincial quantity of IC&I waste produced.

Of the 1.3 million tonnes received at the Ridge Landfill annually, approximately 8,500 tonnes is residue from Waste Connections' London and Bracebridge Materials Recovery Facilities and approximately 13,000 tonnes is residue from other third party materials recovery processing facilities. Residues from these facilities are contaminants and non-recyclable materials that are removed from what is otherwise a recyclable material stream (negative sort). Most of the remaining waste brought to the landfill comes through processing/transfer facilities where recyclables such as wood, metal and cardboard are removed (positive sort) before transfer. The materials and quantities removed are typically dictated by operations safety, existing regulatory approval conditions, available storage space, and end markets. In addition, waste from industrial and manufacturing sources such as 'off-spec' and other non-recyclable materials is disposed at the landfill each year. Contaminated soils may be reused in operations such as daily cover in place of virgin soils to the extent possible. Waste Connections also diverts other material suitable for on-site reuse in applications such as road construction and maintenance and landfill daily cover. The estimated amount of this diverted waste material at the Ridge Landfill in 2017 was 237,631 tonnes.

The Ridge Landfill host community of Chatham-Kent reported a residential waste generation total of 48,523 tonnes in 2017, with a diversion rate of 35%¹. The community has a network of eight (8m) Municipal Transfer Stations for receipt of materials primarily from residential generators including: large items, regular waste, recyclables, appliances, scrap metal, and electronics. All of the municipal solid waste generated from within the Municipality of Chatham-Kent is disposed at the Ridge Landfill. Waste Connections also has the contract for residential waste and recycling collection services for the serviced areas in Chatham-Kent. This service also includes the transport of materials collected at the eight (8) transfer stations to the landfill.

There are five (5) diversion options at the Ridge Landfill that are described and evaluated below, which are:

- Mixed waste processing facility
- Materials recovery facility
- Beneficial reuse of construction and demolition waste
- Source separated organic waste processing
- On-site drop-off depot.

Two of the options to be evaluated (mixed waste processing and source separated organic waste processing) include the potential removal of organic material from the waste stream being landfilled. If either of these two (2) options were implemented, the potential impact of removing organics from the waste stream being landfilled may result in improved leachate quality over the long term and a decrease in the quantity of landfill gas being generated. However, given that the leachate quality at the Ridge Landfill is suitable for complete treatment at a municipal wastewater treatment facility and that detailed analysis has shown that the leachate will meet the Province's Reasonable Use Guideline, removing organics from the landfill waste stream will not have a significant impact on leachate quality. Similarly for landfill gas generation, given that the landfill gas will continue to be collected and at a minimum flared, decreasing the amount of gas generated will not have a significant impact should organics be removed from the waste stream. Additionally, Waste Connections is actively seeking to partner with a third party for the beneficial use of the gas collected from the existing landfill. If the beneficial use of gas proceeds for the existing landfill but organic waste is diverted from the landfill following expansion, then

¹ Chatham-Kent Waste Management.

the incentive to continue the development of the beneficial use project will be compromised because of the potential reduction in landfill gas generation at the site.

2.1.1 Mixed Waste Processing Facility

This option would involve the construction and operation of a Mixed Waste Processing Facility (MWPF) at the Ridge Landfill site to sort divertible materials from the received waste materials. Facility design would only be for recovery of materials that have market value. It would need to be sized to process the non-separated waste material streams discussed above. Also, it would not need to process Chatham-Kent's municipal waste because at-source Blue Box segregation is already employed. For the basis of this evaluation, an annual processing capacity of approximately one (1) million tonnes is assumed. Notwithstanding these considerations, it is Waste Connections stated position that diversion should occur at-source and near to the available markets.

The operation of a MWPF at the Ridge would require front end processing operations to separate large bulky material before processing and to extract bagged materials. Once sorted, the recyclables would be shipped either loose or baled, and trucked to end market or for additional processing off-site. Organics that are separated could be composted at a potential on-site compost facility or trucked to an off-site composting or anaerobic digestion (AD) facility. The quality of the separated organic material and contamination levels of non-organic material contained in it (such as plastics, glass and metal) would be a factor in determining what use could be made of the compost generated on-site or where the organic material could be sent for off-site processing. The market value of the recovered materials will ultimately determine the economic viability of a MWPF. At a minimum, the income received from recovered materials must be able to finance the capital and operating costs of the facility. Existing organics processing facilities typically have restrictions on the quality and nature of the material that they can receive. Depending upon the quality, if compost was generated on-site, some of it could be used for daily cover of waste materials in the landfill or as a soil amendment for areas of final cover.

A very large operational footprint at landfill would be required for a MWPF. This would include a large structure and specific areas for the storage of materials, operations, roads and truck movements. There is limited available remaining property on the site to accommodate this footprint.

MWPFs typically have low recovery rates of marketable materials given the nature of the incoming waste stream (i.e., large presence of contaminants). For example, at the Otter Lake

Waste Processing Facility in Halifax, discussions with the operator of the facility in November of 2018 provided the following observations:

- The quality of fibre materials (e.g., corrugated cardboard, newsprint, and boxboard) that were separated was found to be very poor (primarily due to cross-contamination with organics) and as a result, the fiber materials were un-marketable.
- The fibre materials were typically added to the organics feedstock. Contamination levels in the organics feedstock prohibited the use of the stabilized end product for soil amendment purposes and the processed material was directed for landfilling.
- The removal of marketable recyclables was also a goal. However, the operator of the facility indicated that revenue generated through sorting of recyclables was negligible.

A report prepared for the Halifax Regional Council in 2014, indicated that the annual operating cost of the Otter Lake facility was projected to be in excess of \$130 million over an 11 year period (2014-2025). The Otter Lake facility processed about 15% of the volume annually compared to the amount of waste received at the Ridge Landfill.

In Sun Valley, California, the Athens Services Materials Recycling Facility is an 8,000 m² mixed waste processing facility, which cost US\$50 million to construct in 2014. It was designed to process 150,000 tons/year of mixed waste (575 tons/day). Reportedly, the facility produces an average of 77 tons of fiber and 13 tons of containers per day, a diversion rate of approximately 17% of the waste stream it receives. Based on the cost information from the Sun Valley facility, a capital cost estimate for a potential MWPF at the Ridge site can be estimated to be well over \$250 million to process the anticipated quantity of mixed waste being received at the Ridge Landfill each year. Operating costs for such a facility at the Ridge Landfill would also be extremely high given the labour intensive operation needed².

² <http://greenblue.org/reloop-what-is-mixed-waste-processing-or-all-in-one-dirty-mrf-recycling/>

<https://foresternetwork.com/weekly/msw-management-weekly/waste-sorting/the-evolution-of-mixed-waste-processing-facilities/>

<https://novascotia.ca/nse/waste/docs/SolidWasteStrategyFinalReport1995.pdf>

Item No.3, Committee of the Whole Report, Halifax Regional Municipality, January 14, 2014.

<https://resource-recycling.com/recycling/2017/04/05/mrf-month-athens-services-sun-valley-materials-recovery-facility/>

Consideration of an MWPF

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> The existing waste stream has the potential to expose MWPF workers to dust, odours and other unknown contaminants. These facilities are not typically fully automated and require extensive manual sorting of waste. Extensive health and safety precautions would be required.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> Waste processing will result in generation of GHG's caused by energy consumption during the operation of the MWPF and with trucking and/or handling of the recovered material (organics and recyclables) off-site for additional processing and end markets.
Is there sufficient material for processing?	<ul style="list-style-type: none"> A sufficient volume of suitable (uncontaminated), marketable material is needed for the facility to be cost-effective, it is not certain that a sufficient volume of material could be recovered to create a successful business case. Results from waste transfer station surveys (Appendix B) suggest that potential volume of material that could be recovered is low.
Is the opportunity supported by regulation?	<ul style="list-style-type: none"> There are no provincially-mandated regulations. Furthermore, constructing a MWPF at a landfill is not aligned with the Ontario Environment Plan which focuses on diversion efforts at-source.
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> From the public surveys conducted, there was no support for additional material processing at the Ridge Landfill. There is documented opposition to processing on-site and any activity that would generate any potential for additional impacts (e.g., odours, noise, truck traffic, etc.).
Is it compatible with other existing services?	<ul style="list-style-type: none"> It will compete against existing at-source diversion facilities and services.
Are there infrastructure / space limitations to providing the service?	<ul style="list-style-type: none"> Yes, a MWPF will require additional foot print at the landfill for the facility, material storage, operation, internal roadways and shipping. Existing property at the landfill is allocated for ancillary landfill facilities (e.g. on-site soil storage area, additional flare construction, etc.) which limits space for additional infrastructure.

Question	Response
Is it economically viable?	<ul style="list-style-type: none"> • No, the overall cost of the facility would be very high to process the anticipated minimal quantities of recovered marketable resources. • Materials recovered are unlikely to meet minimum quality requirements. • The market for recycled material is uncertain at this time due to quality restrictions imposed by end users. In addition, there is currently no viable and sustainable market anticipated for the material recovered from a proposed MWPF located at the Ridge Landfill. • A positive business case to support a MWPF at the Ridge Landfill could not be made at this time (i.e. not financially viable or realistic). Notwithstanding these considerations, diversion should occur at-source and near to the available markets which will also reduce transportation costs.
Is it more advantageous to provide the services at other location(s)?	<ul style="list-style-type: none"> • There is no advantage to provide service at other locations for the material received at the Ridge Landfill from the Municipality of Chatham-Kent as it is separated residual waste where diversion has already occurred at-source. • For waste from Southern and Central Ontario it would be more advantageous to process it at or near its source to reduce both transportation costs and associated GHG emissions.

Although a MWPF supports the Made-in-Ontario Environment Plan to reduce the amount of waste that is sent for landfilling, it is not viable undertaking at the Ridge Landfill and does not support the MECP's Environment Plan of generator responsibility for waste streams and at-source diversion. The volume of material that could be extracted is not a significant proportion of the material received at the landfill and the market/use of the extracted material is uncertain. The additional trucking of material would add to GHG emissions and create additional truck traffic as well as the potential for odour, noise and vector impacts at the site. There is no local support for this type of facility at the Ridge Landfill.

2.1.2

Materials Recovery Facility

This option would involve the construction and operation of a Material Recovery Facility (MRF) at the Ridge Landfill site. A MRF is a specialized facility designed to receive, sort and prepare recyclable material for market. MRFs typically accept co-mingled Blue Box recyclable materials that have already been source separated from the overall waste stream generated by either

residential and/or IC&I sources. Processing at a MRF would include sorting of the incoming material through automated and manual means and then baling clean sorted Blue Box materials such as Old Corrugated Cardboard (OCC), Polyethylene Terephthalate (PET), High Density Polyethylene (HDPE), and Polystyrene (PS) which would then be sent to markets (as quantity dictates). Mixed recyclables (mixed plastics) would be sent to an off-site processor for further sorting.

Many of Waste Connection's IC&I customers already practice separation of Blue Box recyclables and this material does not enter Waste Connections' waste transfer station system. This is consistent with the objectives of the MECP's Environment Plan that places a strong onus of undertaking source recycling by the generators of waste. Blue Box materials, collected by Waste Connections at their transfer stations, are taken directly to existing MRFs in the local geographic area within which they are collected.

Given that the majority of waste handled at the Ridge is generated in the Greater Toronto Hamilton Area (GTHA), transporting recyclables to a new MRF located at the Ridge Landfill, bypassing existing MRFs in the GTHA, would not be viable given the GHG emissions and transportation costs. In addition, the sorted materials would have to be trucked back to available market/brokers that are predominantly located in the GTHA.

As such, due to the limitations on the service area of the Ridge Landfill, the only feasible source of Blue Box materials would be from within the Municipality of Chatham-Kent. While this could include both IC&I source and municipal source Blue Box materials, there is already an existing local MRF utilized for that purpose that has the ability to increase capacity if required.

Consideration of a Material Recovery Facility

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> Material processing has the potential to expose MRF workers to dust, odours and other unknown contaminants. These facilities are not typically fully automated and require some manual sorting of waste. Health and Safety practices for workers would be required.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> Additional GHG emissions would be generated to haul source-separated recyclables to the Ridge and to haul recovered materials from the Ridge to end markets. GHG emissions would also be increased due to MRF operations onsite.
Is there sufficient material for processing?	<ul style="list-style-type: none"> When considering the catchment area of Chatham-Kent there would not be sufficient quantities of Blue Box materials to warrant the investment in a new MRF. There is already a MRF in this area that is processing the source separated recyclables. If Blue Box materials from Waste Connections customers in Southern and Central Ontario were transported to a MRF at the Ridge Landfill for processing, there may be sufficient material to warrant a processing facility, but the service would be too costly for these customers who would find processors closer to their generating facilities without the cost of trucking.
Is the opportunity supported by regulation?	<ul style="list-style-type: none"> Blue Box recycling is provincially mandated.
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> No, documented opposition to processing on-site and any activity that would generate additional odours, noise, vectors or require more trucks.
Is it compatible with other existing services?	<ul style="list-style-type: none"> A new MRF would compete against existing Blue Box service and the MRF already in place and operating in Chatham-Kent.

Question	Response
Are there infrastructure / space limitations to providing the service?	<ul style="list-style-type: none"> • Yes, requires a large additional foot print at the landfill for facility construction, material storage, operation, internal roads and shipping. Space is allocated for ancillary landfill facilities (e.g. On-site soil storage area, additional flare construction, etc.) Which limits siting of additional infrastructure.
Is it economically viable?	<ul style="list-style-type: none"> • No, given the limited catchment areas of Chatham-Kent and associated small quantities, existing MRF capacity in Chatham-Kent and the distance to market for segregated product, this option is not considered to be economically viable. • If source separated recyclables are transported from the proposed service area, it would not be economically viable in terms of transportation costs when there are MRFs closer to the points of generation.
Is it more advantageous to provide the services at other location(s)?	<ul style="list-style-type: none"> • For recyclables generated in the proposed service area, it is more advantageous to send materials to local MRFs rather than transporting over 200 km to the Ridge. For recyclables generated within Chatham-Kent, it is more advantageous to send to existing facilities.

While it is anticipated that the MECP's Environment Plan will cause an increase in the amount of recyclable material requiring processing, trucking of material collected in Southern and Central Ontario and shipping it to a MRF located at the Ridge Landfill for further sorting, with subsequent re-trucking of the material for end use or to further processing locations; is not practical or feasible. Constructing a MRF at the Ridge Landfill to process Blue Box material from Chatham-Kent alone is also not feasible since current Chatham-Kent contracts are in place to process the material. The additional trucking of material would add to GHG emissions and create additional truck traffic as well as the potential for odour, noise and vector impacts at the site. There is no local support for this type of facility at the Ridge Landfill.

2.1.3 Construction and Demolition Waste Beneficial Reuse

In the diversions options review memo provided to the MECP on September 4th, 2018, Waste Connections committed to the review of sorting of mixed C&D waste loads at the Ridge Landfill. It was also stated that alternatively, only segregated loads of C&D waste could be considered for acceptance. In developing this option, it was concluded that there is insufficient space at the Ridge Landfill to sort and stockpile mixed C&D waste loads and that the sorting exercise would

be too labour intensive and too costly. As a result, this evaluation focuses on receiving segregated, homogeneous loads of C&D waste for beneficial reuse.

The new MECP Environment Plan supports Waste Connections' position of reducing, reusing and recycling waste at the source (i.e., at the point of generation). In addition, Waste Connections' transfer stations that are located throughout the proposed service area, have well established segregation services, and continually source local facilities for recycling of C&D materials such as: asphalt, brick and concrete, clean fill, organics, wood, roofing and drywall. Although the visual waste transfer station survey (Appendix B) indicated that there is C&D waste being received at the transfer stations and some recovery takes place, it is not practical to safely segregate larger quantities as it would require the hand sorting of mixed materials, and more floor space at the transfer stations to store and process the sorted material.

Segregated C&D waste could be received at the Ridge Landfill where containers or designated areas for different materials could be provided for off-loading by local commercial haulers, contractors and builders. Residents and homeowners undertaking renovations would not be allowed to use this particular service due to safety concerns involving the use of the site. Examples of the segregated material that could be accepted include:

- concrete and/or bricks
- treated wood
- untreated wood
- shingles
- glass.

As appropriate, these materials would be prepared for onsite reuse through crushing or shredding. All other materials would be sold/donated to end markets starting ideally with local Habitat for Humanity and other reuse alternatives, where appropriate.

Consideration of a C&D Depot

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> • C&D waste handling can generate dust and noise impacts (e.g. crushing, chipping). Appropriate health and safety procedures would be required.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> • Reuse of construction materials reduces GHG generation by replacing manufacture of new materials, however, trucking of recovered C&D materials could add to GHG emissions.

Question	Response
Is there sufficient material for processing?	<ul style="list-style-type: none"> • Unknown, generation of C&D waste is typically seasonal and difficult to forecast. • Specific materials may require a significant amount of time to accumulate sufficient volume for use on-site or to transport off-site.
Is the opportunity supported by regulation?	<ul style="list-style-type: none"> • The MECP's Environment Plan looks to capture opportunities to reuse material previously destined for landfill. This service would support the Environment Plan.
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> • Yes, stakeholder survey and community input supported this option.
Is it compatible with other existing services?	<ul style="list-style-type: none"> • Yes, it would augment existing services that are not available at Chatham-Kent transfer stations.
Are there infrastructure / space limitations to providing the service?	<ul style="list-style-type: none"> • Yes. Service may be limited in size as there is limited space available at the landfill.
Is it economically viable?	<ul style="list-style-type: none"> • Set-up cost of facility would be minimal, revenue generation potential of recovered material unknown. Likely a revenue neutral undertaking if the recovered materials can be reused for on-site applications.
Is it more advantageous to provide the services at other location(s)?	<ul style="list-style-type: none"> • No, it is anticipated that the main use for some materials would be at the Ridge Landfill. Therefore it is the preferred location to receive the material.

Waste Connections already practices the re-use of select waste materials for on-site beneficial purposes, such as autofluff for road base and alternative daily cover. The further segregation and on-site reuse or transport off-site for end use of pre-screened homogeneous loads of C&D waste at the Ridge Landfill is an extension of this practice and is a viable option that Waste Connections would consider. If implemented, participation would be limited to commercial haulers and local contractors/builders in commercial vehicles. Residents would not be allowed to participate in this particular service because of safety concerns, particularly with respect to the interaction of large and small vehicle traffic. The initiative strongly supports the MECP's Environment Plan's

focus on exploring additional opportunities to reduce and recycle waste in businesses and institutions.

2.1.4 Source Separated Organic Waste Processing

Source Separated Organic Waste Processing (SSOWP) is the use of organic waste processing technologies that may include energy recovery, and results in the diversion of organic materials. Technologies typically utilized for a source separated organic waste processing facility include: enclosed windrows, aerated static piles, in-vessel composting, or use of an anaerobic digestion technology to process organic waste. After processing, it is anticipated that the material leaving the site would be Class A or B compost, meeting Ontario Compost Quality standards, and could be sold to markets.

For this option, Ridge Landfill would receive source-separated organics collected within Chatham-Kent from municipal and IC&I sources. As identified in Table 2, Response 21 of Waste Connections reply to the MECP of September 20th, 2018, (**Appendix E**) organic wastes from other Municipalities will not be considered due to the restricted residential waste service area of the proposed Ridge Landfill expansion. Similar to Blue Box recyclable materials, for source separated waste originating in Southern and Central Ontario from Waste Connections customers, it is assumed that the organic material would be processed locally and not transported to a SSOWP facility at the Ridge Landfill for processing. The additional cost and GHG generation from transferring the organic material the significant distance (several hundred kilometers) from the major points of waste generation in Southern and Central Ontario is not practical.

