Waste Management Master Plan

County of Peterborough

December 19, 2012

Prepared by Cambium Environmental Inc.

P.O. Box 325, 52 Hunter Street East, Peterborough, Ontario, K9H 1G5

Telephone: (705) 742.7900 (866) 217.7900

Facsimile: (705) 742.7907

www.cambium-env.com

Cambium Reference No.: 1803-001

Executive Summary

Cambium Environmental Inc. was retained to prepare a municipal solid Waste Management Master Plan (WMMP) for the Corporation of the County of Peterborough (County) that will expand on the existing joint County/City plan, which was completed in 1993 (The Peterborough County/City Waste Management Master Plan, Waste Management Systems Plan Final Report). The new WMMP will be a tool for the County to use in the development of waste management policies, guidelines, and best practices for both short and long term planning. The City of Peterborough (City) has prepared a WMMP for its own purposes; however, the County and the City are committed to working together to effectively and efficiently manage municipal solid waste through formal partnerships, aligned policies, and operational relationships. The County and the City were involved in mutual consultations throughout the development of their respective WMMPs.

The goals and objectives of the WMMP are to:

- Optimize Waste Management
- Implement Best Practices for Waste Management
- Expand Outreach for Waste Management

There are several challenges facing the County waste management system including:

- Diminishing life capacity of County/City landfill and the remaining Township landfill sites;
- Non-uniform level of service and varying waste management policies among the Townships and on a broader scale with the City and Province-wide;
- Missed efficiencies due to distinct Township service areas and policies;
- Limited influence/partnership with industrial, commercial and institutional sector waste generators;
- Limited potential for organics processing;
- Uncertain life capacity of the Materials Recovery Facility; and,

- Difficulty in engaging the seasonal population which can cause dramatic fluctuations and unique demands on waste management services.

While waste management in the County is a complex issue due to the problems stated above, many of these problems can be resolved by implementing County-wide policies to increase diversion, minimize waste generation and create efficiencies in waste disposal.

Current Waste Management System

The year 2010 was selected as the baseline year for the WMMP, and all service offerings and data presented in the WMMP are reflective of that baseline. According to the 2010 Waste Diversion Ontario (WDO) Datacall, the County reported services to 34,269 single residential households and 10 multi-residential buildings, with a total population of approximately 58,000 persons. Due to the seasonal nature of the area, it has been estimated that an additional 30,000 people can inhabit the area during the summer months.

The County covers an area of 3,805 square kilometres and is comprised of eight (8) Townships including:

- Township of Asphodel-Norwood
- Township of Douro-Dummer
- Township of Havelock-Belmont-Methuen
- Township of Otonabee-South Monaghan
- Township of Cavan Monaghan
- Township of Galway-Cavendish and Harvey
- Township of North Kawartha
- Township of Smith-Ennismore-Lakefield

Each Township within the County provides varying levels of waste management services to its residents. The Townships of Asphodel-Norwood, Havelock-Belmont-Methuen, and Smith-Ennismore-Lakefield each still operate active landfills. The majority of the waste generated is hauled to the Peterborough County/City Waste Management Facility on Bensfort Road, in the Township of Otonabee-South Monaghan. As of 2010, the County/City facility will provide

waste disposal capacity for the County and City of Peterborough for an estimated 12 to 15 years.

The management of residential waste in the County has been focussed primarily on implementing an effective blue box program in tandem with the collection of garbage. Waste diversion rates in the County have been slowly increasing in recent years, with an overall growth of 4.8% between 2008 and 2010. Even though the goal of 50% diversion was established 16 years ago, from 2007 through 2010 waste diversion rates have remained below 40% (Waste Diversion Ontario, 2011). Therefore, the County has a long way to go in order to meet the socially desired and politically guided diversion rate of 60%.

The following summary provides important details regarding the current waste management system in the County:

- Approximately 23,700 tonnes of residential waste (total including diverted and landfilled) was generated within the County in 2010.
- The results of the 2010 WDO Datacall submission indicate 9,350 tonnes (39.4%) of residential waste produced in the County was diverted through programs such as blue box material recycling, leaf and yard material composting, MHSW collections, and backyard composting. The County's diversion rate is less than the 2010 Rural Regional municipal grouping average of 40.9%.
- In 2010, the net cost for the County's blue box program was $253 per tonne. When compared to the average net cost of $332 per tonne for municipalities of a similar circumstance by municipal grouping, the County is considered more cost efficient than others in the Rural Regional setting.
- The County disposed of 14,350 tonnes of residential waste in 2010 at the PCCWMF, which is calculated as 227 kilograms per capita. In comparison with other municipalities within the Rural Regional municipal grouping, the County disposes more waste per capita than the peer average (199 kilograms per capita). The higher waste generation rate is likely

