



**Report:** TES-WMS-15-01

**Region of Waterloo**  
**Transportation & Environmental Services**  
**Waste Management**

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**To:** Chair Tom Galloway and Members of the Planning and Works Committee

**Date:** February 3, 2015                      **File Code:** E20-40

**Subject:** **Waste Management Master Plan Implementation Update**

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**Recommendation:**

That the Regional Municipality of Waterloo nominate up to four (4) Regional Councillors to establish a Working Group to work with project team staff during implementation of the recommendations of the Waste Management Master Plan as described in Report TES-WMS-15-01 dated February 3, 2015.

**Summary:**

A Working Group of Regional Councillors was established in 2010 when Council directed staff to undertake an update of the Waste Management Master Plan (WMMP). The Working Group, consisting of four councillors (one Councillor representing each of Cities of Cambridge, Kitchener and Waterloo and one Councillor representing the townships), participated in the WMMP Steering Committee and Stakeholder Group. The new WMMP was approved by Council in November 2013. The recommendations of the WMMP are in various stages of implementation and establishing the Working Group will provide Regional Councillors an opportunity to participate and work with staff in the various studies and projects to implement the recommendations of the Master Plan.

**Report:**

Background

Long term strategic planning has laid the foundation for waste management in Waterloo Region since the 1980's. A new Waste Management Master Plan (WMMP) study was initiated in April 2012 to establish a new long-term strategic direction for sustainable waste management in the Region. The division's original Master Plan was established in 1986, and over the past 28 years the Region has implemented the majority of the

recommendations outlined in the original plan, including infrastructure modernization, service integration, and new program initiatives. The result has been a threefold increase in the amount of material diverted from landfill between 1995 and 2014 while population increased only 35% over the same period. Additionally, numerous changes in the planning, regulatory and technical environments have occurred since the WMMP was first approved. Further, the most recent projected remaining capacity at the Regional Landfill site is approximately 15 to 20 years; coincident with the typical planning horizon for a master plan.

Building upon the successes and experience gained over the last 25+ years, the Region undertook to develop a renewed strategy to guide waste management services and establish a strategic direction in the focus areas of *Diversion*, *Residual Waste Management* and *Planning* over the next 20 years. The WMMP study involved collaboration with a Steering Committee comprised of Region councillors and staff, and a Stakeholder's Group comprised of Waterloo Region residents and representatives of community and environmental organizations, business and industry organizations, area municipalities and universities, Regional councilors and technical consultants.

The WMMP study included a comprehensive review of current waste management programs and performance, identification of opportunities to divert even more waste away from landfill, identification of options for future residual waste management, and recommendations of options for the long term management of Waterloo Region's waste.

The WMMP included the following recommendations (E-13-127, November 12, 2013) in each of the three focus areas:

#### Diversion

- Consideration of curbside collection policy changes to increase diversion (e.g. bag limits, bi-weekly garbage collection, standardized Regional residential waste collection), and consider "user pay" options (e.g. bag tags).

#### Residual Waste Management

- Further investigate thermal technology options (e.g. Feasibility Study, Business Case, Life Cycle Analysis, Environmental Impacts Study).
- Continue pursuit of opportunities with the Water Services Division to maximize inherent synergies for processing and disposal of residual waste and biosolids.

#### Planning

- Adopt a waste hierarchy that includes "Recovery" as the 4<sup>th</sup> R and consider recovery of energy and resources above waste disposal.

- Establish an inter-municipal working group to explore potential partnership opportunities for both diversion and residual waste management.

Report TES-WMS-15-01 provides an update on the implementation status of each of these recommendations.

## **Diversion**

While the residual waste management and planning recommendations are long term initiatives, the diversion recommendation could be considered and actioned as part of the next waste collection contract, which commences in March 2017.