Consideration of an SSOWP Facility

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> • Organics facility would not have significant health concerns for workers on-site. Appropriate health and safety measures would be employed. • Some concern from increased attraction of vectors related to organics handling and processing.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> • Unknown. It would depend on the process used (anaerobic or aerobic) and the trucking distances for the raw material to the site and finished product from plant.
Is there sufficient material for processing?	<ul style="list-style-type: none"> • No, currently there is no collection service in Chatham-Kent. If instituted, it is unknown if there is sufficient volume to warrant the size of operation required to be commercially viable. • Rural parts of Chatham-Kent would be unlikely to participate in organics collection favouring on-property/on-farm composting.
Is the opportunity supported by regulation?	<ul style="list-style-type: none"> • There is no regulation that requires the separation and processing of organic waste.
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> • There is support for organics (Green Bin) collection across the Municipality; however, there is no support for siting an organics processing facility at the Ridge Landfill due to potential for odour, noise, trucking and vectors.
Is it compatible with other existing services?	<ul style="list-style-type: none"> • No, it is currently not compatible as there is no organics collection in the Municipality.

Question	Response
Are there infrastructure / space limitations to providing the service?	<ul style="list-style-type: none"> • Yes, requires a large additional foot print at the landfill for facility construction, material storage, operation, internal roads and shipping. Space is allocated for ancillary landfill facilities (e.g. on-site soil storage area, additional flare construction, etc.) which limits siting of additional infrastructure.
Is it economically viable?	If instituted, it is unknown if there is sufficient volume to warrant the size of operation required to be commercially viable.
Is it more advantageous to provide the services at other location(s)?	<ul style="list-style-type: none"> • When or if Chatham-Kent institutes organics service, use of existing or new large scale organics processing facilities would be much simpler and efficient than establishing a new, limited scale facility at the Ridge Landfill.

An organics processing facility at the Ridge Landfill is not a viable commercial undertaking as there is currently no residential organics collection service in place and if it should be implemented, it is unknown what the potential quantities generated by the municipality would be and it is unknown if there is a sufficient quantity of organics material in the IC&I waste originating in Chatham-Kent to make such a proposal viable. However, since there is no provincial requirement at this time to separate organics from either the residential or IC&I waste streams, there is no assured continuous source of material on which to base this undertaking.

Furthermore, local residents concerned with odours, noise, vectors and additional trucks would not support the construction and operation of such a facility.

2.1.5

On-Site Drop-Off Depot

Drop-off depots can take many forms to suit the community they serve. This option considers setting up a drop-off depot, in partnership with the Municipality of Chatham–Kent, at the Ridge Landfill to accept a variety of materials consistent with current Chatham–Kent initiatives. The goal would be to not replicate or overlap existing services but to potentially enhance and compliment the services currently available to residents. There were specific items identified in both the public and stakeholder surveys where the respondents indicated a desire to be able to recycle additional materials. A number of these materials may be able to be accommodated at a drop-off facility at the Ridge Landfill.

The current Chatham-Kent service is outlined below in order to provide context for what could be considered for the Ridge Landfill.

There are currently eight (8) municipal transfer stations in Chatham-Kent (map below) which accept a wide range of materials as listed below:

- *Blue Box Materials* (glass bottles and jars, plastic food and beverage containers and tubs, aluminum and steel cans, empty aerosol and paint cans, aluminum containers and foil).
- *Black Box Materials* (paper beverage cartons including milk and juice cartons, drink boxes, tetra packs and paper hot beverage cups (excluding plastic lids), household paper/newspaper, catalogues, books (hard covers removed) and telephone books, paper egg carton and boxboard (cereal boxes, tissue, shoe boxes, etc.) and cardboard boxes).
- *Other Materials* (rimless tires, white goods (e.g. fridges), scrap metal, empty propane cylinders (max 30 lbs), used oil, electronic waste, single use and vehicle batteries).

Also, four of the Chatham-Kent sites also accept leaf and yard waste, which are also identified on the map below.

Figure 1 - CHATHAM-KENT FACILITY LOCATIONS



In addition, Chatham-Kent conducts a municipal household hazardous waste (HHW) day once a year where residents can drop off materials such as chemicals, pesticides, cleaning fluids, florescent lights, flammable materials (e.g. gasoline and solvents), etc. The collection is done in partnership with Clean Harbours, and is set-up at three locations every fall. Waste Connections currently supports this service through funding. This year, the HHW locations were held at transfer stations in Chatham, Ridgetown, and Wallaceburg.

Specific to a drop-off depot at the Ridge Landfill, this option would involve placement of appropriate sized bins, containers, bunkers and/or lay-down areas for residents to drop-off their materials at the site. It is anticipated that a depot would have hours of operation restricted to

the operating hours of the landfill. The materials accepted at this depot could include, but may not be limited to the following:

- Designated materials (existing and future)
- Bulky items such as mattresses and carpet that require significant storage space
- White goods
- Shingles
- Used clothing/fabric
- Wood and other segregated building materials
- Select agricultural waste products
- Paint.

Consideration of On-site Depot

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> • An isolated, segregated area would be required to maintain complete separation of commercial traffic and landfill vehicle operation from residents utilizing the depot.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> • Some reduction in GHG emissions through the recovery of materials and avoiding use of virgin materials
Is there sufficient material for processing?	<ul style="list-style-type: none"> • Unknown. Potential use of the site could be limited to the immediate neighbours of the landfill as other depots in the Municipality are more conveniently located for the majority of the population. It is unknown what other materials could be added for segregation at Chatham-Kent’s transfer stations as the result of future regulatory changes. <p>If volumes collected are small then there could be considerable aging of materials before there is sufficient quantity to warrant transport off-site.</p>
Is the opportunity supported by regulation?	<ul style="list-style-type: none"> • Yes, an amendment to the site’s Environmental Compliance Approval (ECA) would be required.

Question	Response
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> Survey data indicates support but not demand for a drop-off depot at the Ridge Landfill with the caveat that it does not increase traffic or the number of trucks using the site.
Is it compatible with other existing services?	<ul style="list-style-type: none"> Yes, the service would be designed to be compatible with Chatham-Kent services. This option supports the on-going partnership that Waste Connections has with Chatham-Kent to engage in opportunities to enhance existing waste diversion programs.
Are there infrastructure / space limitations to providing the service?	<ul style="list-style-type: none"> No, some existing use of space at the landfill would need to be re-allocated but there is limited space that could be allocated for this type of service.
Is it economically viable?	<ul style="list-style-type: none"> Set-up of facility would not be a significant cost. The economic viability of the service would depend on the volume of users, the type and marketability of materials to be recovered, staffing requirements, potential funding and user fees that would need to be determined. High contamination rates that can be associated with public drop-off depots may make the service less viable.
Is it more advantageous to provide the services at other location(s)	<ul style="list-style-type: none"> Yes, in the case of existing materials managed at existing Chatham-Kent transfer stations. There is no need to duplicate these services at the Ridge Landfill. In the case of new potential programs there may be some merit in centralizing certain materials at one site e.g. carpet, mattresses. This requires further evaluation.

In fulfilling its commitment made in the ToR, Waste Connections has examined and evaluated the feasibility and viability of implementing an on-site drop-off depot service, including the consideration and assessment of a reasonable number of ways in which to divert the types of local (Chatham-Kent) waste materials received at the Ridge Landfill site. In reviewing the pros and cons, it is clear that while an on-site drop-off depot at the Ridge Landfill is indeed feasible, it is clear that the purpose of a drop-off depot at the Ridge Landfill should be to complement and enhance services already provided to residents in Chatham-Kent.

Waste Connection will continue to support, through their significant financial contributions, drop-offs and HHW depots throughout the Municipality, in addition Waste Connections will move ahead, in conjunction with the Municipality, with the planning of a drop-off depot at the Ridge Landfill for acceptance of specific materials suitable for collection at the landfill site. To this end, Waste Connections can also assist the Municipality in expanding their diversion programs through extension of their existing contracts and practices in Chatham-Kent including those collection services provided by Waste Connections at Chatham-Kent's eight (8) transfer stations.

2.2 At-source and Elsewhere in the System Options

In line with the Made-in-Ontario Environment Plan, Waste Connections is committed to examining and evaluating the feasibility and viability of implementing and supporting diversion programs at-source with its customers and elsewhere in the waste management system. Waste Connections of Canada has 24 stand-alone operating facilities in Ontario that are responsible for local IC&I and/or residential curbside collection; the operation of MRFs and waste transfer stations including two (2) landfills: the Ridge Landfill and the Navan Landfill in Ottawa. The districts work with their IC&I and municipal customers to find at-source solutions for segregation of wastes that have a beneficial end-use. Where at-source separation is not practical, limited manual segregation of wastes for recovery (positive sort) can and does occur at district transfer stations or processing facilities where feasible, and prior to shipment for final residual disposal.

The Waste Connections operating facilities that send their residual waste to the Ridge Landfill have well established waste segregation programs. Waste Connections 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. The results of waste surveys conducted at six (6) of the transfer stations as part of this study is a clear indication that the established Waste Connections programs are effective for diverting these types of materials.

On a system-wide basis Waste Connections diverts an average of 262,000 metric tonnes of IC&I sector material away from disposal sites in Ontario; approximately 180,000 metric tonnes of this material is diverted in Southern and Central Ontario. 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 landfills that year. It is evident that Waste Connections already plays a significant role in IC&I waste diversion in Ontario.

In addition to these diverted materials, Waste Connections also reuses in the order of 238,000 tonnes per year of autofluff, wood chips, glass and asphalt for use in the construction and maintenance of roads and daily cover at the Ridge Landfill. This displaces the use of virgin materials like aggregate and soils. At Waste Connections' Navan Landfill in Ottawa, there is an extensive contaminated soil treatment operation in place, and treated soil is used for final cover and berm construction. Recently, Waste Connections invested in TerraCycle, to support difficult to recycle materials such as those that are not collected in municipal programs including: rigid plastics, polystyrene and plastic laminate.

Some Waste Connections' districts in Ontario have partnered with local farms to reuse some unique waste materials such as: grape residuals, greenhouse vines, as well as other organics and sawdust. Waste Connections Windsor diverts coco product from greenhouse cleanouts to farms. Coco product is a plant growth by-product from greenhouses that is sought by field crop farmers for its exceptional water retention, good drainage and aeration features.

These existing services serve as the baseline for assessment of additional services that can be implemented in the system and to support provincial objectives to increase the amount of waste diverted in Ontario.

Generally future IC&I sector waste diversion opportunities would be focused on additional materials segregation at-source 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. Leadership by the Province in designating materials and enforcing their segregation is imperative to ensure waste generators manage them accordingly.

The following five options are discussed in this section:

- Increased partnerships
- Support implementation of designated materials recovery in the IC&I sector
- Amending 3Rs for the IC&I sector
- New supporting/revived infrastructure

- Monitoring and auditing activity.

2.2.1

Increased Partnerships

The objective of this option is to maximize the value of products as long as possible, keep resources within the economy as long as possible, and facilitate extended use of materials that would otherwise have prematurely reached the end of their useful life. This is accomplished through increased promotion and use of partnerships within the IC&I waste generating community. The MECP's Environment Plan strongly supports these concepts for widespread application by businesses and institutions.

Through their on-going business relationships, Waste Connections would continue to identify opportunities to facilitate partnerships among its customers where a waste product of one customer could be a resource for another. A prime example of this approach is Waste Connections previously mentioned facilitation of the reuse of coco product in the agricultural community. A material that was once destined for landfill is now being utilized to the benefit of the farming community to grow food.

With this option, Waste Connections would promote the reuse of materials through coordination of 'business to business' partnering for reuse or refurbishment of waste materials within local districts and provide shared "resource hubs" in the Waste Connections system, where feasible. Waste Connections would also promote and provide collection support for municipalities that are served by Waste Connections for their municipal programs aimed at reuse initiatives.

Consideration of Increased Partnerships

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> No, only materials that can be safely reused would be considered.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> Yes. Beneficial reuse of materials has a positive impact on the reduction of emissions as it displaces the need for virgin materials.
Is there sufficient material for processing?	<ul style="list-style-type: none"> This would need to be determined on a case by case basis. Waste Connections would look for opportunities for customers to maximize their diversion and would aim to balance waste diversion potential with level of effort required.
Is the option supported by regulation?	<ul style="list-style-type: none"> Not currently supported by regulation, but it is good business practice.
Is there demand and support for the service locally, at-source and/or at elsewhere in the system?	<ul style="list-style-type: none"> Waste Connections has found that under specific circumstances that this is strong support for this service from their customer base. Waste Connections will continue to identify opportunities to facilitate partnerships among its customers, connecting customers that have a waste product that could be a resource for another customer.
Is it compatible with other existing services	<ul style="list-style-type: none"> Yes, in the case of business to business movement of materials there is no interruption of any other service. In local jurisdictions in Southern and Central Ontario, including Chatham-Kent there may be opportunities at transfer stations and/or with non-profit organizations, others who have the space to partner as resource hubs for various initiatives.
Are there infrastructure/space limitations to providing the service?	<ul style="list-style-type: none"> Some Waste Connections properties may not have the physical space to accommodate shared resource hubs. New hubs may need to be established with/by partners.
Is it economically viable?	<ul style="list-style-type: none"> Yes, set up and operational costs are relatively low.
Is it more advantageous to provide the services at other locations?	<ul style="list-style-type: none"> In some cases it may be more advantageous e.g. at other transfer stations and/or with non-profit organizations, others who have the space to partner as resource hubs for various initiatives.

Increasing partnerships is a win-win situation for all involved. It minimizes costs for Waste Connections' customers and helps tackle the issue of GHG emissions by re-using materials and it supports the MECP's Environment Plan. It saves valuable landfill space for non-recyclable materials. Waste Connections knows its customer base well and as that customer base continues to change and grow, it can easily identify these opportunities. Waste Connections has control over the movement of waste materials it manages, so a shift to a different end-user is attainable. Locally, there is support for resource hubs in the form of reuse and swap depots. Waste Connections can assist Chatham-Kent in establishing and advertising these types of facilities at their existing depots and elsewhere within the Municipality. This is an initiative that Waste Connections is committed to supporting.

2.2.2

Support Implementation of Designated Materials Recovery in the IC&I Sector

To address potential government-led designated materials recovery legislation for businesses, Waste Connections could provide technical training and educational support to its small, medium and large IC&I customers during these transition periods. In addition, Waste Connections could offer an audit service to assist their customers in identifying materials in their waste streams. Waste Connections could provide collection services for designated materials and potentially receive additional materials pre-segregated at their transfer stations. Waste Connections can partner with other public and private sector entities for segregation, collection and processing of designated materials.

Waste Connections continually develops, and will continue to support the implementation of regulatory initiatives taken by the MECP. Materials recovery regulations by the MECP could include small appliances, electrical tools, batteries, fluorescent bulbs and tubes, electronic waste, mattresses, carpet, clothing and other textiles and furniture. As these materials are designated, Waste Connections will work with their customers in removing them from their waste streams and aiding in their recovery.

Some of the initiatives to increase waste diversion at-source or elsewhere in the system undertaken by Waste Connections include:

- Educating customers about waste prevention and reduction, including schools that are serviced and continuing to expand on these outreach services.
- Providing research opportunities and investments in innovation. Waste Connections partners with various organizations to support academic research aimed at reducing and recovering waste, such as The Environmental Research & Education Foundation (EREF).

- Conducting waste audits on residual waste streams to determine the extent of recoverable waste.

Consideration of Support for Designated Materials Recovery from Landfill

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> • No, appropriate health and safety procedures would be in place to deal with designated materials.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> • Unknown. Minimizing GHG emissions would likely be one of the MECP criteria for selecting material(s) for designation.
Is there sufficient material for processing?	<ul style="list-style-type: none"> • Customer support can be provided at all times; it is assumed that if a material is designated the quantity will be sufficient for Waste Connections.
Is the option supported by regulation?	<ul style="list-style-type: none"> • This option is about supporting current regulation for designated materials and continuing to support regulations into the future.
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> • Locally, it is expected that Waste Connections will continue to support the Municipality in their efforts to divert residential waste materials as any designated materials recovery program is instituted as would be the case elsewhere in the Southern and Central Ontario service area.
Is it compatible with other existing services?	<ul style="list-style-type: none"> • The collection of any designated materials from the waste stream would be made compatible with existing collection services in Chatham-Kent and in the rest of the Southern and Central Ontario service area.
Are there infrastructure/space limitations to providing the service?	<ul style="list-style-type: none"> • Not for all locations, this would be site specific and material type specific e.g. partnership with existing Chatham-Kent transfer stations, Waste Connections' transfer stations and those locations owned by third parties in the proposed service area to manage the segregation of any designated materials.
Is it economically viable?	<ul style="list-style-type: none"> • Yes, these programs would be funded by producers and/or consumers.
Are there advantages to provide the services at other locations?	<ul style="list-style-type: none"> • Services would be provided at locations suited to material type and location of market for designated materials.

Waste Connections strongly supports government efforts to hold generators responsible for managing the waste they produce as proposed in the MECP's Environment Plan. Waste Connections supports the development, implementation and sustained, widespread enforcement of regulations by the Province that is necessary to provide a level playing field for all waste management service providers. This will allow Waste Connections and others to make the substantial, long term investments required to continue to develop and operate an effective and efficient waste management system in the Province of Ontario.

Waste Connections has over 30,000 customers in Southern and Central Ontario and will continue to develop and provide services to meet the needs of those customers. This includes the creation or modification of dedicated collection routes to meet those needs. Existing Promotion and Education (P&E) services can be enhanced to support the implementation of any future provincial program. Waste Connections already partners with various organizations to support academic research aimed at reducing and recovering food and organic waste, such as The Environmental Research & Education Foundation (EREF). Auditing of materials received at transfer stations is feasible in conjunction with other auditing services. Waste Connections could extend these services in response to a designation of waste material(s) by the Province.

This option is proposed to be carried forward.

2.2.3

Amending 3Rs for the IC&I Sector

This option examines how Waste Connections can respond to amendments to 3Rs (i.e., Reduce, Reuse and Recycle) regulations aimed at increasing recovery across all sectors and specifically the IC&I sector. Specifically, this option considers amendments to Ontario Regulations 102/94 (Waste Audits and Waste Reduction Work Plans), 103/94 (Industrial, Commercial and Institutional Source Separation Programs) and 104/94 (Packaging Audits and Packaging Reduction Work Plans) made under the Environmental Protection Act, commonly known as Ontario's 3Rs Regulations. These regulations currently govern the IC&I sectors. Businesses view the three regulations as the policy framework for waste generator responsibility. The MECP has indicated that amendments that they will make are related to:

- Data gathering from regulated sectors
- Scope of the regulated sectors, size thresholds for facilities and dwellings and designated materials
- Appropriate outcomes for sectors and subsectors
- Reporting and tracking requirements with transparency through public reporting

- Third-party monitoring, certification and audits
- The role of promotion and education in improving IC&I diversion rates
- Performance measures that could be used to increase diversion
- Greater use of new technology and reduction in administrative burden
- Implications of Ontario’s growth management policy
- How to increase diversion in multi-residential buildings
- Exploration of complementary tools, such as producer responsibility to recover resources and reduce waste.

Waste Connections will review any proposed amendments to Provincial policy that is related to the IC&I sector, and provide thoughtful feedback to the MECP to ensure the amended regulations be successfully implemented. Once regulations are implemented, Waste Connections would offer to provide the collection services necessary to support increased materials recovery in the sector as required by its IC&I customers. Additional services offered could be waste audit support, targeted promotion and education to increase awareness of diversion requirements and opportunities, expanded collection and processing services.

The transfer station visual survey completed by Waste Connections (**Appendix B**) indicated that C&D waste and wood are candidates for amended policies. A key Waste Connections task for any policy change would be to help promote and educate their customers on regulatory changes and requirements.