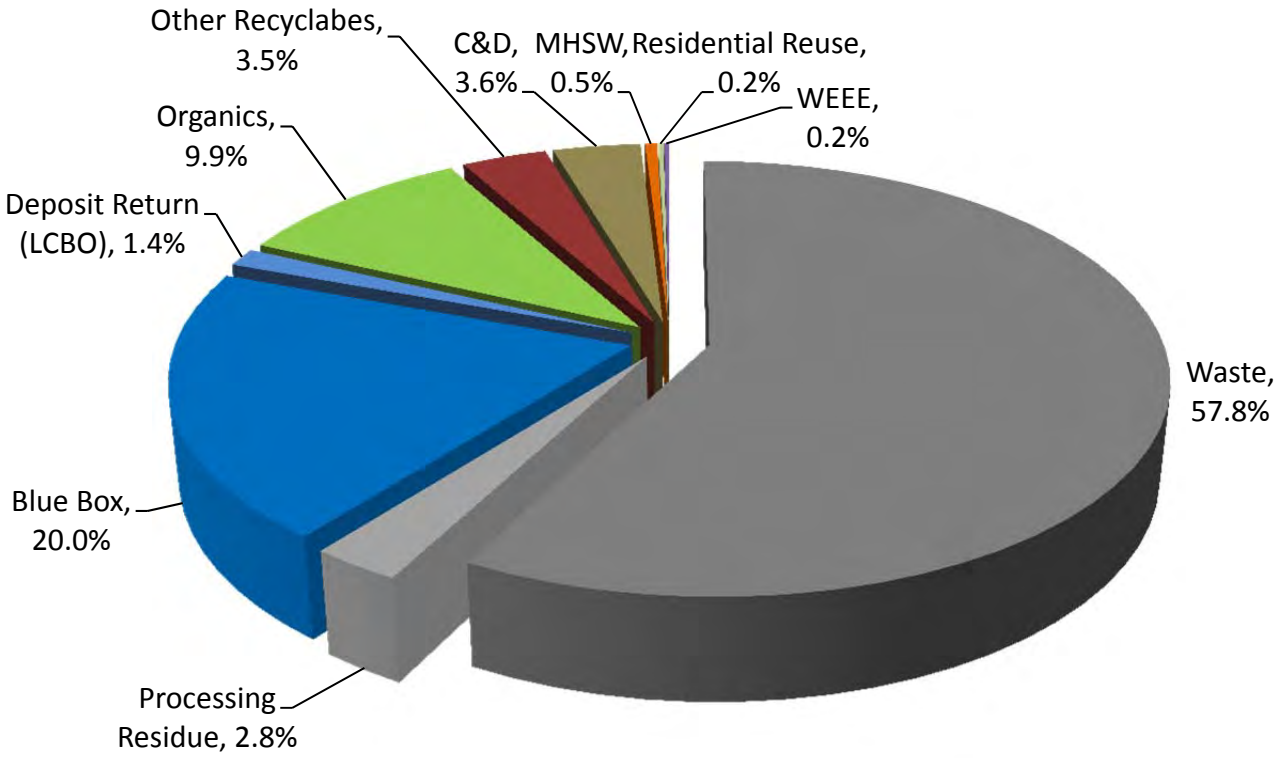
influenced by the seasonal population and differing waste management policies between Townships.

- While most waste diversion programs, including blue box materials, are managed at the County level each of the Townships is responsible for disposal of their waste either through transfer to the PCCWMF and/or landfilled locally.
- Each Township within the County provides varying levels of waste management services to its residents and is responsible for the operation of their waste transfer stations and/or landfill sites, and any bag tag/limits/user pay system or policy enforcement.

Overall, when comparing the County to other municipalities within the Rural Regional municipal grouping,

- o total waste diversion is average;
- o the blue box program is cost effective; and,
- o the residential waste per capita generated is more than average.