Citizen feedback was an integral part of the WMMP and over 600 citizens responded to questions about diversion programs through social media, surveys, and attendance at Public Information Centres. These initial responses shaped the primary diversion recommendation from the WMMP and identified potential changes to curbside collection practices as a method to increase diversion. Nevertheless, the proposed changes would be a significant shift from historical curbside service levels and if implemented, will have considerable impacts on citizens receiving curbside collection. To increase public engagement and awareness, staff recently undertook an additional multi-faceted public engagement program that focused on the WMMP diversion recommendations. This initiative included a random telephone survey and online survey, with access details promoted through a tri-city home delivered brochure, advertisements, website, roadway signs, social media, call-in responses, and public service announcements covered by newspapers, radio and television. By the end of 2014, over 7,500 citizens provided their feedback.

Staff effort has also focused on best practice research, and discussions with Ontario municipalities with well-entrenched diversion programs that include bag limits with weekly and bi-weekly collection, and those with bag tag programs. Waste collection inconsistencies across the area municipalities have been identified (differing bags limits, levels and frequencies of service, etc.), and discussions have been held with area municipal public works and by-law enforcement leaders on the opportunities and challenges of any potential curbside waste collection changes on their operations.

The results of all these activities are currently being compiled and will help shape the proposed recommendations for the next curbside collection contract. As identified in previous reports, staff will present a report later in the spring identifying potential curbside policy options for Council consideration and direction.

Typically a minimum of 18 to 24 months is required after Council direction to finalize the scope of a new collection contract, prepare and advertise the tender, assess and award a new collection contract, and for the preparation/purchasing timelines needed by the successful bidder(s) for a long-term waste collection contract. An extensive public

education and promotion program will also be developed once Council has set the direction for the new curbside collection service.

### **Residual Waste Management**

Residual waste management alternatives evaluated during the WMMP study were evaluated from a sustainability (local impact focus) and life cycle assessment (global impact focus) basis and included consideration of all available technologies such as landfilling, mechanical, biological and thermal processes. The evaluation process also incorporated energy and resource recovery potential.

The sustainability evaluation determined that thermal treatment is the best performing option when all dimensions (social, environmental, technical and economic) are considered together. Thermal technologies can minimize local impacts due to:

- the advent of high performing emissions control equipment,
- small footprint requirement,
- opportunities for significant conversion of residual waste to energy,
- significant volume of waste reduction and corresponding low residual requiring disposal, and
- net operating costs can approach those of traditional landfilling when operating costs are offset by a revenue stream from the sale of energy or cost avoidance, in the case of district heating for example.

The life cycle analysis provided an assessment of the environmental footprint from all stages of a waste management system. Notable results include:

- thermal treatment could result in an avoidance of greenhouse gas (GHG) emissions equivalent to keeping almost 4,000 cars off the road or burning over 44,000 barrels of oil. This is primarily as a result of avoided emissions by off-setting the need to generate electricity from fossil fuels.
- thermal treatment has a significant impact on avoided resource depletion, equivalent to the resource consumption impact of almost 10,000 individuals. This is due to material recovery, and more significantly, energy generation. Virgin resources used to manufacture materials and fossil fuel used for energy production is displaced by renewable energy from thermal treatment.

Based on the evaluation of sustainability and life cycle measures and on the feedback collected from the public during the WMMP, thermal treatment (defined as the use of heat to convert waste into biogas or heat energy) was identified as the best performing option and the most preferred option of community respondents.

Overall, thermal treatment represents a sustainable option for future waste

management for Waterloo Region that can be combined with policies, programs and initiatives to increase overall diversion. Several jurisdictions in Canada are either implementing or planning for the implementation of thermal treatment, including the Cities of Ottawa, Edmonton, Greater Vancouver and the Regions of York, Durham and Peel, and it appears that thermal treatment is gaining momentum.