Consideration of Amending 3Rs for the IC&I Sector

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> • No, appropriate health and safety procedures would be in place to deal with amended regulations.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> • Additional collection vehicles may generate additional GHGs but there will also be a reduction in the use of new materials through additional capture of recyclable materials which would contribute to a reduction.
Is there sufficient material for processing?	<ul style="list-style-type: none"> • Yes, it is anticipated that the MECP would propose amendments to 3R Regulations for materials that would not

Question	Response
	require additional infrastructure capacity in the Province at the time of any amendment.
Is the option supported by regulation?	<ul style="list-style-type: none"> Amended 3Rs would provide regulatory support for these programs which would require sustained enforcement to ensure a level playing field for generators.
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> Stakeholder and Public surveys indicate support for increased recycling opportunities within the Municipality. Based on anecdotal experience. it is believed that support for increased recycling opportunities is widespread
Is it compatible with other existing services?	<ul style="list-style-type: none"> Yes, amended 3Rs is an enhancement of already existing regulations set out for the IC&I sector.
Are there infrastructure/space limitations to providing the service?	<ul style="list-style-type: none"> No, it is anticipated that the MECP would propose amendments to 3R Regulations for materials that would not require additional infrastructure capacity in the Province at the time of any amendment.
Is it economically viable?	<ul style="list-style-type: none"> Would depend on the nature of the amendment.
Are there advantages to provide the services at other locations?	<ul style="list-style-type: none"> No, Waste Connections would simply provide enhanced or new services for its customer base.

Waste Connections supports government efforts to amend the 3Rs Regulations for the IC&I Sector. Strong mandate and regulatory enforcement by the Province would be needed to provide a level playing field for all waste management service providers to operate.

2.2.4 **New Supporting/Revived Infrastructure**

Waste Connections has numerous partnerships with existing processing facilities for processing and recovery of recyclable and compostable materials. Waste Connections has experience with the operation of recyclable materials processing facilities including those for conventional recyclables and for C&D waste processing. Waste Connections would employ that experience as necessary and develop partnerships with new/existing waste diversion infrastructure builders, owners, operators as required for the collection and processing of additional recyclable or

organic materials anticipated to be recovered as part of any future regulatory initiative undertaken in the Province.

In addition, Waste Connections could consider reviving or repurposing existing infrastructure such as their C&D processing facility in Vaughan, once the necessary regulatory and economic conditions exist. This option is strongly supported in the MECP's Environment Plan initiative exploring opportunities to recover the value of resources in waste through the encouragement of new projects and technologies. For new and revived infrastructure facilities, Waste Connections would undertake standardized training for owners and operators of resource recovery systems.

Consideration of New and Revived Infrastructure

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> No, appropriate health and safety procedures would be in place to operate infrastructure.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> Not known at this time, depends on the facility and the material being processed.
Is there sufficient material for processing?	<ul style="list-style-type: none"> It is assumed that once regulations are in place there would be sufficient material to operate a facility(s).
Is the option supported by regulation?	<ul style="list-style-type: none"> Not currently. There is no regulatory framework in place to support the construction of new or the revival of existing infrastructure for Waste Connections.
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> Support for the service will be contingent on regulatory change.
Is it compatible with other existing services?	<ul style="list-style-type: none"> The revival or development of waste diversion infrastructure would be compatible with other services.
Are there infrastructure/space limitations to providing the service?	<ul style="list-style-type: none"> No, reviving/repurposing of existing infrastructure would have minimal space limitations, and new infrastructure would be sited accordingly.

Question	Response
Is it economically viable?	<ul style="list-style-type: none"> The cost associated with establishing new or revived / repurposed infrastructure is unknown, as a complete cost analysis would be required on a case by case basis.
Are there advantages to provide the services at other locations?	<ul style="list-style-type: none"> Depends on the material being recovered, the location of material generation and the location of the proposed new and/or revived infrastructure.

Waste Connections is very experienced at operating recovery facilities and if demand warrants, is prepared to invest in new and revived infrastructure to meet the market demand for increased diversion of materials.

2.2.5 Monitoring and Auditing Activity

Waste Connections could support provincial objectives toward enhanced data collection, reporting, and performance measures. As a practice Waste Connections undertakes on-site audits for its customers to identify opportunities for waste materials segregation for diversion purposes. Waste Connections can also more routinely audit waste materials received at their transfer stations to identify opportunities for increased waste diversion of select materials. The focus would be on materials that have either been designated by the Province, mandated through 3R's amendments or are subject to any other future Provincial initiative. Waste Connections has well established data management and tracking systems that can support provincial tracking of waste diversion in the IC&I sector that it serves.

Consideration of Monitoring and Auditing Activities

Question	Response
Is there potential for an impact to worker and public health and safety?	<ul style="list-style-type: none"> Auditing activity would only take place in safe working areas e.g. at-source and at a distance from moving equipment.
Does it minimize GHG emissions?	<ul style="list-style-type: none"> Auditing could provide data to help Waste Connections and the Province focus on additional diversion with the greatest impact potentially resulting in long term GHG reduction.
Is there sufficient material for processing?	<ul style="list-style-type: none"> Not applicable – this option relates to collecting data; however it will support efforts to identify additional areas for diversion

Question	Response
Is the option supported by regulation?	<ul style="list-style-type: none"> • Ongoing monitoring and data sharing helps understanding of where regulations will have the greatest impact. • The Province has indicated a desire to have on-going access to waste management data
Is there a demand and support for the service locally, at-source and/or elsewhere in the system?	<ul style="list-style-type: none"> • Province has indicated a desire to have on-going access to waste management data.
Is it compatible with other existing service?	<ul style="list-style-type: none"> • Most waste management companies record data for business reasons. Waste Connections would comply with reporting regulations; however, they have concerns regarding confidentiality of their proprietary business information.
Are there infrastructure/space limitations to providing the service?	<ul style="list-style-type: none"> • Additional staff time for tracking and reporting may require some minor changes to internal data management system but reporting services should be flexible enough to enable the use of existing internal data management systems.
Is it economically viable?	<ul style="list-style-type: none"> • Electronic data transfer would have minimal cost impact.
Are there advantages to provide the services at other locations?	<ul style="list-style-type: none"> • This is a centralized feature applicable to all Waste Connections facilities.

There are no barriers to enhanced data collection, reporting and performance measures development and tracking as long as reporting requirements are clear, mandated and consistently applied across both the public and private sectors. Confidentiality of data is also a prime concern related to the proprietary nature of Waste Connections business information.

Scoping of Diversion Options

This section summarizes the findings from the evaluation and provides more context to the proposed options being carried forward

On-Site Processing at the Ridge Landfill

In the evaluation of on-site processing options it becomes clear that none of the on-site material processing options are viable, financially feasible or practical, for the Ridge Landfill site. The waste generated in the service area for the Ridge Landfill originates primarily from the GTHA, which has some of the most advanced waste processing and diversion facilities. As a result, constructing new waste processing and diversion infrastructure at the Ridge Landfill will be redundant and not viable. Processing of these materials at-source is more practical, efficient, economical and in line with the MECP Environment Plan.

Even in the context of smaller facilities that might support local recycling source segregation activities, the low volume of wastes to be received at the Ridge Landfill make a business proposition less likely. Larger, more centralized processing facilities that are located a reasonable geographic distance from population areas that generate sustainable quantities of materials are more viable and this has been the subject of discussion in Ontario for decades.

MWPF's are not commercially viable alternatives to source separation of recyclable materials at the point of generation. Recyclable materials should be recovered at-source (to optimize material quality and support sustained marketability) to the extent possible. The IC&I sector in Ontario has room to improve in recyclable material recovery at-source, through strong legislation, focused education and promotion that can be addressed in the Southern and Central Ontario marketplace through the use of existing processing facilities and the addition of new/revived processing facilities at the key points of generation. For these reasons, the on-site processing facility options are not considered further.

The option of receiving source-separated C&D waste has merit. Waste Connections already reuses a large volume of waste materials in their landfill operations on-site. Providing facilities to receive these materials for beneficial use would complement existing services and existing practice e.g. size reduction of materials through crushing, chipping, shredding as appropriate for movement to various markets. Off-loading of C&D wastes would be limited to commercial haulers and local contractors/builders in commercial vehicles. Homeowners and residents would not be permitted for safety reasons, specifically due to the potential interaction of large and small vehicles.

On-Site Drop-Off Depot

In fulfilling its commitment made in the ToR, Waste Connections has examined and evaluated the feasibility and viability of implementing an on-site drop-off depot service, including the consideration and assessment of a reasonable number of ways in which to divert the types of local (Chatham-Kent) waste materials received at the Ridge Landfill site. In reviewing the pros and cons, it is clear that while an on-site drop-off depot at the Ridge Landfill is indeed feasible, it is clear that the purpose of a drop-off depot at the Ridge Landfill should be to complement and enhance services already provided to residents in Chatham-Kent.

Waste Connection will continue to support, through their significant financial contributions, drop-offs and HHW depots throughout the Municipality, in addition Waste Connections will move ahead with the planning to locate a drop-off depot at the Ridge Landfill for acceptance of specific materials. To this end, Waste Connections can also assist the Municipality in expanding their diversion programs through extension of their existing contracts and practices in Chatham-Kent including those collection services provided by Waste Connections at Chatham-Kent's eight (8) transfer stations.

At-source Diversion Opportunities

While the MECP's Environment Plan firmly places the responsibility for waste on the generator, to achieve any tangible improvement to diversion from the Ridge Landfill waste stream, Waste Connections can continue to encourage and assist its customer base to make incremental improvements to their waste management efforts to divert more materials from the landfill. Waste Connections will continue to work with and provide educational and promotional material to their customers to help improve their waste management efforts. Waste Connections also anticipates that this service would be customized and enhanced to help their customers comply with changes to the regulatory requirements for waste management in the Province. As waste management regulations change in the Province through either by designating materials or amending 3Rs regulations, Waste Connections will assist their customers in adapting to them.

System-Wide Diversion Opportunities

Waste Connections recognizes the onus that the MECP has placed on the IC&I waste sector in its Environment Plan and its role in improving IC&I waste diversion options for its Ontario customers. Waste Connections is committed to maintaining their support and leadership in the Environment Plan, and will continue to support its customers in a feasible manner as regulations change and materials are potentially designated from the waste stream. Waste Connections is very

experienced at operating recovery facilities and if demand warrants, is prepared to invest in new and revived infrastructure to meet the market demand for diversion of materials.

Waste Connections provides recycling services to its customers and can promote and inform their customers about diversion practices at its facilities as regulations are amended to include additional materials. Waste Connections can measure and monitor the waste streams they process in order to achieve better planning and reporting. Providing industry feedback to regulators is a valuable service for better waste management industry-wide guidelines and regulations.

4.0 Promotion and Education Initiatives

The following initiatives will be considered by Waste Connections to promote diversion to its customers, residents of Chatham-Kent, and across the Province.

Chatham-Kent Waste and Recycling Website:

Promote local residential waste diversion resources and services by sharing the link on the Chatham-Kent waste and recycling website <https://www.chatham-kent.ca/GarbageandRecycling>.

Promote Reuse and Swap Event Sites:

The Chatham-Kent public can share materials and plan for event days for waste recycling and exchanges at this existing website. It works like a classified ad section. It's free to use- <http://www.chatham-kent.reuses.com>. Uses iWasteNot systems which is an online web application for waste reduction. These events and sites can be promoted on the Waste Connections web site and newsletters.

Promote Diversion Apps:

There are existing mobile phone software applications (Apps) that are available to the general public that promote diversion. Two (2) such Apps include:

- MyWaste is available to Chatham-Kent residents and businesses free of charge. A link to the app is found on the Chatham-Kent website.

- **Recycle Coach** is available to Chatham-Kent. The app includes information to “Be a better Recycler” and a “What Goes Where” search link. A link to the app is on Chatham-Kent website. The app is useful for any community system wide that signs up for the app services. Users can search by community at <https://solutions.recyclecoach.com>.

These events and sites can be promoted on the Waste Connections web site and newsletters.

Promote Diversion on Ridge Landfill.com:

Waste Connections can promote diversion itself directly through the landfill website, RidgeLandfill.com, in two ways:

- Promote diversion best practices with resourceful content and case studies.
- Promote and educate residential and IC&I sectors through updated compelling content, better use of existing social media outlets, and expand audience.

Promote Recycling and Diversion Services (System Wide):

In order to improve customer and third party hauler diversion, Waste Connections’ will continue to encourage customer to improve diversion in response to market conditions and regulation. For example:

- Increase marketing of recycling - services to its customer base.
- Set a target to increase number of customers for recycling - collection service.
- Educate customers on the value to them in the efficient use of landfill space.
- Promote recycling - collection service options and tips to customer via content on billing invoices.
- Promote the benefits of reuse, reduction, resource recovery, diversion, - - in company marketing materials.
- Promote benefits of efficient use of valuable landfill space (economic, environmental).
- Offer auditing and monitoring services to customers.

Scholarships:

Waste Connections will continue to finance educational scholarships in Environmental Management Programs at Ridgetown College, in order to bring awareness of resource

management issues and to encourage succession planning in environmental stewardship at waste management facilities.

Educate Public on Emerging Regulations:

To aid businesses in their waste management planning, Waste Connections could provide a resource page on their website, with direct links to provincial government regulations, policies, frameworks, and strategies that impact the IC&I sector.

Promote TerraCycle:

TerraCycle, a Southern Ontario corporation, finds end uses and recycling for hard to recycle materials in traditional diversion programs.

5.0 Conclusions

Waste Connections proposes to carry forward the following options/initiatives:

- Consider a program for the beneficial reuse of source separated C&D waste at the Ridge Landfill.
- Continued collaboration with the Municipality of Chatham-Kent in the enhancement of its diversion programs.
- Move ahead with planning of an on-site drop-off depot at the Ridge Landfill for specific materials that would complement and enhance existing diversion opportunities in Chatham-Kent.
- Continue to evaluate opportunities to apply new and emerging diversion technologies to meet market needs.
- Consider constructing new and/or repurposing existing infrastructure in its normal course of business, in ways that could align with changes to Provincial policies and regulations.
- Assist customers in understanding changes to policies and regulations through the existing outreach program.
- Support the Province in waste data collection and management.

- Provide review and comment from an industry perspective to MECP on proposed waste management policies and regulations.
- Share current survey findings with Chatham-Kent Waste and Recycling Services.
- Promote recycling in both the IC&I and residential sectors in Chatham-Kent and across the wider waste management network.
- Continue to develop its recycling and waste diversion services in response to regulatory initiatives, customer needs and end-market needs.
- Continue to support educational scholarships in environmental management in general and waste management programs in particular.

Increased waste diversion is an important component of Waste Connections' efficient, integrated system. It will assist the Province in minimizing the amount of waste sent for landfilling. However, the additional diversion opportunities identified in this report will not reduce the need of the 1.3 million tonnes of capacity per year during the 20 year planning period for the Ridge Landfill.

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6.0 Acronyms, Abbreviations, Definitions

– A –

AD, refers to anaerobic digestion.

Alternative Daily Cover, cover material other than earthen material placed on the surface of the active face of a landfill at the end of each operating day to control odours, blowing litter, scavenging, etc. (CDR,2016)

– C –

C&D, refers to Construction and Demolition waste materials, such as wood, drywall, metal fixtures, etc.

CNG, refers to compressed natural gas.

– D –

Diversion, refers to any environmentally-sustainable initiative that decreases the quantity of waste that must be landfilled” noting it is critical that a market exists in order for any material to be diverted.

– E –

EA, Environmental Assessment, means an environmental assessment process and/or report submitted pursuant to subsection 5(1) of the EAA³.

ECA, Environmental Compliance Approval, is a regulatory approval issued by the MECP for operation of a specific facility’s emissions and discharges related to air, noise, waste and sewage.

³ Environmental Assessment Act

Environment, defined in the EA Act includes: natural environment (air, land, water, plant and animal life including humans), built environment (building, structure, machine), social, economic, cultural conditions and the interrelationships between them.

EREF, refers to Environmental Research & Education Foundation.

– F –

Flaring, refers to the high temperature destruction (burning) of landfill gas generated by waste in the landfill and collected through a network of wells and pipes.

– G –

GHG, greenhouse gas.

GTHA, Greater Toronto Hamilton Area.

– H –

HDPE, refers to high density polyethylene, a type of plastic.

HHW, refers to Household Hazardous waste stream.

– I –

IC&I, refers to Industrial, Commercial and Institutional waste stream.

Indigenous Communities, The First Nations and Métis communities identified by the Ministry of Environment, Conservation and Parks that have potential to be interested in, or impacted by the Undertaking. These groups include: Caldwell First Nation, Walpole Island First Nation, Kettle and Stoney Point First Nation, Chiefs of Ontario, Chippewas of the Thames First Nation, Moravian of the Thames, Munsee-Delaware Nation, Oneida of the Thames, Métis Nation of Ontario and the Aamjiwnaang First Nation.

– L –

Landfill, refers to an approved, engineered site used for the long-term disposal of waste.

Landfill Site Area, This term encompasses the 262 ha area identified by the MECP which includes the fill areas and associated environmental works, and facilities required for the ancillary waste management activities.

Leachate, refers to the liquid produced when water passes through waste material.

Leachate Collection System, refers to the on-site system of PVC pipes and drainage aggregate beneath or around a landfill mound that is designed to capture and move leachate to the sewer main and ultimately to the Blenheim wastewater treatment lagoons.

– M –

MECP, Ministry of the Environment, Conservation and Parks.

MRF, refers to a material recovery facility.

MWPF, refers to mixed waste processing facility.

– O –

OCC, refers to old corrugated cardboard.

Organics, refers to the biodegradable component of waste received at a landfill. Also referred to as green bin waste, originating from plants and animals, it includes: food, garden, yard, animal and plant based materials.

– P –

PET, refers to polyethylene terephthalate, a type of plastic.

PS, refers to polystyrene, a type of plastic.

– R –

Recovered Resources, This refers to recyclable materials that can be reused.

Residuals, refers to the non-divertible component of the waste stream that is landfilled.

Resource Recovery, refers to materials or energy that can be taken from waste and used.

Ridge Landfill, Property that encompasses existing Landfill Site Area and proposed expansion. The site is owned by Ridge Limited Partnership. Ridge (Chatham) Holdings G. Inc., is the general partner and Waste Connections of Canada Ltd. is the limited partner.

– S –

SSOWP, refers to source separated organic waste processing.

Stakeholders, refers to ‘interested persons’ as defined in the “Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario” (Ministry of the Environment, 2014b) (January 2014).

– T –

Transfer Station (TS), refers to a facility where garbage (waste) is transferred from garbage collection trucks and consolidated into larger waste hauling trucks for transportation to waste processing, diversion, or disposal site.

– U –

Undertaking, The proposed expansion of the Ridge Landfill (also described herein as the “Project”).

– W –

Waste Connections of Canada Inc., or “Waste Connections”, is the proponent for this Undertaking. Waste Connections was formerly Progressive Waste Solutions Canada Inc.

Progressive Waste Solutions and Waste Connections merged in an all-stock transaction as of June 1, 2016.

– Z –

Zero Waste, refers to “a philosophy, a strategy, and a set of practical tools seeking to eliminate waste, not manage it.”⁴ Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.

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⁴ Zero Waste International Alliance

Appendix A

Diversion Examples and Case Studies



MEMO

TO: Cathy Smith, Project Manager, Ridge Landfill Expansion EA, Waste Connections
FROM: Bill Allison, Dillon Consulting Ltd.
DATE: December 5, 2018
SUBJECT: Review of IC&I Waste Composition in Ontario and Elsewhere in Canada
OUR FILE: File # 15-2456

1.0 Terms of Reference and MECP Commitments

As noted in the Approved Amended Terms of Reference, approved by the Ministry of Environment, Conservation and Parks in May 2018:

Waste Connections will commit to assisting the province in meeting its diversion goals and will consider opportunities to enhance its existing waste diversion activities, either at source, at the Ridge Landfill, or elsewhere in Waste Connections' integrated system.

Waste Connections committed to the MECP to conduct a review of recent and publicly available IC&I waste reports and waste composition audits produced by municipalities and others to gather waste generation and composition data for the Industrial, Commercial and Institutional (IC&I) sector. This memo outlines waste composition in Ontario and elsewhere in Canada for the IC&I waste stream. As approximately 98% of waste accepted at the Ridge Landfill is IC&I waste and 2% is residential waste, the examples and case studies were chosen accordingly.