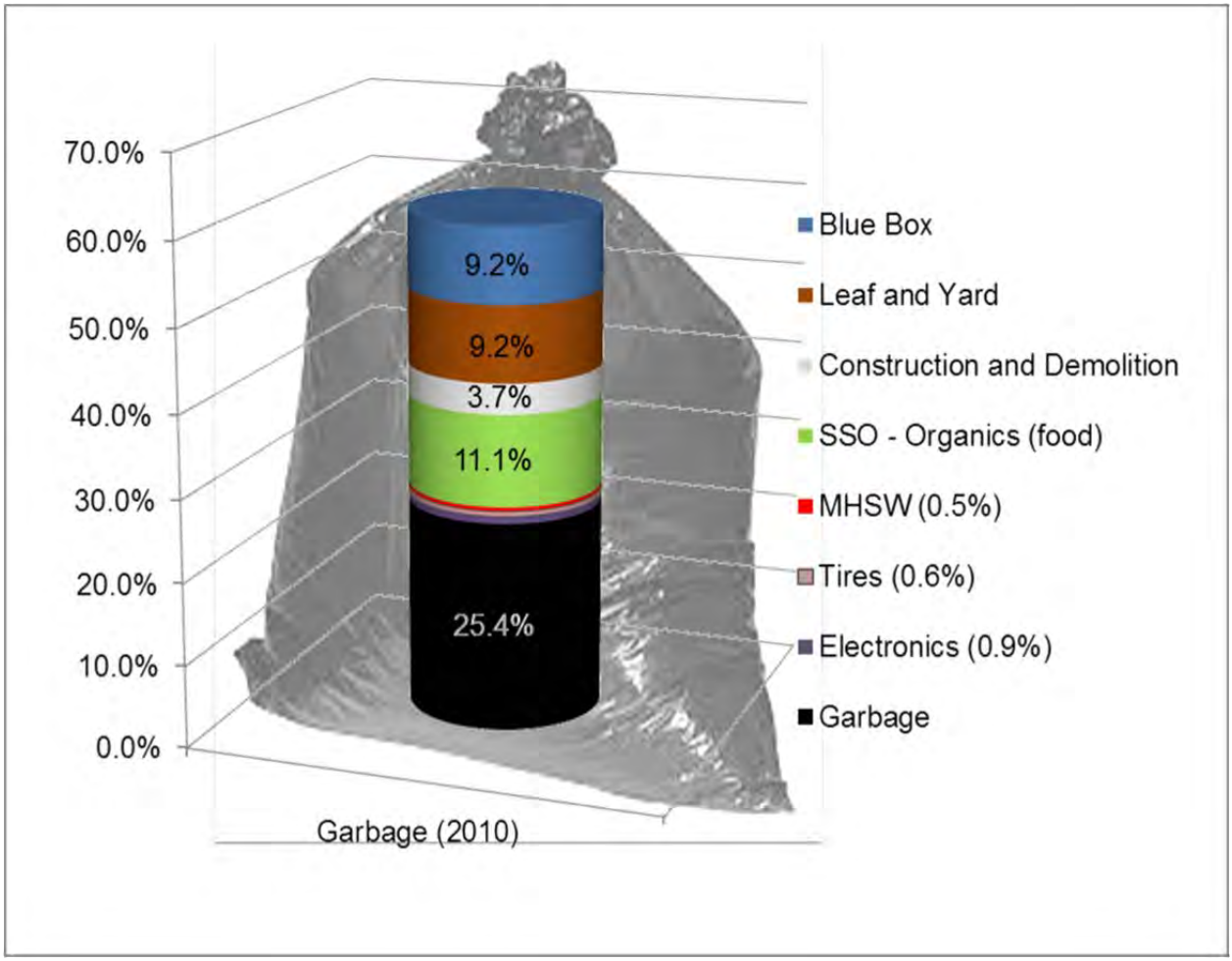
The County's waste composition is represented graphically below.


Other Recyclabes, 3.5%
C&D, 3.6%
MHSW, 0.5%
Residential Reuse, 0.2%
WEEE, 0.2%
Organics, 9.9%
Deposit Return (LCBO), 1.4%
Waste, 57.8%
Blue Box, 20.0%
Processing Residue, 2.8%

The waste management system of the County provides a solid foundation on which to enhance and expand to meet the sustainability needs (i.e. social, economic, and environmental) of the County over the next 20 years.

As a component of the WMMP, a divertible waste opportunity analysis was conducted to assess the performance of the County's diversion programs. The divertible waste opportunity analysis shows that it is possible to divert 75% of the waste in the County; therefore, achieving the 60% diversion target is a realistic goal over the next 20 years. It is recognized that even with increases in waste diversion in the County, there will still be a need for disposal of materials that cannot be, or are not, diverted.

The graph below demonstrates how much more waste could be diverted from garbage bags by achieving a 75% capture rate, and the corresponding decrease in garbage going to landfill after implementation of potential options. As illustrated, the greatest gains in diversion would be realized through increased capture of blue box, food waste, leaf and yard materials and construction and demolition debris.



To address the waste management needs of the County, a long list of waste management options was assembled and assessed for suitability, based on the County's unique waste management system and circumstances. Fifty seven options for waste diversion and three categories of waste disposal options were reviewed. Some of the options evaluated were determined to be unsuitable for the County and Townships at this time; however, the County and Townships may decide to revisit the long list of options in the future as some options may become suitable at a later date, in a specific circumstance or jurisdiction, or based on conditions that are not foreseen at this time.

Consultation Program

The County undertook comprehensive consultations with the public to gain an understanding of residents' facility and program usage, overall participation in waste diversion, and to learn their opinions of improvements that could be made to waste management in the County. The County's objective for the consultation program was to ensure that the WMMP process was open and transparent, and that interested parties could maintain involvement in, and knowledge of the plan. A Technical Advisory Committee was established to provide study direction and technical input on an on-going basis. Aboriginal communities in the County as well as First Nations associated with the William's Treaty were contacted to solicit input.

The initial public consultation included presentations to each Township Council, and County staff hosting "Environment Days" events, attending meetings and fairs, and visiting business areas to inform residents and other waste management system users about the WMMP. Promotional materials encouraging public input into the WMMP process were distributed at such events and meetings. Public information centres were held at five locations in the County in August, 2011. Results of the initial round of public consultation suggested that residents of the County confirm agreement with the objective to reduce waste. The methods to reduce waste that were determined to be the most acceptable to the public include:

- Increase blue box items
- Increase public promotion and education
- Implement bag limits for garbage

With regard to disposal options, residents ranked the presented waste disposal options in the following way:

- Increase waste reduction (extend life of landfill).
- Combustion with the potential for energy generation (if approved).
- Expand existing landfill (if approved).

The least desirable option was to export waste outside County boundaries.