In accordance with the recommendations of the WMMP, the Region is currently completing a study to assess and evaluate the feasibility of implementing a residual waste management system using thermal treatment technology with energy recovery. The Feasibility Study will examine the opportunities and barriers associated with implementation of thermal treatment by the Region, including:

- opportunities for collaboration and partnership amongst neighbouring jurisdictions and/or private sector entities,
- synergies with the Biosolids Master Plan,
- factors which are outside of the primary waste management mandate of the Region, including provincial policy direction and changes,
- considerations related to revenue from energy generation,
- required changes to Regional waste management policies, programs and operational practices necessary to allow for the successful implementation of thermal treatment, and
- the relative benefits of utilizing recovered energy for electricity generation and/or district heating.

Further, the Feasibility Study will provide value-added rationale for decision-making and scoping of subsequent studies (e.g. Business Case, Life Cycle Analysis, Environmental Impacts Study) should they be deemed appropriate. Following the completion of the feasibility study the information will be used to compare to alternative solutions, such as, a new landfill before a decision is made by Council.

At this time, it is noted that no final decision on the future of residual waste disposal has been made by Council.

### **Planning**

The Region's future residual residential waste tonnage is projected to be approximately 100,000 tonnes annually, which represents the low end of economic viability for thermal technology. Therefore, exploring opportunities to partner with the Region's Water Services Divisions to include biosolids as a feedstock, with municipal neighbours facing similar future landfilling constraints and/or the private sector to achieve economies of scale and optimal efficiency is underway.

As part of the WMMP study, the Region hosted an inter-municipal workshop in June 2012. Waste management representatives from several neighbouring municipalities

participated in an open dialogue regarding common challenges, opportunities, leading/best practices, and to explore opportunities for future collaboration, not only focused on residual waste management but all waste management issues such as diversion programs and policy initiatives. Initial membership includes the Cities of Brantford, Guelph, Hamilton, London, and Toronto, Counties of Brant, Wellington, Norfolk, Oxford and Region of Peel and Niagara. The group agreed to form an Inter-municipal Working group to continue discussions, and an inaugural meeting was held in October 2014, with a second meeting anticipated in Spring 2015. Waste Management staff are also participating in the Biosolids Master Plan Update.

### Next Steps

Implementation of the recommendations will continue to proceed according to the following schedule. Staff will meet with the Working Group and report back to the Planning and Works Committee at key milestones.

Recommendation	Timing
Consideration of curbside collection policy changes to increase diversion (e.g. bag limits, bi-weekly garbage collection, standardized Regional residential waste collection), and consider “user pay” options (e.g. bag tags).	Commenced 2014. Staff will report back in the spring of 2015 for further direction/finalization of the scope of the next collection contract.
Further investigate thermal technology options (e.g. Feasibility Study, Business Case, Life Cycle Analysis, Environmental Impacts Study).	Commenced 2014. Anticipated completion of Feasibility Study and report to Council in the fall of 2015. Subsequent studies to be informed by findings of Feasibility Study.
Continue pursuit of opportunities with the Water Services Division to maximize inherent synergies for processing and disposal of residual waste and biosolids.	Ongoing coincident with Biosolids Master Plan Update.
Adopt a waste hierarchy that includes “Recovery” as the 4 <sup>th</sup> R and consider recovery of energy and resources above waste disposal.	Incorporated into Feasibility Study scope.
Establish an inter-municipal working group to explore potential partnership opportunities for both diversion and residual waste management.	Commenced 2014. On-going with next meeting scheduled for Spring 2015.

**Corporate Strategic Plan:**

Implementation of the recommendations of the new WMMP supports the Corporate Strategic Plan Objectives of Focus Area 1 Environmental Sustainability, including 1.1 “Integrate Environmental Considerations Into the Region’s Decision-Making” and 1.3 “Reduce the Amount of Waste Requiring Landfill”.

**Financial Implications:**

The preliminary 2015 Waste Management Ten Year Capital Program includes sufficient funding provisions in 2015-2018 to implement the recommendations identified in the Waste Management Master Plan.

**Other Department Consultations/Concurrence:**

Nil

**Attachments**

Nil

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