2.0 Background

According to the Recycling Council of Ontario there is a total of 16,250,000 tonnes of IC&I waste produced in the province, i.e., 44,500 tonnes/day, each year. This total is derived from a wide range of businesses and industries that require a variety of collection methods and frequency of service, as well as waste streams that are unique to particular industries. In Ontario there are 458,387¹ businesses and industries that could potentially generate IC&I waste².

3.0 Examples of Current IC&I Waste Composition in Ontario and Elsewhere in Canada

Oxford County, Ontario – 2017 IC&I Waste

In 2017, Kelleher Environmental calculated the composition of the IC&I waste stream using their KE WAM Model. The model is an estimate based on a compilation of waste audits of IC&I sectors. Using a total tonnage of 42,000/year, they estimated that food (22%), paper/cardboard/ newsprint (29%), and plastics

¹ Statistics Canada, 2017

² Ibid

(14%) were the three main materials identifiable in the IC&I waste stream arriving at Oxford County's landfill. Yard and wood waste accounted for 13%, and unidentified waste accounted for 16%. Glass and metals constituted the remaining 6%.

Kelleher Environmental estimated that manufacturing was the largest contributor by weight to Oxford County's IC&I waste at about 22% of the total, followed by retail at over 16%, health care at 10% and the hospitality trade (hotels/restaurants) at 9%, offices (IT, finance, insurance, real estate, professional/technical services, admin, etc.) collectively at 10%, and agriculture at 7%. The remainder of the waste composition was associated with the transportation, warehousing, wholesale, mining, and utilities sectors.

It was stated that private waste haulers were not willing to provide actual tonnage values in order to confirm tonnage leaving Oxford County to ensure business confidentiality. The report concluded that there was no reliable source of data in Ontario regarding the composition of IC&I waste and recommended MECP institute a central reporting requirement for the IC&I sector.

Overall the top three materials found in this IC&I waste stream were: food 22%, paper 29% and plastics 14%. These three divertible materials make up over half of the waste stream analyzed.

Metro Vancouver, British Columbia – 2014 IC&I Waste Characterization Program

Tetra Tech EBA Inc. conducted a study for Metro Vancouver to establish characterization data on IC&I waste. The objectives of the study were to characterize waste from a subset of businesses across the following four industries: Accommodation, Business Commercial, Manufacturing and Retail Trade.

Ninety-eight samples of waste with a total weight of 7,274 kg were collected directly from businesses and sorted. Results were characterized by category and sector. The audit concluded that manufacturing contributed 10% of the total IC&I waste stream, followed by 9% from the hospitality trade, 7% from offices, 4% from retail, with the remaining 70% being categorized as 'other waste' (education, health care, construction, government, and wholesale). The study concluded that manufacturing was the single greatest contributor of unsorted disposed waste and it contained a large quantity of organics.

Manufacturing produced the most unsorted disposed waste and Retail Trade the least. Accommodation & Food produced the largest amount of organic material (58%) despite having a smaller overall waste disposal rate. Manufacturing produced the largest amount of plastics (18%); the proportion of plastics was comparably lower for the other business categories. Business & Commercial Services produced the most paper (38%), followed by Manufacturing (25%). Retail Trade produced the least of the three major material categories: organics, plastics, and paper. In terms of smaller-tonnage product categories, Accommodation & Food produced a relatively large amount of glass and metals (2%), and Manufacturing produced a noteworthy amount of non-compostable organics (e.g. treated or painted wood, textiles,

rubber, and other composite organic materials), household hazardous, and fines (4%, 3%, and 3%, respectively).

Overall, the top three materials found in this IC&I waste stream were: compostable organics 40%, paper 31% and plastics 18%. Over 80% of the IC&I waste stream in this analysis is composed of three divertible materials.

City of Calgary, Alberta – 2011 IC&I Waste Diversion in Calgary

At a conference in Edmonton, a representative of the City of Calgary presented data of their annual IC&I waste stream which amounted to 314,500 tonnes in 2010. IC&I made up half of the total waste stream in Calgary from eighteen different business sectors. Their results identified the top four sector contributors to waste as: hospitality trade 17%, retail 15%, health care 11%, and manufacturing 7.5%.

They observed that Ontario had enacted successful legislation to make recycling options more readily available at institutions and businesses, and that Alberta needed to consider a similar approach.

Overall, the top two materials found in this IC&I waste stream were food and paper/cardboard/yard waste which added to over 62% of the total IC&I waste stream.

In November 2017, Calgary implemented a bylaw for businesses. If a business does not have a food and yard waste program in place after Nov. 1, 2017, the first step will be to work with them to help them become bylaw-compliant. Owner(s) of the business property could be subject to a fine if they fail to comply. As of November 1, 2016 businesses and organizations in Calgary are required to recycle the same materials that residents recycle at home, plus scrap metal, clear plastic film (polyethylene) and wood.

City of Ottawa, Ontario – 2007 IC&I Waste Characterization Report

A consortium of three firms, Genivar, Kelleher Environmental, and Jacques Whitford, identified the composition and quantities of IC&I and C&D waste, and its sectors of origin. In 2006, Ottawa's total non-residential waste stream consisted of 70% of IC&I and 30% of C&D material. Approximately 14% of the IC&I stream was being diverted from landfill. The study did not account for pre-diversion occurring from scrap metal dealers or reuse of materials by the manufacturing sector. The studied used existing waste data and modelling to identify composition and waste stream quantities.

The top four sectors of waste generation were identified as retail (17-24%), hospitality (15-19%), health care (11-14%) and manufacturing (9-15%). The remainder was identified as originating from offices.

Similar to the other IC&I studies, paper/cardboard (42%), food (14 %) and plastics (10%) were the largest components of the total IC&I composition. The information was used as a baseline to begin targeted programs for diversion in Ottawa.

RIS International Ltd. – 2005 the Private Sector IC&I Waste Management System in Ontario

This report, prepared for the Ontario Waste Management Association by RIS International Ltd, identified the top four sectors contributing to the IC&I waste stream as manufacturing (27%), retail (15%), hospitality (14%), and health care (11%) out of a total of 6,520,000 IC&I waste generators in Ontario.

The overall composition of materials within the IC&I Ontario waste stream was estimated using existing waste data, data from other jurisdictions and waste modelling. No physical waste composition audits were carried out for this study.

Overall, the 2005 study reported that Ontario IC&I waste composition's top three materials were: paper fibers 40% (paper 25% and cardboard 15%), organics 13% (food 11.4% and yard waste 1.6%) and plastics 8%. The study reported construction and demolition (C&D) waste separately from the IC&I stream. For C&D the top three materials were: wood (31% - 52%), fill and aggregate (14%) and drywall (9%).

The OWMA has attempted to compile waste data and quantities from its broad waste sector members for many years. The collection of data has been sporadic despite the benefits of a robust IC&I waste data set to the waste sector. Private businesses are in competition for business and market share. Fair competition in the market is the driver behind the safeguarding of proprietary business data, sales data and waste services data. There is little incentive to share detailed data with OWMA or any other organization, nor is their regulatory requirements to report to a central body. While the IC&I sector is required to have waste management plans and carry out waste audits to monitor those plans, the enforcement of this requirement is not in place in Ontario at this time.

4.0 Discussion

The common theme in the studies reviewed, is that there is significant opportunity to reduce divertible materials from the IC&I waste stream at their source i.e., at their place of generation. The quantity of divertible material has often been identified as well over 50 % of the total IC&I waste stream. The divertible material in the IC&I stream has been documented to originate from four main IC&I sectors: manufacturing, hospitality, (accommodation and restaurants), retail, and healthcare. Based on the reviewed reports the IC&I composition ranges, based on weight, are:

- Organics 13% to 58%
- Paper 29% to 42%
- Plastics 8% to 18%

Organics, paper fibers and plastics are the three main material categories in most need of feasible and practical solutions to effectively divert them from the IC&I waste disposal stream. Organics consisting of food waste, spoiled food, soiled paper, leaf and yard waste is the largest component of IC&I waste composition. Paper fibers consisting of printed paper, newspaper, boxboard and cardboard makes up the

second largest component of IC&I waste. Finally, plastics (containers, film, foam and rigid, single-use) make up the third largest component of IC&I waste.

Of the three components, organics and paper are divertable materials that currently have processing capacity in Ontario. Organics can be composted or anaerobically digested. These processing facilities currently exist throughout Ontario and are proven technologies. Paper recycling has existed since the 1970s in Ontario. The recycled paper quality is a factor in finding feasible end markets. China has recently raised the quality standard of recyclables it accepts. Some current Canadian recycling facilities are struggling to maintain that high quality due to mixed collection of recyclables. Proper sorting and quality control (not soiled nor contaminated) can help ensure there are viable markets for paper recycling. While sorting facilities exist for plastics in Ontario, not all types of plastics are accepted at these facilities. Currently, not all plastic materials have an end market to sell sorted plastics to. Market development would need to occur in order to recycle or reuse all plastics in all the waste streams including residential, IC&I and C&D.

Ontario's waste reduction strategy lacks targets for the IC&I sector in particular. The IC&I sector currently operates on a business-to-business, fee per service structure, where the costs of waste diversion are not offset by government programs or stipulated through regulation. For the majority of materials, this means disposal is the least direct cost option. Additionally, relatively few members of this sector are required to divert any of their refuse from disposal. As a result, waste diversion occurs at a much lower rate in the IC&I sector than in the residential sector, where provincial public policy initiatives and public acceptance for diversion programs have been prominent drivers. This is one of the biggest changes necessary for a new waste strategy. Greater focus and attention on establishing mechanisms such as disposal bans and extended producer responsibility schemes could increase waste diversion in the IC&I sector.

Appendix B

Transfer Station Waste Survey Results



MEMO

TO: Cathy Smith, Project Manager, Ridge Landfill Expansion EA, Waste Connections
FROM: Bill Allison, Project Manager, Dillon Consulting Limited
DATE: December 11, 2018
SUBJECT: Transfer Station Waste Surveys - Results
OUR FILE: 15-2456

As noted in the Approved Amended Terms of Reference, approved by the Ministry of Environment, Conservation and Parks in May 2018:

Waste Connections will commit to assisting the province in meeting its diversion goals and will consider opportunities to enhance its existing waste diversion activities, either at source, at the Ridge Landfill, or elsewhere in Waste Connections' integrated system.

This purpose of this memo is to support Waste Connections' investigation into diversion opportunities and is in response to the MECP's request to quantify how much material could be diverted at Waste Connections' operated transfer stations. Just over half (695,000 tonnes) of the amount of waste disposed annually at the Ridge Landfill originates from these transfer stations.

To attempt to quantify the divertible quantity of material, high-level waste surveys were carried out with the assistance of seasoned Waste Connections' tipping floor operators to identify materials received on site. The results of the high-level waste surveys provide insight to the diversion potential. The information gathered will be used to evaluate potential waste diversion options, to assess the viability of programs, and to determine where additional diversion activities may be appropriate to implement.

Data Collection Approach

For a two week period, in the fall of 2018, Waste Connections transfer station staff conducted random, visual surveys of waste loads received at six Southern and Central Ontario waste transfer stations. The selection of transfer stations was based on obtaining a representative sampling of waste materials that are received across the Waste Connections' complete network. The two week survey period was considered to be a representative sample of the majority of customers served by each transfer station.

The purpose of the surveys was to gain a better understanding of the material composition being received in discrete loads. A copy of the visual survey material checklist form that was used in the survey is attached. The forms were used to record the estimated percentage of each of a range of materials (identified as typical of the IC&I waste stream) having some diversion potential in each load that was surveyed.

The material categories transfer station operators were surveying consisted of the following:

Material Category	Description
Organics	expired fresh produce, prepared food, kitchen waste, soiled paper towel
Organics in Packaging	grocery store expired meat, cheese, fruit & vegetable in packaging
Landscaping	leaf & yard, grass, brush, branches, stumps
Cardboard	boxes, packaging, displays, signs
Other Paper	boxboard, newspaper, printed paper, packaging, cups
Plastics (Mixed)	containers, pails, jugs, film, wrap, Styrofoam
Metal	scrap, empty drums, containers, cans, rods, tubes
Appliances & Electronics	washer, stove, fridge, TV, computer, printer, etc. (white goods)
Wood (untreated)	pallets, lumber, scrap wood waste
Construction Other	shingles, asphalt, cinder, bricks, rubble, siding
Carpet and Textiles	flooring, drapery, cloth, fabric, rugs, mats, rags, garments, linen
Other	Mattresses, drywall, steel straps, furniture

The six transfer station locations that participated in the survey are shown on the map below and include:

- Advance Transfer Station, 117 Advance Blvd., Brampton L6T 4H9
- Barrie Transfer Station, 320 Saunders Rd., Barrie L4N 8Z9
- Bracebridge Transfer Station, 580 Ecclestone Drive, Bracebridge P1L 1V7
- Creditstone Transfer Station, 650 Creditstone Rd., Concord L4K 5C8
- Hamilton Transfer Station, 500 Rennie St., Hamilton L8H 3P5
- Oakville Transfer Station, 1209 North Service Rd. E., Oakville L6H 1A7

Specific information on each transfer station is included at the end of this memo.

FIGURE 1: TRANSFER STATION LOCATIONS SURVEYED



The following working assumptions were used as part of the analysis of the raw data collected:

- The six transfer stations receive typical loads of materials accepted at transfer stations throughout the Waste Connections system in Southern and Central Ontario.
- The materials on the list that was utilized were selected to represent materials that had established recycling programs or potential for a recycling program and/or market development in the province.
- Bagged materials were not opened. Visual estimates of material volumes were applied based on experience of the operators.

- An average size volume in cubic meters was applied to truck loads by each specified truck type i.e., roll-off, front end, side load.

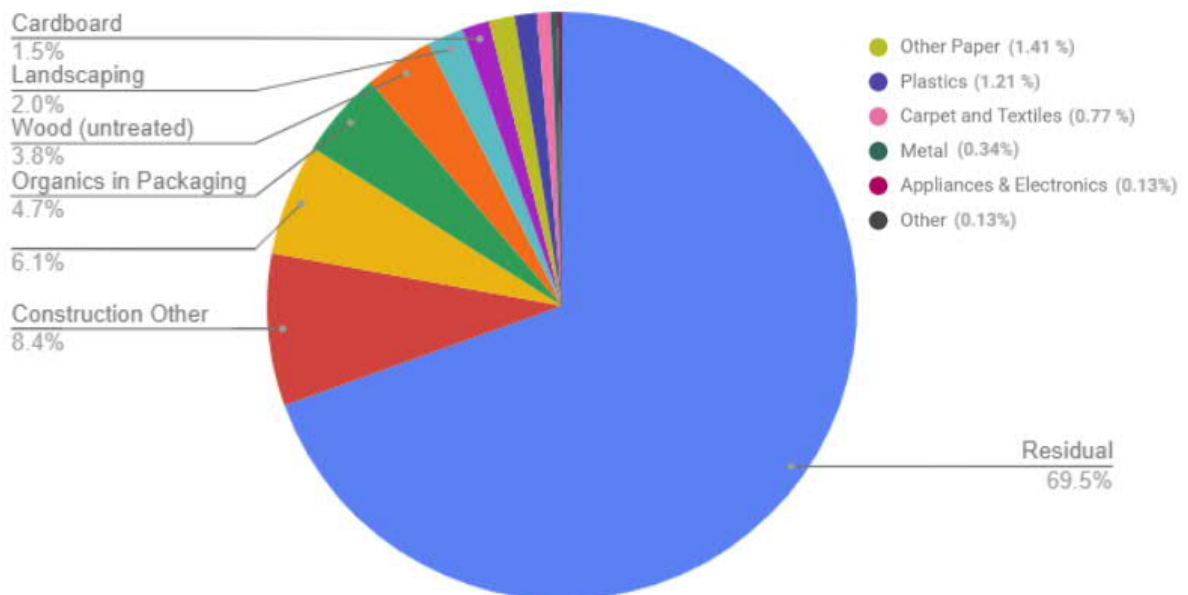
Completed forms were received by Dillon and the data entered into Excel tables for subsequent analysis. As part of the analysis, the following steps were completed:

- Application of average industry standard bulk densities for each material type.
- Conversion of each material volume to a quantity in tonnes by applying bulk densities.
- Calculation of percentage by weight of each material averaged for all loads surveyed.

In reviewing the survey results by material composition (see Figure 2 below) the predominant divertible materials at the transfer stations by weight are organics, construction and demolition materials (C&D) and wood waste. Landscaping waste and cardboard were identified as being present in lower quantities.

FIGURE 2: MATERIAL COMPOSITION SURVEY RESULTS

% by weight breakdown (including residuals)



Survey Form

Waste Connections Canada	Waste Volume Visual Survey Ontario October 2018			Page No.:
Employee Initials:	Site:			Date:
<i>Circle the percent % of materials per load where applicable.</i>	Load No.:	Load No.:	Load No.:	
	Truck Type: FE RO ROC SL	Truck Type: FE RO ROC SL	Truck Type: FE RO ROC SL	
Materials	Time of Day:	Time of Day:	Time of Day:	
Organics – produce, food scraps, kitchen waste, soiled paper towel	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Organics in Packaging - grocery store expired meat, cheese, fruit in packaging	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Landscaping – leaf & yard, grass, brush, branches, stumps	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Cardboard – boxes, packaging, signs, cutouts, displays	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Other Paper – boxboard, newspaper, printed paper, packaging, cups,	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Plastics – containers, pails, jugs, film, wrap, Styrofoam	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Metal- scrap, empty drums, containers, cans	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Appliances & Electronics- washer, stove, fridge, TV, computer, printer	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Wood (untreated)– pallets, lumber, scrap wood, renovation and construction wood	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Construction Other- shingles, asphalt, cinder, bricks, rubble, window glass	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
Carpet and Textiles- flooring , rugs, mats, drapery, cloth, rags	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
OTHER: _____	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
OTHER: _____	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	
OTHER: _____	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	<5% 5-10% 10-25% 25-50% >50%	

Transfer Station Information

Advance TS

(117 Advance Blvd., Brampton L6T 4H9)

Distance from Ridge Landfill	268 km
Days Operating	Monday to Saturday
Average Tonnage Handled Daily	375-400 tonnes
Number of Visual Surveys Completed	177

Barrie TS

(320 Saunders Rd., Barrie L4N 8Z9)

Distance from Ridge LF	350 km
Days Operating	Monday to Saturday
Average Tonnage Handled Daily	300 tonnes
Number of Visual Surveys Completed	48

Bracebridge TS

(580 Ecclestone Dr., Bracebridge P1L 1V7)

Distance from Ridge LF	440 km
Days Operating	Monday to Saturday
Average Tonnage Handled Daily	112 tonnes
Number of Visual Surveys Completed	60

Creditstone TS

(650 Creditstone Rd., Concord L4K 5C8)

Distance from Ridge LF	288 km
Days Operating	Monday to Saturday
Average Tonnage Handled Daily	575-625 tonnes
Number of Visual Surveys Completed	33

Hamilton TS
(500 Rennie St., Hamilton L8H 3P5)

Distance from Ridge LF	241 km
Days Operating	Monday to Saturday
Average Tonnage Handled Daily	330tonnes
Number of Visual Surveys Completed	60

Oakville TS
(1209 North Service Rd. E., Oakville L6H 1A7)

Distance from Ridge LF	259 km
Days Operating	Monday to Saturday
Average Tonnage Handled Daily	94tonnes
Number of Visual Surveys Completed	71

Appendix C

Public Diversion Survey Results

MEMO

TO: Cathy Smith, Project Manager, Ridge Landfill Expansion EA, Waste Connections
FROM: Bill Allison, Project Manager, Dillon Consulting Limited
DATE: December 4, 2018
SUBJECT: Public Waste Diversion On Line Surveys - Results
OUR FILE: 152456

As noted in the Approved Amended Terms of Reference, approved by the Ministry of Environment, Conservation and Parks (MECP) in May 2018:

Waste Connections will commit to assisting the province in meeting its diversion goals and will consider opportunities to enhance its existing waste diversion activities, either at source, at the Ridge Landfill, or elsewhere in Waste Connections' integrated system.