The secondary public consultation included presentations to each Township Council and a County wide information centre held in November 2012. In conjunction with this open house session, an online survey was posted to the County website during both the initial and secondary consultation periods to obtain public opinion on the current waste system, preferences for system improvements, and general comments related to waste management. Results of the secondary round of public consultation suggested that seasonal residents felt that they already pay high taxes for the service they receive and therefore were unwilling to increase taxes for additional diversion.

All input received through the consultation program was considered by the County, and was used to guide the recommendations for future waste diversion and disposal.

Recommendations for Waste Diversion

Opportunities to maximize waste diversion depend on having appropriate, efficient and affordable infrastructure and operations in place to collect and process the materials. An ideal waste diversion program must:

- allow for modular implementation opportunities working cooperatively between the County and Townships;
- be flexible enough to be accessible and understood by residents;
- be structured enough to allow for short and long term planning; and,
- be affordable for all.

The WMMP has identified a number of strategies that will allow the County to meet or exceed the 60% diversion target set by the Province, which has been accepted by the County as a realistic and achievable goal. The following Key Recommendations are made on a County-wide level to take a positive step toward meeting the 60% waste diversion target:

Short Term Actions (1-5 years)

Collection Strategies

- Enhance Collection of Leaf and Yard Materials - Establish seasonal curbside collection of leaf and yard materials in strategic population centres and allow for collection at all landfills and transfer stations within 2 years. All material collected should be formally diverted, such as being processed at a composting facility. The anticipated increase in diversion is 9.2%.
- Increase Diversion of C&D Debris - Create designated drop-off areas at all landfills and transfer stations to allow for proper separation of C&D debris from other waste types within the next 2-5 years. The C&D debris should be hauled to a C&D processing facility for proper sorting for eventual recycling, reuse or disposal. The County should work with local companies and individuals in the construction and demolition trade to promote the proper sorting and collection of C&D debris. The anticipated increase in diversion is 3.7%.
- Promote Backyard Composting - Continue to assist and promote the use of backyard composters to all residents. The anticipated increase in diversion is up to 1%.

Policy and Enforcement Approaches

- Align By-laws - Introduce a new County-wide waste management by-law, which will support activities and policies designed to increase diversion and preserve landfill capacity at the PCCWMF (e.g. 2 bag limit, bulky item limits, encourage and improve diversion, outline responsibilities of the Townships and County, etc.), within the next 2 years. The anticipated increase in diversion is 3%.
- Increase Enforcement - Provide increased enforcement for all existing, enhanced and new diversion programs, beginning within the next 5 years. Increasing enforcement is anticipated to help all of the key recommendations reach their noted diversion potential.
- Mandatory Recycling - Re-establish mandatory blue box recycling and the proper diversion of tires, MHSW, WEEE and C&D debris, banning these materials from disposal within the next 5 years.

Promotion and Education Strategies

- Coordinate P&E Campaigns - Provide consistent messaging through current on-going P&E for all County-wide diversion programs within the next 5 years and beyond. Use a variety of materials, techniques and approaches to capture and maintain the interest of the public. Consistent public messaging is anticipated to help all of the key recommendations reach their noted diversion potential.

Monitoring and Reporting

- Measuring Success - The overall success of waste diversion programs should be monitored on a regular basis to allow for modifications to increase or maintain waste diversion as necessary to meet the desired waste diversion targets. Section 8.0 includes a description of the items to be monitored on a regular basis. The first review should be completed in 2018, with reviews completed every 5 years thereafter.

Medium Term Actions (5-10 years)

Collection Strategies

- Expand SSO Collection at Curbside and Transfer Stations - Provide “green bin” service to strategic population centres and install additional collection systems (i.e. Molok©) at strategic landfill or transfer stations. The anticipated increase in diversion is 11.1%.

Policy and Enforcement Approaches

- Building Permit Waste Reduction Plans - Establish the requirement for waste reduction plans during project planning for development, demolition and construction projects. Applicants seeking a building permit would be required to review a guidance document and then complete a Project Waste Reduction Summary. The anticipated increase in diversion is 5%.

IC&I Diversion Strategies

- Investigation of IC&I Waste - Measure the quantity and composition of waste generated by the IC&I sector, including agricultural waste, that is collected in the Townships and report the data to the County.

Long Term Actions (10-20 years)

Policy and Enforcement Approaches

- Materials Ban (Organics) - Once the expanded SSO collection program has been introduced, prepare for and mandate an organics disposal ban within the next 10-20 years. Considerable lead time will be required to have the appropriate infrastructure in place to support an organics ban; therefore, the County and Townships should begin to work toward this goal. The anticipated increase in diversion is 3%.

It is important to note that the implementation of the waste diversion options is likely to occur over several years, with some options requiring substantial lead time for public notification, planning, financing, funding, and preparation. Due to the structure of the County, some of the programs would be led by the County while others would be managed at the Township level. Due to the differing needs of each Township, some flexibility in selecting tailored and appropriate diversion programs is necessary. Each Township should review all waste diversion options presented in this WMMP for applicability and suitability to their jurisdiction, and implement programs as required to supplement the County-wide initiatives recommended.