As part of this assistance to the province, Waste Connections committed to undertaking public outreach to engage residents of Chatham-Kent on potential opportunities for increased diversion in their community.

Data Collection Approach

Data was collected through a Public Diversion Survey and through diversion related questions asked to those who were interviewed as part of the data collection for the socio-economic assessment.

The Public Diversion Survey was conducted online to obtain input from Chatham-Kent residents and business owners on current waste reuse and recycling practices and to identify potential opportunities for improvements. Chatham-Kent residents and business owners were asked 18 questions related to:

- Curbside programs
- Transfer stations
- Household Hazardous Waste (HHW)
- Other Waste Management Programs
- Ridge Landfill.

The survey was accessible from October 24, 2018 to November 16, 2018 through the project website, <http://www.ridgelandfill.com/survey>. Google Forms, an online web survey app, was used to administer the survey. The survey notification was advertised in seven (7) local

MEMO



newspapers¹ the week of October 22nd to 29th, 2018 with a total circulation of approximately 60,000 copies. In addition, letters that included the survey notification were mailed on October 24, 2018 to 99 property owners within 1 km of the Study Area and along the designated waste haul route. The survey and newspaper advertisement are attached.

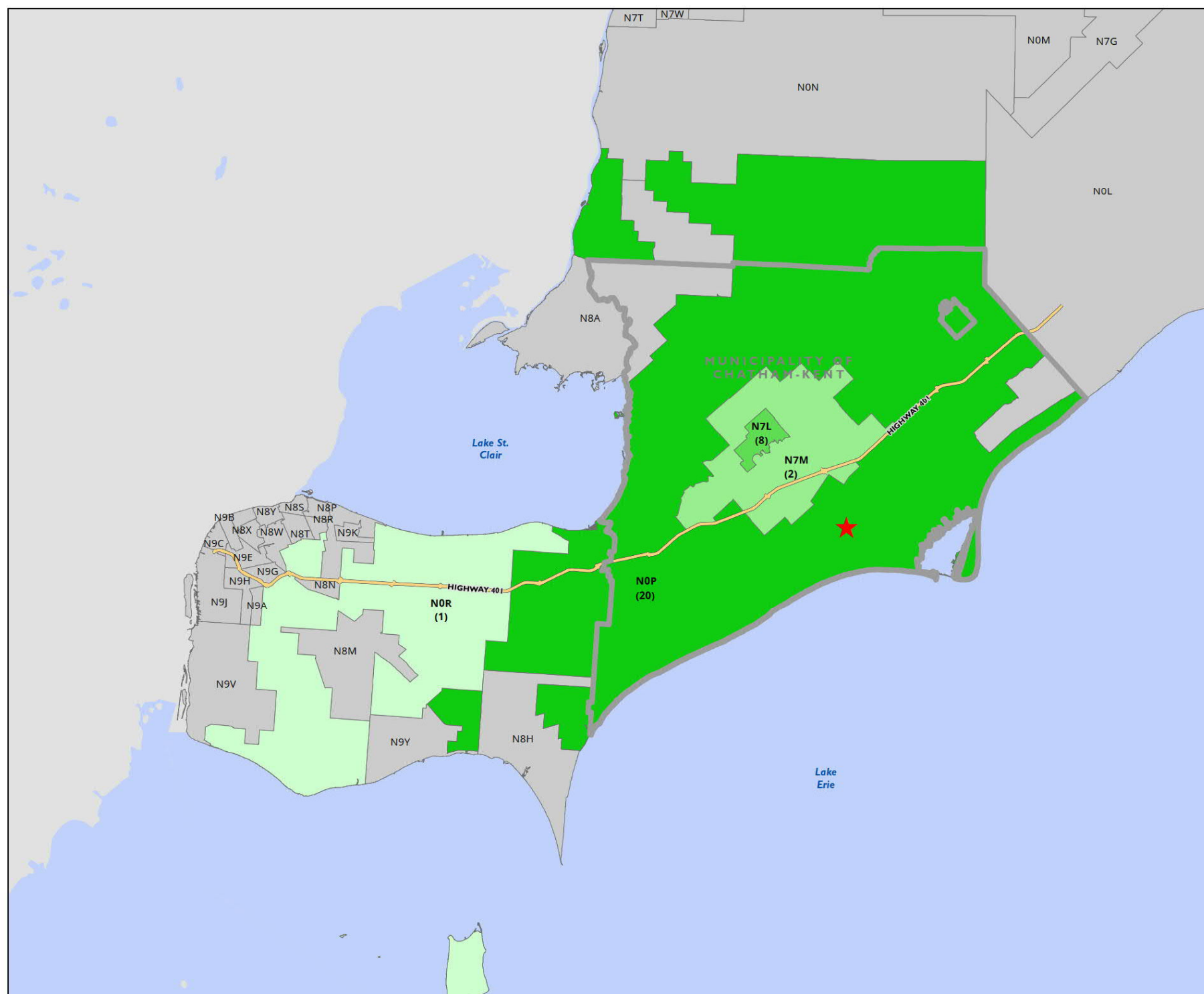
The survey included a request for the participant's postal code and Figure 1 below indicates the number of responses received from each postal code area. The majority of participants in the survey appear to be located in close proximity to the Ridge Landfill within the Municipality of Chatham-Kent.

The Socio-Economic Data Collection Interviews were offered to those living in residences or operating businesses within 1 km of the site and along the haul route. Letters were sent to 99 households/businesses requesting that they contact Dillon Consulting to set up an interview time. An interview sign-up sheet was also available at the Open House in July 2018. A total of 18 interviews were completed.

¹ The Public Diversion Survey was advertised in the Tilbury Times (October 30, 2018), Wallaceburg Courier (October 25, 2018), Chatham Daily News (October 25, 2018), Chatham This Week (October 24, 2018), The Herald (October 24, 2018), Blenheim News Tribune (October 24, 2018), and The Chatham Voice (October 25, 2018).

MEMO

FIGURE 1: PUBLIC DIVERSION SURVEY RESPONSE AREA



RIDGE LANDFILL ENVIRONMENTAL ASSESSMENT

FIGURE 2 PUBLIC DIVERSION SURVEY RESPONSE AREA

★ Ridge Landfill

Number of Respondents (Postal Code)

- 1
- 2
- 3 - 8
- 9 - 20
- Postal Code

Postal Code Data from Statistics Canada:
<https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm>

1:500,000
0 2.5 5 10 km



MAP DRAWING INFORMATION:
IMAGERY PROVIDED BY DIGITAL GLOBE/
DATA OBTAINED FROM MNRIF

MAP CREATED BY: GM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 17N



PROJECT: 152456
STATUS: DRAFT
DATE: 2018-12-06

MEMO

Public Survey Results

Despite the extensive advertising for the survey in the local newspapers and mail-out, only 31 people or 0.05% of those who may have received notification completed the survey. An overview of the survey response and completion rate is attached. The input received was reviewed and taken into consideration in the evaluation of waste diversion alternatives. The results of the survey should be viewed with caution as they represent a very small fraction of the population of the Municipality.

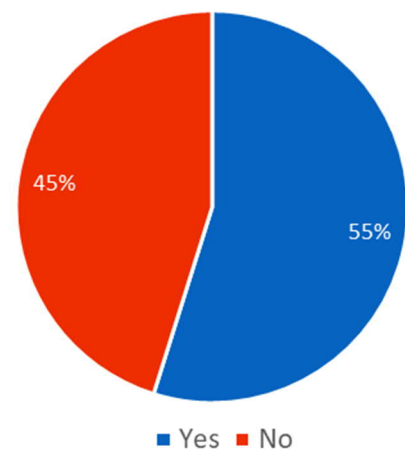
Curbside Programs

The Municipality of Chatham-Kent currently accepts Blue Box Materials (e.g., plastics, glass, and aluminum) and Black Box Materials (e.g., paper beverage cartons, household paper/newspaper, and cardboard) in the curbside recycling program for all properties receiving curbside collection.

Based on the survey results, 55% of the respondents participate in the curbside recycling program. Reasons for not participating include geographic location i.e. rural areas not collected, recyclables taken to transfer station, and businesses not being included. Suggestions for improving the program included the following:

- Improved scheduling (e.g., weekly service for recycling)
- Greater variety of materials (e.g., organics/green bin program, greater variety of plastics)
- Mandatory recycling program
- Expand service area to include rural collection

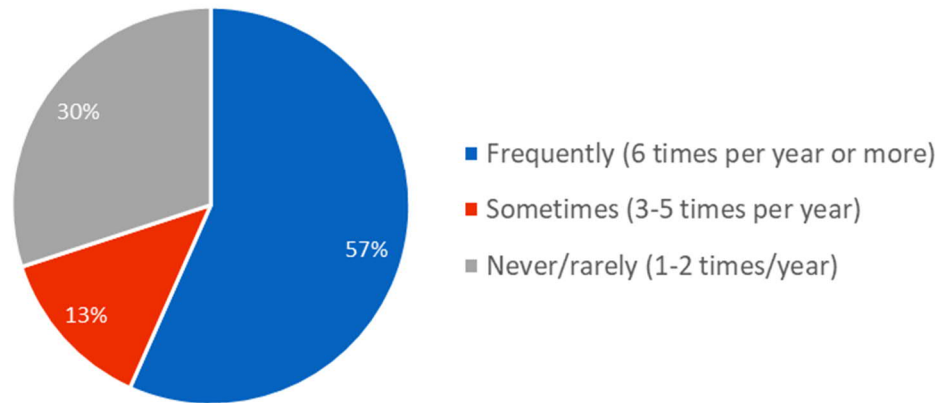
Do you participate in the residential curbside recycling program?



Transfer Stations

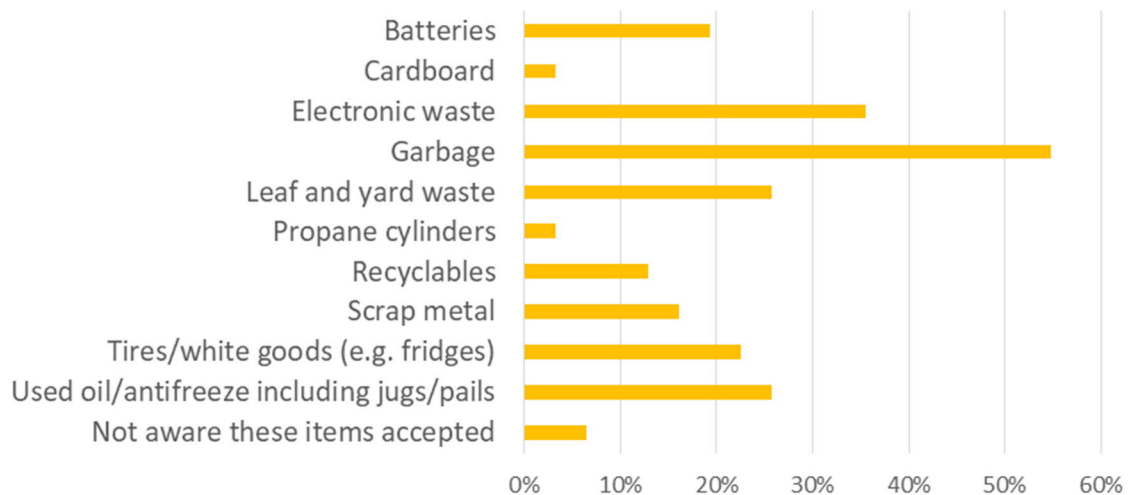
There are eight (8) transfer stations in Chatham-Kent. In addition to accepting the above mentioned recyclables, the transfer stations also accept: rimless tires, white goods (e.g. fridges), scrap metal, empty propane cylinders (maximum 30 lbs.), used oil, electronic waste, single use and vehicle batteries and four of the sites also accept leaf and yard waste. 71% of the survey participants indicated they have taken materials to a local transfer station.

How often do you use these drop-off areas?



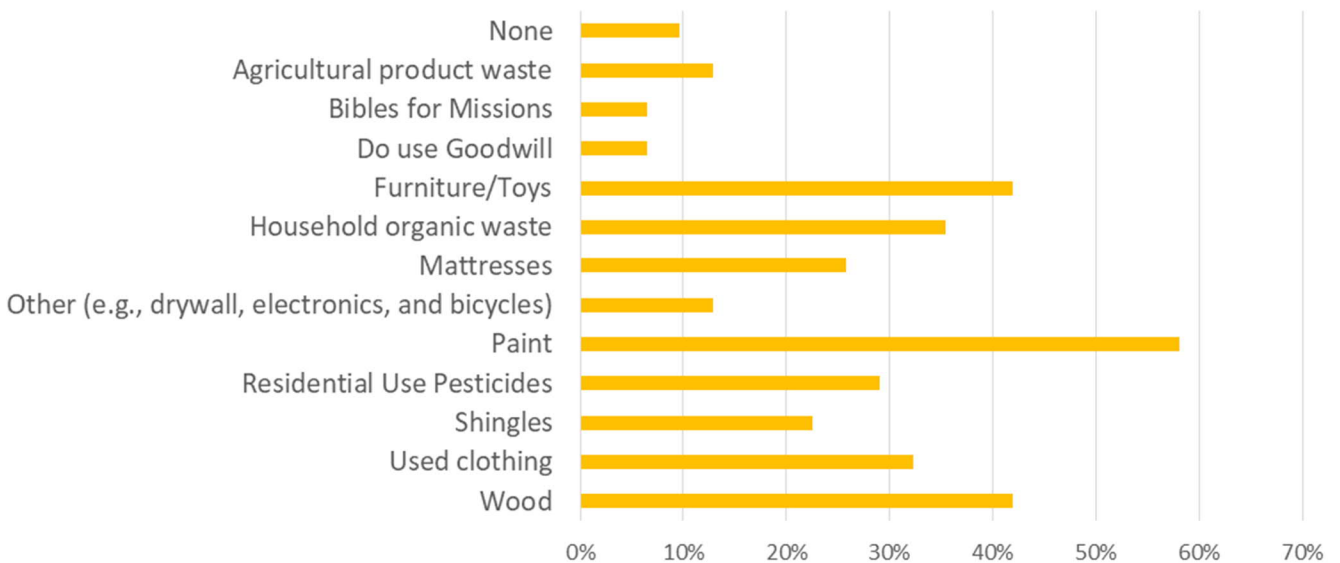
Participants identified garbage, electronic waste, leaf and yard waste, and used oil/antifreeze as the most common items dropped off at the local transfer station. 74% of survey participants were aware that the below noted materials could be taken to a transfer station. 8% were not aware that these items could be dropped off at the transfer stations.

Items dropped off to a local transfer station in the last 12 months



Participants most frequently identified paint, furniture/toys, wood, and used oil/antifreeze as being materials they would like to be able to direct to a regular diversion program.

What additional materials do you wish that you could recycle/reuse/re-purpose?



Suggestions survey participants noted for improvements to the transfer station program that would increase participation and community’s use of the recycling/reuse drop-off program included the following direct quotes:

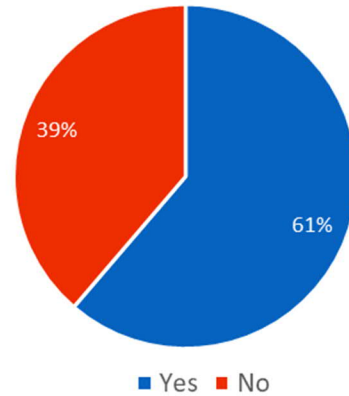
<p>Range of Materials:</p> <ul style="list-style-type: none"> • Curbside organic/yard waste pickup • Accept more items in blue or black bins • Hazardous waste (e.g., paint) • Designated bins for aluminum cans, steel cans, plastic bottles and glass jars 	<p>Incentives:</p> <ul style="list-style-type: none"> • Reduce drop-off fee • Rebate programs • Tax reduction • Prizes
<p>Drop-off Service:</p> <ul style="list-style-type: none"> • Longer drop-off hours • Rotate hazardous waste drop-off sites in communities all year • Dedicated recycling facility 	<p>Awareness Building:</p> <ul style="list-style-type: none"> • Where are transfer stations located? • What are the costs of using the service?

Household Hazardous Waste (HHW)

Currently, there is a municipal household hazardous waste collection day held once per year in three locations where residents can drop off materials such as chemicals, pesticides, cleaning fluids, florescent lights, flammable materials (e.g., gasoline and solvents), etc.

Survey results indicate that 61% of survey participants have brought materials to a HHW location. Reasons to not bring materials to a HHW location included participants not having HHW (42%) or it being an inconvenience to do so (58%).

Have you brought materials to a household hazardous waste day/location?



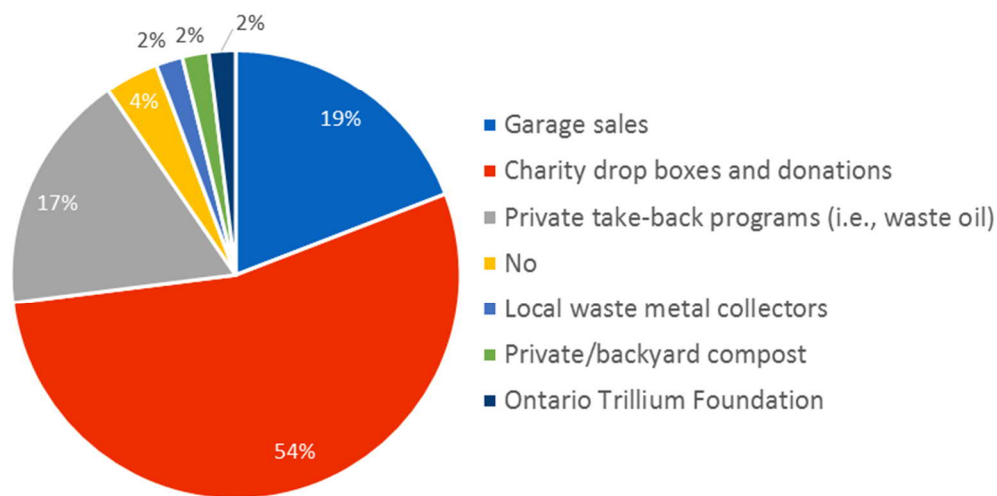
Participants' suggestions to make HHW recycling more convenient included three (3) different approaches:

- More frequent events.
- Different locations, including home pick-up and drop-off at transfer station.
- Multiple events spaced over the year.

Other Programs

Survey Participants identified charity drop boxes and donations, garage sales, and private take-back programs as the most common non-municipal programs being used.

Do you recycle/reuse/repurpose materials in any of the non-municipal programs noted below?



Ridge Landfill

Participants were asked for their input on whether the following types of services/facilities should be located at the Ridge:

Facility	Yes/No
Drop-off depot for construction and demolition waste separation	79% Yes
	21% No
Drop-off for items such as electronics, tires, bulky items, etc.	57% Yes
	43% No
Swap facility or beneficial use program that could include construction and renovation materials, textiles, housewares, furniture, paints and used clothing	59% Yes
	41% No
Collection of specific non-recyclable material to benefit a specific business or community group	58% Yes
	42% No
Agricultural wastes that can be recycled (e.g. jugs, agricultural bale wrap/ film, containers, bags, twine)	79% Yes
	21% No

Why Yes

- Reduce environmental impact of dumping materials.
- Drop-off location should be located at the Ridge.
- Some of the items can be reused or repurposed.
- Observed to work well at existing transfer site visited.
- The more recycling programs the better.
- Space available at the Ridge.
- Existing businesses in nearby area would use the service.

Why No

- Not convenience for urban dwellers.
- Not cost effective.
- Traffic congestion at drop-off depot.
- Satellite locations would be more convenient.
- Encourage use of existing programs (e.g., Habitat for Humanity).

If available, 79% of participants responded “yes” and 21% responded “no” to using a public depot located at the Ridge Landfill that could take a wide range of materials. The main reason for not using the depot would be that the Ridge Landfill is too far away from urban centers.

If available, 57% of participants responded “yes” and 43% responded “no” to using a swap facility to donate and pick-up various materials at the Ridge Landfill. The main reason for not using the facility would be that the Ridge is too far away.

It should be noted that most survey participants qualified their affirmative answer of locating facilities at the Ridge Landfill site with the caveat that as long as it did not increase noise, dust, traffic, odour or litter.

Socio-Economic Interview Results

The Socio-Economic Interview response rate was 18%. The following summarizes the responses to the diversion related questions asked in the interview.

- 1) What materials do you generate that you wish you could bring to the Ridge Landfill for reuse or recycling? What do you do with these materials now?
 - Most interview participants indicated that they generate recyclable materials and that they currently take these to the transfer station. 12 of the 18 interviewees indicated that they are satisfied with the current transfer station.
 - Two (2) interviewees commented that the landfill would be closer for them. One interviewee identified horse manure as an item they are not currently able to recycle.
- 2) What do you like/dislike about current diversion programs in Chatham-Kent?
 - Four (4) of those interviewed suggested that the Chatham-Kent diversion program was satisfactory.
 - Noted opportunities for improvement included:
 - Find ways to process additional materials (e.g. Styrofoam, more types of plastic)
 - Add HHW pick-up or drop off in rural area
 - Expand the garbage and recycling services to rural areas
 - Concerns with litter at the transfer stations
 - There are limitations/restrictions to what is accepted at the transfer station (volume, materials, hours) that should be reviewed
 - Recycling program can be improved
 - Need enhancements, particularly with composting

- Improve communications about the transfer stations/recycling programs to increase community knowledge.
- 3) As a Ridge Landfill neighbour we would like to know what you think about on-site facility options (e.g. mixed waste processing, source separated organics, construction and demolition waste, blue box materials facility, drop off depots, swap facility, recycling of agricultural waste such as bale wrap or twine).
- Most respondents (14) noted that increasing diversion is important.
 - Nine (9) of the 18 interviewed indicated some degree of support for additional diversion facilities at the Ridge Landfill. The convenience of having diversion facilities at the Ridge Landfill was noted by one participant.
 - Seven (7) of the 18 interviewed, including some who supported facilities at the Ridge Landfill indicated some concern about potential impacts of these types of facilities at Ridge Landfill including the potential for increased noise, dust, odour, wildlife and traffic.
 - Other comments from interviewees included:
 - Consider more education
 - Allow local use of the Ridge Landfill for waste/recyclables as a means of compensation
 - Partner with Habitat ReStore and other like organizations
 - Focus diversion at source

Summary

The following summarizes the general survey and interview findings:

- The Ridge Landfill is a convenient drop-off location for participants who live in close proximity to the landfill, however, participants also expressed concern for noise, dust, odour, wildlife, traffic, and litter impacts on the area surrounding the landfill if diversion options at Ridge Landfill were provided.
- Participants did express a preference for local drop-off sites in Chatham-Kent with extended hours.
- Participants would like to see the following materials being accepted at Chatham-Kent facilities: mattresses, paints, C&D, HHW, organics on a regular basis.
- Participants would like to see more frequent recycling events (HHW, recyclables, and garbage) and more drop-off locations (e.g., local arenas, inside buildings) throughout the Municipality.

- Participants would like to see increased waste management service to rural areas (e.g. expanded garbage and recycling pick up, additional HHW drop-off or pick up locations).
- Participants expressed that there is room for improvement in communications around the transfer stations and recycling programs.

Appendix D

IC&I Stakeholders Survey Results



MEMO

TO: Cathy Smith, Project Manager, Ridge Landfill Expansion EA, Waste Connections
FROM: Bill Allison, Project Coordinator, Dillon Consulting
cc:
DATE: December 4, 2018
SUBJECT: IC&I Stakeholder Survey
OUR FILE: 152456

As noted in the Approved Amended Terms of Reference, approved by the Ministry of Environment, Conservation and Parks in May 2018:

Waste Connections will commit to assisting the province in meeting its diversion goals and will consider opportunities to enhance its existing waste diversion activities, either at source, at the Ridge Landfill, or elsewhere in Waste Connections' integrated system.

As part of this assistance to the province, Waste Connections committed to undertaking targeted interviews and outreach to stakeholder entities such as agricultural groups, community associations and local businesses in order to inform and receive feedback from them on potential diversion opportunities.

Data Collection Approach

The focus of the IC&I Stakeholder Survey was to obtain input from local industries on current waste reuse and recycling practices and to identify potential opportunities for improvements as it relates to their respective industry sectors. The stakeholders were selected on the basis of being representative of the Chatham-Kent NAICS commercial business demographics, including commercial, industrial, commercial/industrial, agricultural, and charity business sectors.

E-mails with the survey notification were sent on October 26, 2018 and November 6, 2018 to seventy-seven IC&I Stakeholders within the Chatham-Kent area. The survey was open, on-line, from October 26, 2018 to November 16, 2018. Survey Monkey, an online survey development tool, was used to administer the survey. The survey included questions of business related to waste reuse and recycling practices. Participants were also provided the opportunity to provide written responses.

Nine (9) respondents participated in the survey. In total, eight (8) online responses and one (1) written response were received. The survey, an overview of the survey response and completion rate, and survey notification are attached.

IC&I Stakeholder Survey Results

78% of participants responded “yes” and 22% responded “no” to whether there are specific materials that their organization sees as having potential for diversion from the landfill. Participants noted the following materials that could be easily collected but may not be currently diverted:

- Excess lumber and other building materials from renovations and new home builds.
- Filter cake from the Municipal waste water treatment facilities.
- Paper plates, food waste, and other compostable materials.

Participants mentioned the following collection program enhancements that their organization thinks should be in place to increase waste diversion efforts:

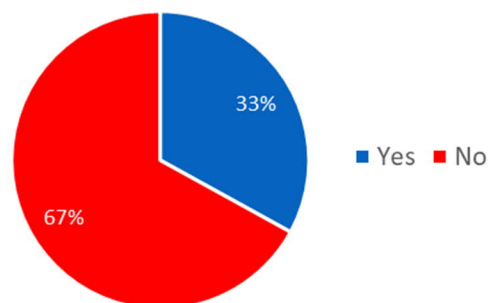
- More frequent pick-ups.
- More locations with recycling bins.
- Offering collection of organics, glass, plastics and pop cans.

Participants identified construction materials, paper products (e.g., paper towel, card board), food waste, cans, bottles, and organics generated at homes, churches, offices, and factories as easy to collect. Participants indicated that the downtown core is an area where collection and recycling is least available or most difficult. In addition, participants identified compost, cans and bottles, and ‘abnormal materials’ as most difficult to collect or recycle. Concern was also expressed regarding the proper recycling of contaminated materials.

33% of participants were aware of other companies that already receive recycling materials and that Waste Connections may partner with, including Habitat for Humanity and Orgaworld London.

Overall, participants indicated that they all reuse/recycling programs that are currently in place are effective and should continue. One industry participant recommended that

Are you aware of any companies that already receive materials for recycling and that may partner with Waste Connections?



involvement from the government is needed to improve material reduction and recyclability of materials.

Summary

Based on the survey results, participants generally take advantage of most, if not all, reuse and recycling programs available to them. Participants expressed that they would like to further enhance their current recycling practices if programs become available, as currently there is no curbside pickup in rural areas of Chatham-Kent. Improvements that could be made to the existing recycling services include more frequent pick-ups; offering recycling of excess paint, furniture, pallets, organics (e.g., restaurant food waste); and increasing the amount of material picked up. Results of the survey should be viewed with caution as only about 12% of the stakeholders participated.

Appendix E

Background Documents



MEETING MINUTES

Subject: Ridge Landfill EA – Diversion Meeting
 Date and Time: August 1, 2018 12 pm – 1:15 pm
 Location: Retro Suites Hotel, 2 King Street West, Chatham ON
 Our File: 152456

Attendees

Rick Kucera	Chatham-Kent, Manager, Waste and Recycling Services
Cathy Smith	Waste Connections
Megan Bellamy	Dillon Consulting

Notes

Ridge Landfill EA – Diversion Alternatives

Waste Connections is moving forward with commitments in the Terms of Reference to support the province in their goals to increase waste diversion from landfills. Waste Connections has put together a memo committing itself to looking at, and evaluating opportunities for diversion at-source, on-site at the Ridge, or elsewhere in their integrated system. The Ministry of Environment, Conservation, and Parks (MECP) is currently reviewing this memo. Rick Kucera to review the memo and consider partnership opportunities with Chatham-Kent. Rick will also consider what diversion alternatives would complement existing municipal programs and programs that might create unnecessary duplication.

Rick mentioned there is an annual Household Hazardous Waste (HHW) collection day, but noted that it is not frequent enough for residents to effectively manage their HHW. The collection is done in partnership with Clean Harbours, a private sector company, and is set up at three locations every fall. Waste Connections currently supports this program through funding. This year, the HHW locations will be at transfer stations in Chatham, in Ridgetown, and in Wallaceburg. Rick indicated that he would be supportive of a more frequent HHW collection depot at the Ridge, but noted that he would prefer it to be located in Chatham if possible which is more central and more convenient for the public. Rick and Cathy also discussed the potential for accepting HHW at other Chatham-Kent facilities, such as one or more of their existing eight (8) transfer stations. This would require an amendment to the current ECA for any of the municipal-owned facilities.

In either scenario the number of operating days would need to be considered and when. For example, it would be ideal to have Saturdays as one of the operating days for public convenience. Chatham-Kent and Waste Connections need to consider how the existing funding could be applied to this model instead of the current Clean Harbours program. Rick and Cathy to have continued discussion as the EA progresses.

Cathy noted that this was consistent with feedback from the criteria evaluation workshop (held on July 11, 2018) where participants generally expressed opposition to on-site processing, but were in favour of a drop-off depot located in Chatham-Kent (not centralized at the Ridge).

Rick mentioned that waste management education is a priority of Chatham-Kent, and that there may be partnership opportunities with Waste Connections to implement educational programs. A suitable location for education would need further discussion, and it was noted that an internet-based platform may not be ideal due to the large senior population in Chatham-Kent without computer access.

Rick noted that Waste Connections' former educational centre in Blenheim had been received very positively.

Cathy noted that Waste Connections and Dillon are developing a survey as part of the need to consult on diversion opportunities. The survey is being reviewed by Waste Connections, but Cathy would like Rick's review and input. The survey could be administered in partnership with the Municipality or simply noting the municipality's support for the initiative. Megan to send Rick the survey once it has been reviewed. Rick will review and provide commentary and will also discuss it with Chatham-Kent's communication officer.

Errors and/or Omissions

These minutes were prepared by Megan Bellamy who should be notified of any errors and/or omissions.



MEMO

TO: Cathy Smith, Project Manager, Ridge Landfill Expansion EA, Waste Connections
FROM: Megan Bellamy, Project Coordinator, Dillon Consulting
Clayton Gionet, Dillon Consulting
cc: Brian Forrestal, Regional Engineering Manager, Waste Connections
DATE: September 4, 2018
SUBJECT: Diversion Options for Evaluation in the Ridge Landfill EA
OUR FILE: 152456

Terms of Reference Commitments

As provided in the amended Terms of Reference, approved by the Ministry of Environment, Conservation and Parks (the “Ministry”, formerly the Ministry of the Environment and Climate Change) on May 1, 2018, Waste Connections has 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 Landfill, or elsewhere in Waste Connection’s integrated system. These opportunities will be examined further in the Environmental Assessment (“EA”) as an activity concurrent to the evaluation of alternative methods for landfill site development.

Waste Connections will examine and evaluate the feasibility and viability of implementing an on-site diversion program as part of the preferred site development alternative method, including the consideration and assessment of a reasonable number of ways in which to divert the types of waste materials received at the site. The assessment of any diversion program or measures will be carried out in accordance with best management practices, in consideration of new and emerging technologies, health and safety and in recognition of the goals and expectations set forth by the following documents:

- *Resource Recovery and Circular Economy Act, 2016.*
- Strategy for a Waste-Free Ontario: Building the Circular Economy.
- The Food and Organic Waste Policy Statement under the *Resource Recovery and Circular Economy Act, 2016* which directs proponents of new or expanded waste management systems for disposal to consider resource recovery opportunities for food and organic waste; and

Obtaining Stakeholder Input

Waste Connections has committed to undertaking an extensive communications and consultation plan for the Ridge Landfill Expansion EA including workshops, open houses, newsletters and mail outs, one-on-one meetings and on-line approaches. During the workshop and open houses, Waste Connections of Canada will ask for stakeholders input on possible waste diversion strategies that could be implemented at The Ridge and elsewhere in the system.

The following section outlines some of the additional tactics Waste Connections is considering to ensure stakeholders and residents of Chatham-Kent are engaged, up to date and able to provide feedback on potential opportunities for increased diversion. The focus will be on on-site diversion activities at the Ridge and on potential partnering opportunities with Chatham-Kent. For the purpose of this consultation, diversion is defined as “any environmentally-sustainable initiative that decreases the quantity of waste that must be landfilled” noting it is critical that a market exists in order for any material to be diverted.

Targeted Interviews

- Waste Connections will complete targeted outreach to stakeholder entities such as agricultural groups, community associations and local businesses in order to inform and receive feedback from them on potential diversion opportunities.
- Waste Connections will offer those identified groups, stakeholders and individuals the opportunity for one-on-one in-person interviews or phone call interviews if preferred.
- Information from the interviews will be recorded and consolidated to identify areas of opportunity and inform future waste diversion programming and planning activity.
- To further extend our stakeholder engagement, Waste Connections will employ an online survey so that more stakeholders can provide feedback to our team.
 - Survey Monkey™ has proved very successful in the past for waste management strategy development processes. It is a user-friendly, effective on-line platform and is a proven way to gather stakeholder opinions in a cost effective and efficient manner.
 - The Survey Monkey™ platform allows for the consolidation and analysis of the collected responses.

The following are a range of questions that could be asked:

- What materials do you currently recycle/reuse/repurpose?
- What materials could you recycle/reuse/repurpose more?
- Is/Are there a material(s) that you could use and/or reuse in your local business/manufacturing/group that could be collected at the Ridge?
- What do you not like about current recycling/reusing/repurposing programs?
- What changes or improvements would increase your participation in recycling and reuse activities?
- Have you taken materials to a local depot, transfer station or drop-off in the last 12 months?
 - If you have, what items did you drop off?
 - Were there any materials that you wanted to drop off but were unable to?
 - How often in a year do you use the depot(s)?

- Would you use a depot more often if a wider range of materials could be taken there (e.g., recyclables, yard waste, household hazardous waste, electronics, appliances, furniture), a one-stop-shop?
- If there was a public depot that could take a wide range of materials located at the Ridge Landfill would you use it?

Questions more specific to Stakeholder groups:

- Are there specific materials that your organization sees as having potential for diversion from landfill?
- Are you aware of companies that already receive these materials for recycling and who might partner with us to provide additional opportunities?
- Are there collection programs that are not in place that your organization thinks should be in place to increase waste diversion efforts?
- Are there programs you would like to participate in but they are cost prohibitive?

Increased Diversion Opportunities At-Source & Elsewhere in the System

Waste Connections of Canada 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 in some cases can occur at district transfer stations or processing facilities where feasible and prior to shipment for final residual disposal.

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.

On a system-wide basis Waste Connections 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 metric tonnes of this material is diverted in Southern and Central Ontario. 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 that year. It is evident that Waste Connections already plays a significant role in IC&I waste diversion in Ontario.

In addition to these diverted materials 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 berm construction. Recently, Waste Connections invested in TerraCycle, to support difficult to recycle materials such as those that are not collected in all municipal programs, including: rigid plastics, polystyrene and plastic laminate.

Waste Connections continually develops, and will continue to support the implementation of regulatory initiatives taken by the MECP including those initiatives to implement actions to reduce food and organic waste. Some of the initiatives to increase organic waste diversion at source or elsewhere in the system include:

- Providing waste reduction promotion and educational materials to the schools they provide services to and continue to expand on these outreach programs.
- Providing research opportunities and investments in innovation. Waste Connections partners with various organizations to support academic research aimed at reducing and recovering food and organic waste.
- Assisting the Province in promoting the use of soil amendments, where applicable.
- Supports the Region of Peel's organic waste curbside collection program with a fleet powered by CNG.
- Waste Connections Windsor District receives food wastes (e.g. from grocery stores) and partners with Seacliffe Energy in Leamington who diverts approximately 11,000 tonnes/year of IC&I sourced organic waste through anaerobic digestion. Organic waste materials are marketed or managed locally where possible.

Many of Waste Connections' districts in Ontario have partnered with local farms for use of some unique waste materials like grape residuals, greenhouse vines, as well as other organics and sawdust. 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 features.

These existing programs serve as the baseline for assessment of additional programming that can be implemented in the system and to support provincial objectives to increase the amount of waste diverted from landfills in Ontario.

Generally future IC&I sector waste diversion opportunities would be focused on additional materials segregation at-source 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*. Leadership by the Province in designating materials and enforcing their segregation is imperative to ensure generators of waste manage them accordingly.

The following tables summarize potential diversion opportunities and initiatives at-source and elsewhere in the Waste Connections system.

Diversion Option	Pros	Cons
<p>Increased Partnerships to Support a Circular Economy</p> <ul style="list-style-type: none"> Maximize the value of products as long as possible, keep resources within the economy as long as possible and facilitating extended use of materials that would have otherwise reached the end of their useful life. Waste Connections will continue to identify opportunities to facilitate partnerships among its customers to where a waste product of one customer could be a resource for another. 	<ul style="list-style-type: none"> Waste Connections is already practiced at this e.g. partnerships with local farms for use of grape residuals, greenhouse coco vines, other organics and sawdust. Waste Connections knows its customer base well and as that customer base continues to change and grow can easily identify these opportunities. Waste Connections has control over the movement of waste materials that it manages so a shift to a different end-user is readily enabled. Extends the lifecycle of products and can displace the production of new manufactured materials. 	<ul style="list-style-type: none"> None other than some waste products have restrictions e.g. they require destruction for safety and liability reasons.

Diversion Option	Pros	Cons
<p>Support the Sharing Economy</p> <ul style="list-style-type: none"> Promote reuse through coordination of ‘business to business’ partnering for reuse or refurbishment of waste materials within local districts. Provide shared resource hubs in the Waste Connections system where feasible. Promote and provide collection support for municipalities that are served by Waste Connections for their municipal programs aimed at re-use initiatives. 	<ul style="list-style-type: none"> Shared resource hubs are rapidly increasing in popularity. Bulk materials that have a beneficial use and that are ‘hard to handle’ at landfill get reused – extends the lifecycle of products and increases diversion rates. Waste Connections knows its customer base well and as that customer base continues to change and grow can easily identify these opportunities. 	<ul style="list-style-type: none"> There can be a stigma around second-hand goods, particularly the idea that they are unclean, less desirable or less functional once used. Some Waste Connections properties may not have the physical space to accommodate shared resource hubs – hubs may need to be established with/by partners.
<p>Support Implementation of Material Bans, Designated Materials Recovery in the IC&I Sector – Dry Material</p> <ul style="list-style-type: none"> Provide technical, training and educational support to small, medium and larger ICI establishments during these transition periods. Provide collection depots and collection services for banned and designated materials. Banned and designated materials segregation from loads at transfer stations where feasible. Receive additional materials already segregated at transfer stations. 	<ul style="list-style-type: none"> Small IC&I establishments in particular will need educational support and support for program establishment at their facilities which can be readily facilitated by Waste Connections. Waste Connections has over 30,000 customers in Southern and Central Ontario and as such this support would be ‘far reaching’. Can easily establish dedicated collection routes as necessary. 	<ul style="list-style-type: none"> Provincially mandated programs and enforcement are necessary for success. It may be feasible to segregate larger items that may be designated like carpets and mattresses but some materials cannot be reasonably segregated from loads received at transfer stations, principally for safety reasons e.g. small items like appliances, tools and not organics. Some Waste Connections transfer stations may not have the physical space to accommodate additional traffic or segregated materials.