Recommendations for Waste Disposal

It is recognized that there is limited capacity remaining at the County/City Waste Management Facility, and that despite best efforts toward waste diversion, eventually additional waste disposal capacity will be required. To implement many of the solid waste disposal options discussed, the County will be required to follow a provincial environmental assessment process (individual or screening). The environmental assessment process can also be used to assist in determining the most suitable option for disposal. It is recommended that the County initiate the environmental assessment process a minimum of 8 years prior to reaching capacity

at the existing facility, to ensure that sufficient time is allocated for necessary supporting studies.

The WMMP presents a discussion of several options to manage disposed waste into the future, and each has a unique set of strengths and challenges as discussed in Section 5.7.

The following Key Recommendations will bring the County closer to identifying the most suitable means of waste disposal once capacity is no longer available at the County/City Waste Management Facility.

- Investigate Suitable Options for Future Landfill Capacity
    - Monitor existing landfill capacity, landfill expansions and potential greenfield locations over time to allow the widest selection of suitable options.
- Undertake a Formal Review of Waste Management Technologies
    - As a component of these reviews, the County should monitor the progress of the Durham York EFW facility and investigate options for use of this facility. The County should also continue to investigate internal and external sources of capacity for compost processing. Reviews should be completed on a regular basis (every 3 to 5 years).
- Undertake a Full Feasibility Study for Waste Disposal
    - A cost/benefit assessment for future residual waste capacity within the County should be completed. Options to create mutually beneficial partnerships with other municipalities and the private sector outside its jurisdiction should be investigated.
    - The study should be developed so that it may be used as necessary to meet the requirements of the EAA and other relevant legislation, should the County decide to proceed with implementation of a specific residual waste disposal option.

Most of the waste disposal options presented within the WMMP would be subject to major studies, municipal and provincial approvals and possibly federal approvals (i.e. existing landfill capacity expansion, new landfill site, thermal treatment facility). The intent of the studies and

approvals is to make sure that the expansion or creation of a new facility, and subsequent operation, does not have a negative impact on the environment. Components of the environment considered in the required studies include natural, cultural, social and economic aspects.