Diversion Option	Pros	Cons
<p>Support Implementation of Material Bans, Designated Materials Recovery in the IC&I Sector – Organic Waste</p> <p>Support actions to reduce food waste:</p> <ul style="list-style-type: none"> • Provision of promotion and education to customers as it relates to food waste prevention and reduction including schools that are serviced. • Continue to provide research opportunities and investments in innovation. • Conduct waste audits on residual waste streams to determine the extent of food and organic waste including avoidable food waste. • Support development of renewable natural gas including consideration for linkages to food and organic wastes. 	<ul style="list-style-type: none"> • Already existing Promotion and Education (“P&E”) programs can be easily enhanced to support future provincial program implementation. • Waste Connections already partners with various organizations to support academic research aimed at reducing and recovering food and organic waste such as The Environmental Research & Education Foundation (“EREF”). • Auditing of materials received at transfer stations is feasible in conjunction with other auditing programs (discussed elsewhere) - Waste Connections can share this information with MECP. • Waste Connections possesses significant expertise in the development of RNG and can continue to support the Province in the development and use of RNG. • Waste Connections is committed to the continued and expanded use of CNG trucks that can run on RNG and has and will build RNG infrastructure. 	<ul style="list-style-type: none"> • Provincially mandated programs and enforcement are necessary for success.

Diversion Option	Pros	Cons
<p>Amended 3Rs – IC&I Sector</p> <ul style="list-style-type: none"> Review proposed amendments and provide thoughtful feedback to the MECP to ensure the amended regulations are successfully implemented. Provide sufficient container capacity, collection services and processing capacity to support increased materials recovery for the IC&I sector. Promote and educate on regulatory change and regulatory requirements. <p>New Supporting/Revived Infrastructure</p> <ul style="list-style-type: none"> Partner with new/existing waste diversion infrastructure builders for collection and processing of waste streams e.g. construction and demolition waste, organic waste, additional recyclable materials recovered under amended 3Rs. Revive infrastructure like Waste Connections’ construction and demolition processing facility in Vaughan. Where applicable undertake standardized training for owners and operators of resource recovery systems including composting and anaerobic digestion. 	<ul style="list-style-type: none"> Changes in regulatory requirements will require educational support and support for program enhancements which can be readily facilitated by Waste Connections. Waste Connections has over 30,000 customers in Southern and Central Ontario and as such this support would be ‘far reaching’. Can easily expand dedicated collection routes as necessary. Waste Connections has already partnered with existing processing facilities for diversion of organic waste and for recyclable materials processing etc. and already has a business model in place. Waste Connections has experience with the operation of recyclable materials processing facilities including those for conventional recyclables and for construction and demolition waste processing. 	<ul style="list-style-type: none"> Provincially mandated programs and enforcement are necessary for success. Provincially mandated programs and enforcement are necessary for success.

Diversion Option	Pros	Cons
<p>Monitoring and Auditing Activity</p> <ul style="list-style-type: none"> • Support provincial objectives toward enhanced data collection, reporting and performance measures. • Support data collection for ‘business to business’ diversion not currently tracked. • Audit waste materials received at transfer stations to identify opportunities for increased waste diversion. • Support the food and organic waste diversion framework and action plan by developing and implementing procedures for monitoring and compliance. 	<ul style="list-style-type: none"> • Waste Connections has well established data management and tracking systems that can support provincial tracking of waste diversion in the IC&I sector that it serves. • Business to business diversion programs can be tracked through district data collection. • Waste Connections can 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 to help identify diversion opportunities e.g. for designated materials or materials regulated with amended 3Rs. 	<ul style="list-style-type: none"> • Additional staff time for tracking and reporting, may require some changes to internal data management system. • Provincially mandated programs and enforcement are necessary for success.

Increased Diversion Opportunities at the Ridge

The following tables summarize potential diversion opportunities and initiatives at the Ridge. The initiatives have been separated into two categories: On-Site Processing and On-Site Depots for Local Material Collection. Various handling options for implementation of these initiatives include:

- Receive materials at the Ridge site for on-site reuse (glass, auto-fluff, soils and concrete are currently received at Ridge);
- Receive recyclables and reuse materials at the Ridge site for transfer to other locations for processing or reuse;
- Receive recyclables and reuse materials at the Ridge site for processing and sale to end markets; and
- Receive material at the site for mixed-waste processing.

Many of the potential programs described below reflect commitments made in the approved Amended Terms of Reference dated May 2018 that are specific to Chatham-Kent; both with the municipality and to the IC&I customers therein. Considerations with respect to new infrastructure will be limited to material from within the local service area. For example, it is assumed that organic waste processing capacity is sufficient at or near major generation sources to accommodate a landfill ban or the implementation of other regulatory mechanisms and infrastructure considerations will be limited to the local service area. Depot based programs at the Ridge are focused on the provision of service to the local community and/or supplementing Chatham-Kent programs.

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 or at other locations in Chatham-Kent which are closer to the points of waste generation. 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 will 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.

The following tables summarize potential diversion opportunities and initiatives that could be undertaken at the Ridge Landfill and that will be evaluated further and through the support of public consultation.

On-Site Processing

Diversion Option	Pros	Cons
<p>Mixed Waste Processing Facility (“MWPF”) at the Ridge</p> <ul style="list-style-type: none"> • Permitting, design and operation of a MWPF. • The use of processing equipment and/or manual labour to sort through mixed waste and remove recyclables and/or to recover organic materials. • Materials recovered would be processed on-site or sent to an off-site processor for example: <ul style="list-style-type: none"> ○ Recovered recyclables sorted and sent directly to market or to off-site processors for further sorting and sale to end market ○ Recovered recyclables sorted and further processed on-site for sale to end market ○ Organics recovered for processing on -site and a compost product produced for market ○ Organics recovered and transferred for processing by others 	<ul style="list-style-type: none"> • Enables the recovery of useful materials and minimizes the amount of material sent to landfill. • Requires no consumer participation or any promotion and education. • This option supports the <i>Waste-Free Ontario Act</i> initiatives for recovery and recycling. • Diversion of SSO supports the potential provincial disposal ban on food and organics. • Can be coupled with technologies either on site or elsewhere in the system to generate outputs. These technologies include: <ul style="list-style-type: none"> ○ Material Recycling Facility; ○ Compost facility; and ○ Anaerobic Digestion plant. • Technology is flexible to changes in waste quantities and composition. 	<ul style="list-style-type: none"> • Provincially mandated programs and enforcement are necessary for success. • High capital and operating costs to establish a MWPF compared to the additional costs and benefits of improving existing source separation programs. • Available technology may not be suited to heterogeneous Industrial, Commercial & Institutional waste streams. • Recovery rates for this type of a facility are low – both with respect to processing challenges and dependent on the feedstock e.g. only 2% of the waste received at the Ridge is residential waste which has a typically higher organic waste composition than IC&I waste - contamination rates may be high - compared to additional at-source, other segregation alternatives. • Transportation costs and associated GHG emissions will be higher than if a MWPF were located close to the point of waste generation and end-markets

Diversion Option	Pros	Cons
<ul style="list-style-type: none"> ○ Remaining residual material would be landfilled at the site. <p>Logistics</p> <ul style="list-style-type: none"> ● Mixed waste received on-site. ● Front end processing operations separates recyclables (Blue Box and organics). ● Blue Box recyclables loose or baled and sent to market or to either off-site or on-site processing. ● Organics composted at on-site compost facility or shipped to off-site facility. 		<p>thereby impacting the economic viability of this option.</p> <ul style="list-style-type: none"> ● Staff working conditions may pose challenges – retention issues. ● Staff health and safety concerns. ● Potential dust and odour and other nuisance issues. ● Difficult to find end markets.
<p>Source Separated Organic Waste Processing</p> <ul style="list-style-type: none"> ● Permitting, design and operation of a source separated organic waste processing facility e.g. enclosed windrow, aerated static pile, in-vessel composting, or use of an anaerobic digestion technology to process organic waste. <p>Logistics</p> <ul style="list-style-type: none"> ● Only organics collected within Chatham-Kent; municipal and IC&I sources, all other organics will be separated and processed close to source. This assumes 	<ul style="list-style-type: none"> ● This option supports the Waste-Free Ontario Act initiatives and could reduce organic waste, if banned from landfill disposal. ● Diversion of SSO supports the potential provincial ban on food and organics. ● Organic wastes such as leaf and yard waste, soiled paper products, food scraps can be processed using any demonstrated and available technology . ● Other materials accepted in the Green Bin program (i.e., fats and oils, meat and dairy products, diapers, sanitary waste, pet waste) may work using certain types of organics processing technologies. 	<ul style="list-style-type: none"> ● Provincially mandated programs and enforcement are necessary for success. ● The proposed organics ban would be limited to large municipal and commercial demographics, i.e. large generators of organics including municipalities. The provincial target for a Chatham-Kent sized municipality is 50% organics recovery by 2025 for single family homes. This may not be a sufficient volume to support new infrastructure unless sufficient local and mandated IC&I volumes can support it. ● Potential for leachate, odour generation and nuisance issues from pests (e.g., insects, rodents).

Diversion Option	Pros	Cons
<p>organic waste processing capacity is sufficient at or near major generation sources to accommodate a landfill ban or the implementation of other regulatory mechanisms.</p> <ul style="list-style-type: none"> • Pre-processing of organics on-site to remove contamination (plastics, glass, metals). • Composting of organics on-site to produce category A compost. • Sale of compost to markets. • In the case of aerobic composting leaf and yard waste generated by Chatham-Kent would be negotiated for receipt as a suitable amendment/bulking agent – otherwise it isn't the intent of these considerations to replace existing and well established services provided by the municipality. 	<ul style="list-style-type: none"> • The Strategy for a Waste-Free Ontario plans to designate source separated organics for diversion through landfill bans which would require Chatham-Kent to establish, procure processing capacity. 	<ul style="list-style-type: none"> • A composting facility constructed on-site may not be compliant with the Guidelines for Production of Compost in Ontario – separation distance from sensitive receptors likely required are a minimum of 250 meters and up to 1000 meters depending on site-specific factors. • A reduction of organic waste into the landfill could reduce the viability of the planned landfill gas utilization project at the Ridge. • Sufficient volume is needed to be cost-effective.
<p>Construction and Demolition (C&D) Waste Processing at the Ridge</p> <ul style="list-style-type: none"> • Includes: concrete, rubble, clean wood, shingles, clean fill, etc. <p>Logistics</p> <ul style="list-style-type: none"> • Collect C&D material on-site. • Sort material on-site in to reuse categories (e.g., wood, concrete, fill); this 	<ul style="list-style-type: none"> • The <i>Waste-Free Ontario Act</i> will look to amend the 3Rs regulations to increase institutional, commercial and industrial (IC&I) waste diversion, including C&D. • As new materials are designated for diversion by the province, new opportunities may be identified in C&D diversion initiatives. 	<ul style="list-style-type: none"> • Provincially mandated programs and enforcement are necessary for success. • C&D waste requires specific handling. Contaminated or hazardous C&D waste (i.e., asbestos) cannot be reused. Contaminated soil must be kept separate from clean fill. Dry wall must be kept dry for reuse (i.e. covered or indoor storage). Treated lumber must

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Diversion Option	Pros	Cons
<p>can be accomplished through some combination of automation and manual sorting.</p> <ul style="list-style-type: none"> • Alternatively the site could receive segregated materials only. • Process material on-site for reuse (e.g., Crushing or shredding). <ul style="list-style-type: none"> ○ Reuse material on-site where applicable ○ Sell reuse material to end markets (e.g., construction industry) 	<ul style="list-style-type: none"> • There are potential beneficial reuse opportunities at the Ridge (e.g., shingles, crushed glass, concrete, gravel to be used as road base). This reuse of material can be applied to the Ridge site. There is potential for beneficial reuse opportunities for the construction industry and/or not-for-profit organizations. 	<p>be separated from clean lumber. While these wastes do not all need enclosed containers, their sorting piles and or bunkers need to maintain their separation after sorting to reduce mixing of material.</p> <ul style="list-style-type: none"> • Automated handling can generate dust and dust concerns. • General health and safety can be a concern. • Distance from/to points of generation and end-markets .
<p>Blue Box Recyclables Materials Recovery at the Ridge</p> <p>Permitting, design and operation of a materials recovery facility at the site for acceptance and processing of all designated Blue Box materials</p> <p>Logistics:</p> <ul style="list-style-type: none"> • Collect on-site and process blue box materials through automated and manual means. • Bale clean sorted Blue Box materials such as (OCC, Pet, HDPE, PS) and send to markets. 	<ul style="list-style-type: none"> • There are established markets and revenue for most Blue Box materials. • There is a well-established recycling program in the province, and minimal public education would be required. • This option could potentially support increased recycling efforts in the IC&I sector where additional processing capacity may be necessary. • This option could support the need for new capacity in the case where existing processing infrastructure may need to be replaced. 	<ul style="list-style-type: none"> • Ontario Extended Producer Responsibility (EPR) is in transition. An amended Blue Box program plan for residential recycling is in progress. The draft amendment proposes a regional recycling system with geographic catchment areas as opposed to a local municipal system for recycling Blue Box materials. The cost of recycling Blue Box materials will be 100% paid for by the industry, i.e. producers and stewards. Currently it is 50:50 with municipalities paying half and industry paying half. • Markets for some materials have recently been in turmoil due to external

Diversion Option	Pros	Cons
<ul style="list-style-type: none"> Send mixed recyclables (mixed plastics) to an off-site processor/MRF. 		<p>factors e.g., high contamination rates in bales of sorted recyclables sent to processors overseas – lack of end-markets.</p> <ul style="list-style-type: none"> High cost to process to get product quality necessary to sell commodities. There is substantial material recovery facility capacity in southern and central Ontario including capacity in Chatham-Kent that makes this option potentially unnecessary. Since Blue Box material is generated from residential waste and the residential waste service area for the Ridge expansion has been restricted to the City of Chatham-Kent, it is unlikely that sufficient volume will be available to make this a viable option.

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On-Site Depots for Local Materials Collection

Diversion Option	Pros	Cons
<p>Beneficial Reuse On-Site</p> <ul style="list-style-type: none"> There are potential beneficial reuse opportunities at the Ridge for materials such as shingles, crushed glass, concrete, asphalt, slag, used gravel in construction and operating applications in place of virgin materials. These materials can be reused as road base, gas pipe back fill, tipping pad, drainage and cover applications in place of virgin materials, particularly stone products. <p>Logistics</p> <ul style="list-style-type: none"> Provided storage space; lay-down areas, tipping areas, bunkers as appropriate for sorted materials. Reuse materials at site for road beds, drainage etc. 	<ul style="list-style-type: none"> Engages local businesses to participate in the circular economy. Potential for reduced disposal cost for generator if material can be reused. Reduces cost of construction material. Recycled material replaces the use of virgin materials. Waste Connections already uses and will continue to use excavated soil on site for berm construction, cover, road and ditch construction, vegetated stabilization areas etc. 	<ul style="list-style-type: none"> This is considered diversion if materials are used for on-site infrastructure (e.g., access roads, drainage ditches, etc.) However, use of these materials for daily cover is not considered diversion although it could be argued it should be. Public safety concerns for on-site activities.
<p>On-Site Drop-off Depot(s) for Beneficial End-Use By Others</p> <ul style="list-style-type: none"> Establish drop-off depot (s) to service IC&I and residential customers. Specific 	<ul style="list-style-type: none"> Presents diversion opportunities for Chatham –Kent residents and the IC&I sector. Programs are already well established for diverting some targeted materials. 	<ul style="list-style-type: none"> Installation/start-up costs to implement the program and ongoing maintenance costs. Considerations for this option include the degree of local public

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Diversion Option	Pros	Cons
<p>materials to be received will be development through consultation.</p> <ul style="list-style-type: none"> ○ IC&I customers and residents. ○ The drop-off depot (s) would utilize bunkers or bins to accept, by way of example, materials such as Blue Box materials, C&D and renovation waste from residents and concrete, wood, rubble, metal etc. from ICI customers. <p>Logistics</p> <ul style="list-style-type: none"> ● Collect recyclable materials on-site. ● Provide public access for diversion opportunities on-site. 	<ul style="list-style-type: none"> ● There may be opportunities to expand services and increase diversion. ● Easy to track the diversion of materials brought to site. ● At a public drop off, the public has to sort their material into the appropriate bin, and this limits mixing and contamination of materials. Staff may also supervise the site to ensure proper sorting. 	<p>interest/willingness to use these facilities if located at the Ridge may be low.</p> <ul style="list-style-type: none"> ● Public safety concerns for on-site activities. ● Distance to markets for diverted materials. ● Do not want to duplicate the efforts made by the Municipality of Chatham-Kent.
<p>Agricultural Waste</p> <ul style="list-style-type: none"> ● Partnership with organizations like CleanFarms as a collection point for agricultural wastes (jugs, film, containers, bags, twine) accepted in their programs. 	<ul style="list-style-type: none"> ● Provides and additional collection point for a recycling program specific to the agricultural industry that would serve the community around the landfill. 	<ul style="list-style-type: none"> ● Would require established end-markets for materials. ● Would require community willingness to participate. ● Requires agreements with CleanFarms.

Diversion Option	Pros	Cons
<p>Swap Site</p> <ul style="list-style-type: none"> Collect gently used materials in partnership with local NGOs like Salvation Army, Goodwill, Habitat for Humanity, etc. such as clothing, textiles, furniture, housewares, bikes, toys, paint/stain, etc. <p>Logistics</p> <ul style="list-style-type: none"> Collect on-site. Provide/resell gently used items to the public. Excess material donated to charities or sold to end markets in bulk (e.g., textiles). 	<ul style="list-style-type: none"> Diversion of these items from landfill prolongs the lifespan of a landfill. Donating material, reselling it or reusing it supports a circular economy. 	<ul style="list-style-type: none"> Items would require inspection, sorting and handling. Swap site would require assigned staff or trained volunteers. Public safety concerns for on-site activities.
<p>Electronics</p> <ul style="list-style-type: none"> Provide for drop off of used electronics and electrical small appliances. <ul style="list-style-type: none"> Note that used batteries fall under HHW <p>Logistics</p> <ul style="list-style-type: none"> Collect Waste Electric and Electronic Equipment (“WEEE”) on-site as drop off service. 	<ul style="list-style-type: none"> Revenue from the recycling of Ontario electronic waste (OES program). Provides an additional collection site for added convenience to the public. 	<ul style="list-style-type: none"> Electronic wastes can be bulky (large televisions) and there is no charge or limit to the amount of electronics that can be dropped off. Consideration need to be given to sizing of collection facilities. Electronics have to be sheltered from weather. OES program is in transition. The Ministry asked for the program to end by June 2020. Stewards of electronic products will no longer run the program.

Diversion Option	Pros	Cons
<ul style="list-style-type: none"> • Manage material and storage to prevent corrosion. • Send off-site to processor. • Collect revenue from provincial collection program (currently the Ontario Electronic Stewardship (OES) is in transition). 		<p>Instead it will be overseen by the Resource Productivity and Recovery Authority (“RPRA”), an agency of MECP.</p> <ul style="list-style-type: none"> • Public safety concerns for on-site activities.
<p>Tires</p> <ul style="list-style-type: none"> • Provide for drop off of used tires both passenger and large off-the-road Ontario Tire Recycling (“OTR”). <p>Logistics</p> <ul style="list-style-type: none"> • Collect tires on-site. • Sort tires for reuse or retreading. • De-rim and shred tires for pre-processing. • Produce tire crumb product. • Send off-site to processor and end markets. 	<ul style="list-style-type: none"> • Used tires program is long established in the province. • Provides an additional collection site beyond automotive service stations for added convenience to the public. Ridge is an added convenience to the public as they could potentially drop of many other types of items in one stop, instead of making several trips to various locations to drop off various materials. Not all waste and recycling collection sites in Chatham-Kent accept all materials. 	<ul style="list-style-type: none"> • Used tire program currently in transition. • Public safety concerns for on-site activities.