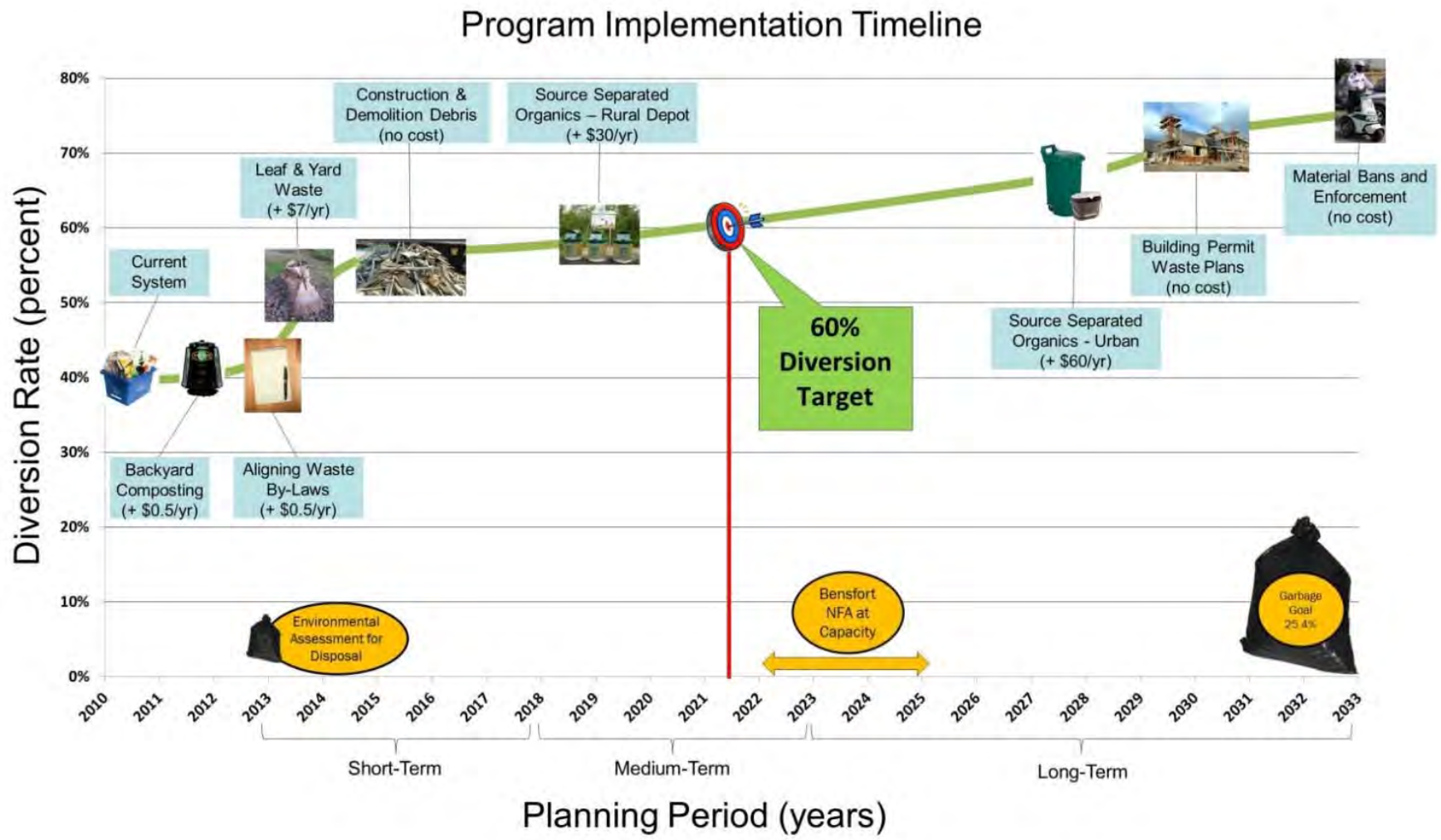
Implementation of Recommendations

The implementation and performance of the waste management system improvements identified in the WMMP should be monitored on a regular basis, to ensure that the system continues to evolve with waste generation, diversion and disposal conditions. An annual review of the status of waste diversion programs, the impact on waste diversion rates, remaining waste disposal capacity and a summary of any consultations should be undertaken, and documented in an annual monitoring report.

The WMMP is intended to be a living document that will be occasionally revised to reflect the ever changing conditions of waste management. A review and update to the WMMP should be completed every 5 years to ensure that it remains a relevant, current and applicable tool to assist with the management of waste throughout the County.

It is understood that diversion programs can take several years to reach their full diversion potential. In the case of the County, it is assumed that all programs will reach maturity (i.e. the maximum sustainable diversion rate) in 5 years from implementation. This assumption has been adopted to illustrate the progress that the County will make toward meeting the 60% waste diversion target over the planning period, as outlined above. Based on the implementation schedule provided, it is anticipated that the County will reach the 60% diversion rate target between 2021 and 2022.

The 60% waste diversion target set by the Province and adopted by the County can be met by implementing the Key Recommendations, as presented in the figure below.


Program Implementation Timeline
Diversion Rate (percent)
80%
70%
60%
50%
40%
30%
20%
10%
0%
Current System
Backyard Composting (+ $0.5/yr)
Leaf & Yard Waste (+ $7/yr)
Aligning Waste By-Laws (+ $0.5/yr)
Construction & Demolition Debris (no cost)
Source Separated Organics – Rural Depot (+ $30/yr)
60% Diversion Target
Source Separated Organics - Urban (+ $60/yr)
Building Permit Waste Plans (no cost)
Material Bans and Enforcement (no cost)
Environmental Assessment for Disposal
Bensfort NFA at Capacity
Garbage Goal 25.4%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
Short-Term
Medium-Term
Long-Term
Planning Period (years)

The current cost for diversion programs is estimated to be $84 per household. To get to the 60% diversion target it is estimated that an average additional cost of $7 per household per year over a ten year period will be required.

It was recognized through the public consultation program that residents feel they are currently paying high taxes for the services received. Moving forward, it will be important to ensure that Key Recommendations of this Plan are implemented in a financially accountable manner, in order to reach the 60% diversion rate target. The County and Townships should work together to identify opportunities to off-set the costs associated with the addition of diversions programs to minimize the tax burden to residents.

Funding for some diversion programs is made available through government initiatives and stewardship programs. Funds can also be made available by seeking efficiencies within all waste management services, at the Township, County and co-operative levels. Improving efficiencies will increase finances available to use for improvements in County-wide waste management services. The County should continue to monitor funding availability from internal and external sources throughout the planning period to assist with program implementation and operating costs.

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1.0 Introduction

Cambium Environmental Inc. (Cambium) was retained in 2011 to prepare a municipal solid Waste Management Master Plan (WMMP) for the Corporation of the County of Peterborough (County) that will expand on the existing joint County/City plan, which was completed in 1993 (The Peterborough County/City Waste Management Master Plan, Waste Management Systems Plan Final Report). The new WMMP will be a tool for the County to use in the development of waste management policies, guidelines, and best practices for both short and long term planning. The City of Peterborough (City) has prepared a WMMP for its own purposes; however, the County and the City are committed to working together to effectively and efficiently manage municipal solid waste through formal partnerships, aligned policies, and operational relationships. The County and the City were involved in mutual consultations throughout the development of their respective WMMPs.

Under the Ontario Municipal Act, 2001, the County has the responsibility to plan for and manage the solid waste generated within its boundaries. The focus of the WMMP will be to provide strategic direction for optimizing the current and future residential solid waste programs to best meet the sustainability needs (i.e. social, economic, and environmental) of the County over the next 20 years.

1.1 Background

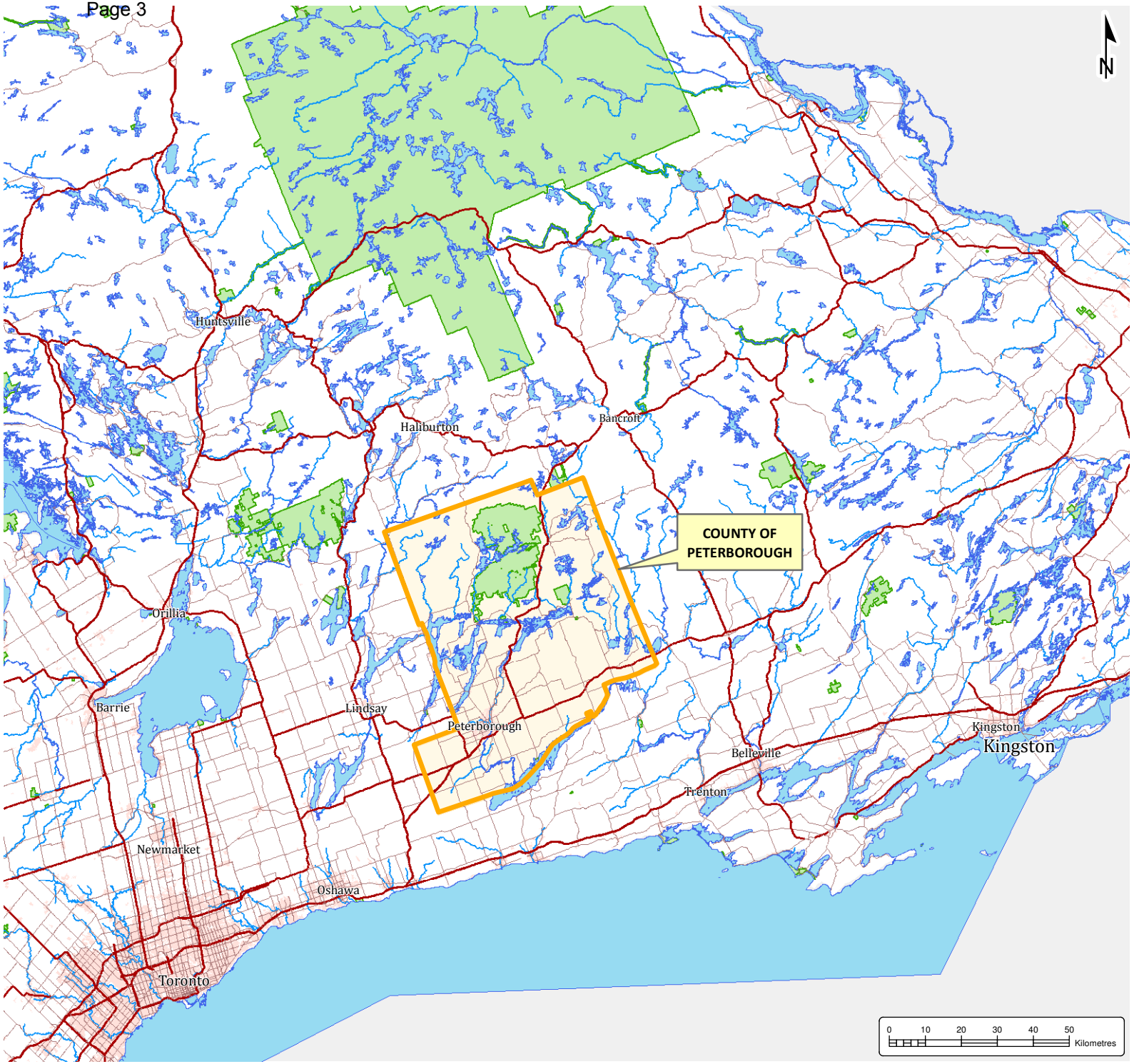
In the 2010 Waste Diversion Ontario (WDO) Datacall, the County reported services to 34,269 single residential households and 10 multi-residential buildings. The population is approximately 58,000 persons. Due to the seasonal nature of the area, it has been estimated that an additional 30,000 people can inhabit the area during the summer months.

The County covers an area of 3,805 square kilometres (Figure 1) and is comprised of eight (8) Townships including:

- Township of Asphodel-Norwood
- Township of Douro-Dummer
- Township of Havelock-Belmont-Methuen
- Township of Otonabee-South Monaghan
- Township of Cavan Monaghan
- Township of Galway-Cavendish and Harvey
- Township of North Kawartha
- Township of Smith-Ennismore-Lakefield

Each of the Townships individually manage the collection and transportation of residential garbage generated within their respective jurisdictions. The majority of this waste is hauled to the Peterborough County/City Waste Management Facility (PCCWMF) on Bensfort Road located in the Township of Otonabee-South Monaghan. The Townships of Asphodel-Norwood, Havelock-Belmont-Methuen, and Smith-Ennismore-Lakefield each still operate active landfills. All Townships operate transfer stations for waste collection and transfer (Figure 2).

It should be noted that for the purposes of this report the County WMMP does not include the jurisdictions of the City and the Hiawatha First Nations community. The Curve Lake First Nations community is included to a limited degree and noted where appropriate. While the geographical area, population and specifics of waste diversion and disposal activities in the City are not discussed in this report, due consideration has been given to the current and future partnership opportunities that may improve waste management in the County.