Diversion Option	Pros	Cons
<p>Bulky Items including White Goods</p> <ul style="list-style-type: none"> The <i>Strategy for a Waste-Free Ontario</i> plans to designate new materials for diversion and may designate bulky items. Space could potentially be allocated at the Ridge to allow drop-off of bulky items. <p>Logistics</p> <ul style="list-style-type: none"> Collect material on-site as drop off service. Manage material for reuse. Provide depot service for public and community organizations to reuse materials. Materials sent to processing off-site (e.g., carpet and mattress de-manufacturing processors). Provide CFC removal from refrigeration units. 	<ul style="list-style-type: none"> This option supports the Waste-Free Ontario Act initiatives and could reduce bulky waste items from landfill disposal. Diversion of bulky items would support a potential provincial ban on mattresses. Carpets, mattresses, furniture etc. could be received: local residential collection rules currently limits these to a 3-item weekly garbage limit at curbside which includes garbage bags and bulky items. – this program would enable items over and above the 3 item limit to be received. 	<ul style="list-style-type: none"> Certain items may not be salvageable due to various program requirements (e.g., mattress infestations). This option would be limited to members of the public who are able to transport large or bulky items. Public safety concerns for on-site activities.

Consideration of Options for At-Source, At the Ridge and Elsewhere in the System

In order to examine mechanisms to support 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 the integrated system a number of factors will be considered.

First and foremost one of Waste Connections core Operating Values is safety. The Operating Value states:

We strive to assure complete safety of our employees, our customers and the public in all of our operations. Protection from accident or injury is paramount in all we do.

As such the evaluation of all diversion opportunities will strongly consider public and worker safety aspects but other considerations for each alternative will include:

- Does it minimize GHG emissions?
- Is there sufficient feedstock in the case of processing?
- Is the program supported by regulation?
- Is there a public demand/local demand and support for the service at the Ridge?
- Is it compatible with other existing programs? (like those delivered by Chatham-Kent)
- Are there infrastructure/space limitations to providing the program?
- Is it economically viable?
- Are there advantages to provide the services at other locations in Chatham-Kent (such as multiple HHW collection depots)?

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MEMO

TO: Cathy Smith, Project Manager, Ridge Landfill Expansion, Waste Connections of Canada
FROM: Karla Kolli, Dillon Consulting
DATE: September 20, 2018
SUBJECT: Diversion Options for Evaluation in the Ridge Landfill EA
OUR FILE: 15-2456

The purpose of this memo is to respond to comments provided by Carolyn Lee, Ron Nielsen and Marc Peverini, Ministry of the Environment, Conservation and Parks (MECP; formerly the Ministry of Environment and Climate Change) on September 4, 2018, for the Diversion Options for Evaluation in the Ridge Landfill EA memo, dated July 23, 2018. A summary of the comments provided by the MECP, together with our corresponding response, is provided in the tables below.

Responses to MECP comments are based on the premise in the following excerpts from the approved Terms of Reference (ToR):

“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.”

“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.”

The responses to the comments regarding the diversion memo are outlined in the tables below:

- Table 1: Overarching Comments on the Consideration of Diversion Options (based on email correspondence)
- Table 2: Comments within Diversion Memo on the Consideration of Diversion Options

Table 1: Overarching Comments on the Consideration of Diversion Options (based on email correspondence)

#	Comment	Commenter	Response
1	Consultation initiatives should identify the potential participants from each sector, including operators of existing diversion programs under the Waste Diversion Transition Act (WDTA), and could specify questions and engagement methods suited to those participants. In particular, consultation initiatives and diversion options should target IC&I generators, given the IC&I-heavy make-up of wastes currently received at the Ridge Landfill.	Carolyn Lee, MECP	<p>To elaborate on discussion provided in the diversion memo we will be interviewing representatives from the following sectors and those that represent IC&I waste generators: agricultural groups, community associations and associations that represent local commercial businesses, retail, industrial manufacturers, and institutions as applicable. The groups are based on the geographic scope of the EA. For residential waste it is the Municipality of Chatham-Kent. For the IC&I waste service area it is confined to southern and central Ontario.</p> <p>Groups may also include existing operators for construction and demolition wastes, metals and scrap, electronic waste, tires, municipal special/hazardous wastes, organics, and textiles. Questions and discussion will be focused to specific group interests as appropriate, Kent Federation of Agriculture by way of example.</p>
2	When discussing the potential to collect, separate, or receive residential wastes, consultation initiatives and diversion options could consider municipalities beyond Chatham-Kent, particularly for food waste/organics where regional approaches could be in demand, suitable, and beneficial.	Carolyn Lee, MECP	<p>As per the Terms of Reference, the geographical scope of the EA for residential waste is the Municipality of Chatham-Kent, the host community of the Ridge. Municipal residential waste generated beyond Chatham-Kent is beyond the scope of this project as the proposed service area is confined to Chatham-Kent.</p> <p>However, IC&I waste generated in municipalities beyond the Chatham-Kent area is within this scope. The IC&I waste service area is confined to southern and central Ontario. The EA will consider opportunities for Waste Connections to enhance its existing waste diversion activities within Chatham-Kent and for the IC&I sector in southern and central Ontario.</p>
3	Diversion options, both system-wide and on-site, should highlight potential candidate materials, identify suitable generators likely to participate (residential vs. IC&I), and focus on whether diversion is environmentally beneficial and economically viable.	Carolyn Lee, MECP	The results of the Diversion Options evaluation will highlight potential candidate materials for waste diversion. The evaluation will focus on diversion opportunities that are environmentally beneficial and economically viable.
4	<p>Where on-site diversion is discussed:</p> <p>Further clarity would help the reader understand where materials will be separated in advance for on-site processing versus separated on-site for on- or off-site processing (particularly re: the option to remove more Blue Box wastes from the waste stream versus the mixed waste processing option)</p>	Carolyn Lee, MECP	This will be addressed as part of the evaluation. As per the Terms of Reference, Waste Connections operates transfer station facilities that send their residual waste to the Ridge Landfill. These transfer station facilities have well established waste segregation programs and continually source local facilities for recycling of IC&I materials such as asphalt, brick, concrete, clean fill, organics, wood, roofing, drywall, paper fibres, comingled containers, metals, separately collected cardboard and other divertible materials. In addition, Waste Connections strongly supports industries and businesses practices that undertake voluntary on-site waste diversion, for example as part of company zero waste policies or corporate sustainability policies and diversion targets.
	Pros and cons should be discussed within the context that new activities would occur at an existing waste disposal site, and should avoid presenting material management requirements as negatives unless economically or operationally infeasible.		This approach will be used as part of the evaluation.
5	The memo would benefit from a final scoping of some of the diversion options the proponent believes to be most beneficial and feasible.	Carolyn Lee, MECP	A final scoping of some of the diversion options that Waste Connections believes to be most beneficial and feasible will be addressed as part of the evaluation.
6	As consultation initiatives and options development proceed, the proponent should attempt to quantify how much material could be diverted, potential costs associated with diversion, and participation rates.	Carolyn Lee, MECP	High-level waste surveys will be carried out by Waste Connections with the assistance of seasoned Waste Connections tipping floor operators to identify materials received on site. The results of the high-level waste surveys will provide insight on the diversion potential. The information gathered will be used to evaluate potential waste diversion options, to assess the economic viability of programs and where it may be appropriate.

Table 2: Comments within Diversion Memo on the Consideration of Diversion Options

#	Comment	Commenter	Response
1	ToR Commitments: Will WCC be using targeted interviews to gather info on the waste stream and recycling opportunities?	Ron Nielson, MECP	As part of the consultation on the diversion component, feedback from various stakeholders including targeted IC&I waste generators will be gathered regarding waste material streams generated and potential recycling opportunities that are economically and operationally feasible, as well as the potential for reuse of materials by Waste Connections clients and potential efforts to support a circular economy. Stakeholders will have an opportunity to provide their feedback throughout the study, either through targeted interviews or by submitting their comments to the Project Team via email. Based on our experience some organizations prefer to circulate to their members via email for individual input (e.g., the Kent Federation of Agriculture).
	ToR Commitments: What about reviewing any studies completed by the surrounding municipalities, or conducting some waste audits to determine what's in the waste stream that could be recovered? This would likely yield better information and data than relying solely on interviews.	Ron Nielson, MECP	As per the Terms of Reference, the geographical scope of the EA for residential waste is the Municipality of Chatham-Kent and the IC&I waste service area is confined to southern and central Ontario. While adjacent municipalities have been notified of the project, conversations with municipalities regarding residential waste are limited to Chatham-Kent, the host community. Waste Connections will review any recent and publicly available IC&I reports/audits produced by municipalities (e.g., such as Owen Sound, Ontario) and others to gather waste generation and composition data for the IC&I sector. As noted previously, high-level waste surveys at Waste Connections transfer stations are also planned. Detailed, quantitative waste audits are beyond the scope of this assessment of diversion opportunities.
2	ToR Commitments: WCC could leverage their knowledge of the ICI waste stream to identify and quantify materials that could be recovered, in what amounts, and what additional efforts are needed to achieve this – actions by others – source separation, hauling, sorting / other processing, etc.	Ron Nielson, MECP	Waste Connections will conduct high-level waste surveys carried out with the assistance of seasoned Waste Connections tipping floor operators. These surveys will provide an opportunity to identify material that could be recovered for reuse and or recycling. At a high level and as part of the evaluation Waste Connections can identify the necessary efforts involved to achieve this and what external supports might be necessary but that are beyond the control of Waste Connection e.g. actions by others.
	Obtaining Stakeholder Input: On the spectrum of Quality of Engagement, it appears that stakeholders are limited to learning about plans and offering feedback, but not to participating in any level of design, planning or decision making.	Ron Nielson, MECP	The diversion survey is intended for Waste Connections to learn what programs should be enhanced or newly developed, in partnerships with who, and what program logistics make sense given local community dynamics. Throughout the EA process, stakeholders have and will continue to have an opportunity to provide feedback and to be involved. Stakeholder input, together with the technical work being undertaken, will be taken into consideration by the Project Team during the evaluation and the final decision-making process. Consultation is one piece of the decision-making process along with economic and environmental considerations during the evaluation.

Table 2: Comments within Diversion Memo on the Consideration of Diversion Options

#	Comment	Commenter	Response
3	Obtaining Stakeholder Input: The on-site focus limits options of types of approaches and may also limit the quantity / capacity of any diversion system(s) that are proposed.	Ron Nielson, MECP	As per the Terms of Reference, the geographical scope of the EA for residential waste is the Municipality of Chatham-Kent, the host community of the Ridge. The IC&I waste service area is confined to southern and central Ontario. As such, the focus for on-site options is limited to Chatham-Kent residential waste and local IC&I waste generators. For the balance of the IC&I waste stream, the Waste Connections operated transfer stations that send their residual waste to the Ridge Landfill have well established waste segregation programs. Waste Connections will continually source local facilities for recycling of IC&I materials such as asphalt, brick, concrete, clean fill, organics, wood, roofing, drywall, paper fibres, comingled containers, metals, separately collected cardboard and other divertible materials and may identify additional initiatives that could be undertaken as part of the evaluation both at these transfer stations and at source.
4	Obtaining Stakeholder Input/Targeted Interviews: I would recommend that this section identify the different groups that could be targeted, such as municipalities, businesses, existing diversion programs, haulers (e.g. landfill clients), processors.	Marc Peverini, MECP	As per the first bullet in Table 1, Waste Connections will complete targeted outreach to representatives from the following sectors and that represent IC&I waste generators: agricultural groups, community associations and associations that represent local commercial businesses, retail, industrial manufacturers, and institutions as applicable. The groups are based on the geographic scope of the EA. For residential waste it is the Municipality of Chatham-Kent. For the IC&I waste service area it is confined to southern and central Ontario. Groups may also include existing operators for construction and demolition wastes, metals and scrap, electronic waste, tires, municipal special/hazardous wastes, organics, and textiles.
5	Obtaining Stakeholder Input/Targeted Interviews: Could also ask: - which materials are easily collected but may not be currently diverted? - which materials would be easiest to collect and where are they generated (home, schools, etc.)? - where is collection/recycling least available or most difficult?	Marc Peverini, MECP	Agreed. These questions will be asked as part of the diversion survey.
6	Increased Diversion Opportunities At-Source & Elsewhere in the System: Resource Recovery and Circular Economy Act, 2016	Marc Peverini, MECP	The in-text reference to the <i>Waste-Free Ontario Act</i> will be revised to <i>Resource Recovery and Circular Economy Act, 2016</i> .
7	At Source & Elsewhere in the System: Identifying a potential material or two for each diversion option could be valuable	Marc Peverini, MECP	Agreed. Potential materials for diversion options were noted at the Workshop and the first Open House for the EA and will be included and discussed as part of the evaluation.
8	At Source & Elsewhere in the System: Providing an example of an existing partnership could be valuable here	Marc Peverini, MECP	A local agricultural greenhouse partnership example was in the Diversion Options memo submitted to MECP on July 23, 2018 and other examples can be provided as part of the evaluation.
9	At Source & Elsewhere in the System: Could include waste audit support.	Marc Peverini, MECP	This option will be modified to include waste audit support in the evaluation.
10	At Source & Elsewhere in the System: Could benefit from discussion of partnerships with Chatham-Kent re: new organics servicing in the Policy Statement.	Marc Peverini, MECP	Discussions with Chatham-Kent have and will continue to be held with respect to organics servicing. In addition to provision of residual waste disposal services at the Ridge Landfill Waste Connections also services CK's waste, blue and black box, bulky item and HHW collection programs. These discussions will be conveyed as part of the evaluation.

Table 2: Comments within Diversion Memo on the Consideration of Diversion Options

#	Comment	Commenter	Response
11	At Source & Elsewhere in the System: Could include waste audit support, targeted promotion and education to increase awareness of diversion opportunities.	Marc Peverini, MECP	This option will be modified to include waste audit support, targeted promotion and education to increase awareness of diversion opportunities in the evaluation.
12	At Source & Elsewhere in the System: Could discuss ways to gather, disseminate, promote data availability.	Marc Peverini, MECP	Discussion on ways to gather, potentially disseminate and promote data availability will be provided as part of the evaluation.
13	Increased Diversion Opportunities at the Ridge: If this is mostly for the local community, that's only a very small part of the overall operation of the landfill - 98% of the waste comes from ICI sources – from much further away – how likely is it any of these customers would use the drop off facility (it's mostly haulers that bring the waste to the landfill, not the customers themselves)?	Ron Nielson, MECP	A drop-off at the Ridge is a potential opportunity to target materials that are currently not accepted in the municipal program or that are demanding a higher level of service and in the non-residential sector in and around Chatham-Kent. The planned high-level waste surveys along with the diversion survey to organizations and the general public may provide additional insight on such opportunities. Public drop off facilities could serve local small commercial business, as well as residents, to reduce their residual waste quantities and waste disposal costs e.g. renovation businesses, landscaping businesses.
14	On-Site Processing: Diversion-options should address: A) the potential quantity for diversion; and, B) the likelihood that the materials would be diverted / recovered (or range, e.g. low to high).	Ron Nielson, MECP	As part of the consultation component of this project high-level waste surveys will be carried out with the assistance of seasoned Waste Connections tipping floor operators on site. The exercise would identify at a high level the types of materials, quantities and likelihood of recovery or markets. Additional insight on diversion opportunities will also come from the diversion survey to organizations and the general public.
15	On-Site Processing: Note that only 2% of the waste received is municipal – programs need to be designed primarily for ICI / non-res waste.	Ron Nielson, MECP	Programs will be designed for both the residential (within Chatham-Kent) and IC&I sector (within southern and central Ontario), with the primary focus on IC&I waste sector diversion possibilities.
16	On-Site Processing: Provincially mandated programs are certainly helpful but are not the be all and end all of removing recyclables from waste streams. This comment applies to all options, since this bullet is repeated.	Marc Peverini, MECP	Duly noted.
17	On-Site Processing: It could be valuable to discuss the benefits of co-locating a diversion/MWP facility on-site with a landfill (given that the cons of this are discussed). This comment applies to all options, since this is a potential benefit in all options.	Marc Peverini, MECP	The high-level benefits of co-locating a diversion/MWP facility on-site will be elaborated on.
18	On-Site Processing: Recovery rates vary depending on the type of materials being recovered, which vary depending on the use of diversion programs and sectors that generate the waste.	Marc Peverini, MECP	Comment noted for evaluation.
19	On-Site Processing: A discussion of how health, safety, rodent, etc. concerns differ between a landfill and recycling/recovery facilities would be valuable, as would similar comments for other options.	Marc Peverini, MECP	Comment noted for evaluation.
20	On-Site Processing: The discussion of this option should not be framed solely around provincial programs and landfill bans. The discussion could consider benefits of removing organics from landfill stream, including reduced leachate, reduced odour, and longer landfill lifespan.	Marc Peverini, MECP	The evaluation will consider benefits of removing organics from landfill stream, including reduced leachate, reduced odour, and longer landfill lifespan.
21	On-Site Processing: The Policy Statement's collection direction may apply to other southwestern Ontario municipalities (Windsor-Essex, Sarnia, etc.) the discussion could consider organics volumes from other municipalities in the context of option viability.	Marc Peverini, MECP	As per the Terms of Reference, the geographical scope of the EA for residential waste is the Municipality of Chatham-Kent and the IC&I waste service area is confined to southern and central Ontario.

Table 2: Comments within Diversion Memo on the Consideration of Diversion Options

#	Comment	Commenter	Response
22	On-Site Processing: The Strategy does not propose designating source separated organics for diversion through landfill bans. The Food and Organic Waste Policy Statement does set waste reduction and resource recovery targets for food and organic waste, and provide direction for food and organic waste collection to municipalities, businesses and some institutions. The discussion of this option should reference new organics collection and processing requirements, as well as their impact on local municipalities and Ridge clients.	Marc Peverini, MECP	The evaluation of this option will reference new organics collection and processing requirements, as well as their impact on Chatham-Kent and Ridge clients.
23	On-Site Processing: These are not “cons”, simply material management practices.	Marc Peverini, MECP	Agreed.
24	On-Site Depots for Local Materials Collection: While a partnership is indeed beneficial, it is not a requirement to provide an agricultural waste drop-off recycling location and the option should not be scoped as such.	Marc Peverini, MECP	The intent is to provide a public drop off (Recovery Park) servicing both IC&I and residential sector and for materials not currently accepted at Chatham-Kent public drop offs. Agricultural waste collection is not being considered as a stand-alone program.
25	On-Site Depots for Local Materials Collection: Perhaps partnerships with external organizations could be combined with the on-site drop-off depot option and not be a standalone option.	Carolyn Lee, MECP	
26	On-Site Depots for Local Materials Collection: A discussion here about coordinating and/or complementing municipal and other diversion (e.g. charities) initiatives could be valuable.	Marc Peverini, MECP	As part of the consultation component of this project Waste Connections is communicating with Chatham-Kent and other local stakeholders about the future of the Ridge and waste collection practices. Waste Connections is committed to 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 provincial waste diversion objectives. Coordination opportunities would come out of feedback from the consultation process with local stakeholders i.e. one organization's waste is another's resource.
27	Consideration of Options for At-Source, At the Ridge and Elsewhere in the System: It would be beneficial for this document to identify some of the options from the previous two sections that WCC thinks are most suitable or most beneficial.	Marc Peverini, MECP	The purpose of the evaluation is to identify the options at-source, elsewhere in the system and at the Ridge that are most suitable or most beneficial.