Waste Management Master Plan

County of Peterborough

Legend

- Highway
- Other Road
- Watercourse, Permanent
- Water Area
- County of Peterborough
- Built-Up Area
- Provincial Park
- Outside of Province

Source: © Queen's Printer of Ontario, 2010
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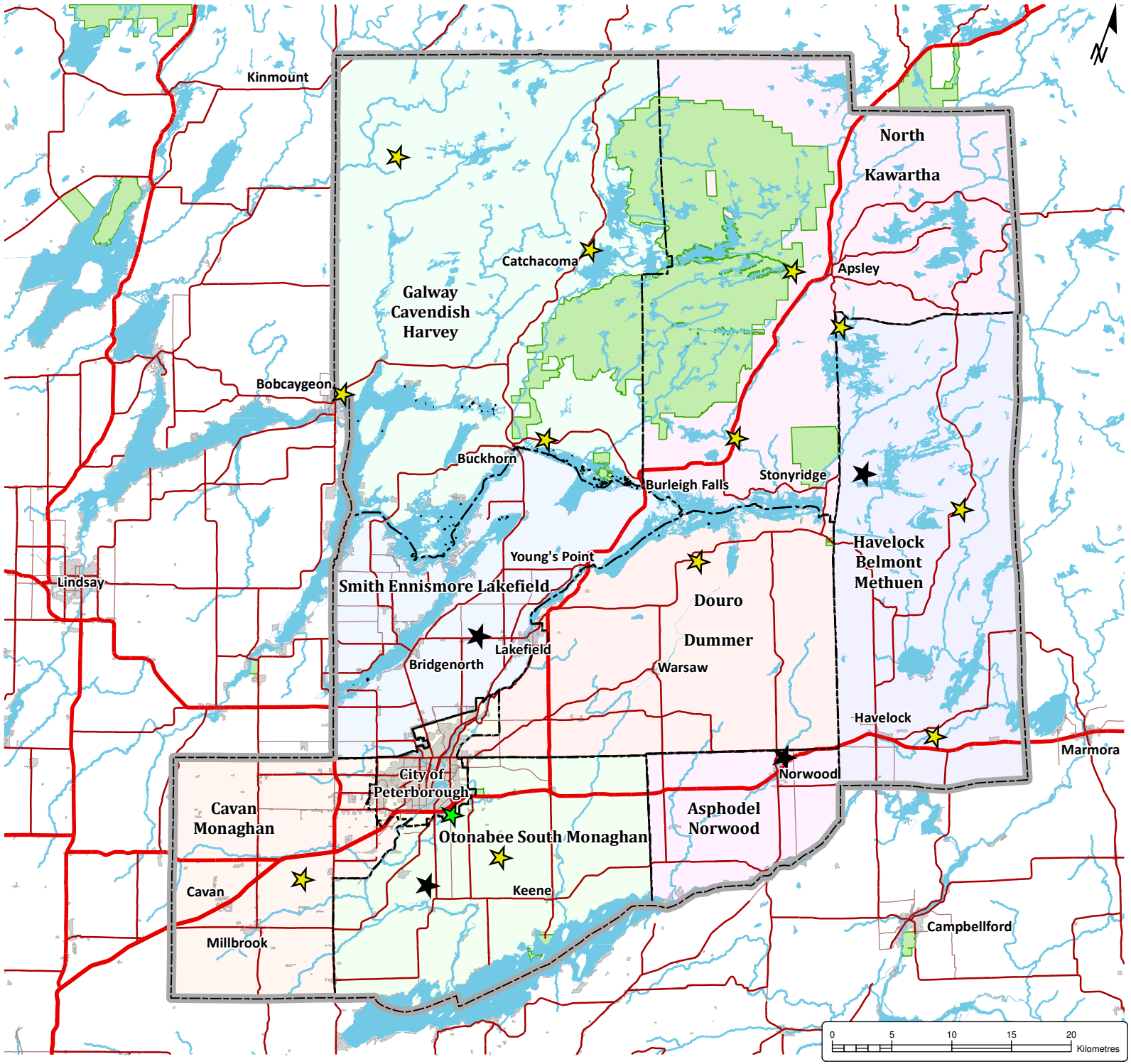
CAMBIUM ENVIRONMENTAL
P.O. Box 325, 52 Hunter Street East
Peterborough, Ontario, K9H 1G5
Tel: 1 (705) 742.7900
Fax: 1 (705) 742.7907
www.cambium-env.com

REGIONAL LOCATION PLAN

Project No.:	Date:
1803-001	August 2011
Scale: 1:1,500,000	Projection: NAD 1983 UTM Zone 17N
Created by: GMH	Checked by: DFB
Figure: 1	



Waste Management
Master Plan

County of Peterborough

Legend

- Transfer Site
- Landfill
- MRF/MHSW (2 sites)
- County Boundary
- Municipal Boundary
- Highway
- Major Road
- Minor Road
- Watercourse, Permanent
- Water Area
- Provincial Park
- Built-Up Area

Source: © Queen's Printer of Ontario, 2010
(this does not constitute an endorsement by the MNR or the Ontario Government)

CAMBIUM ENVIRONMENTAL

P.O. Box 325, 52 Hunter Street East
Peterborough, Ontario, K9H 1G5
Tel: 1 (705) 742.7900
Fax: 1 (705) 742.7907
www.cambium-env.com

COUNTY AND TOWNSHIP
WASTE SYSTEM PLAN

Project No.:	Date:
1803-001	September 2012
Scale: 1:450,000	Projection: NAD 1983 UTM Zone 17N
Created by: NLB	Checked by: DFB
Figure: 2	

1.1.1 History of Waste Diversion in the County

Organized waste diversion has been taking place in the County for approximately 25 years. In 1987, it was difficult to determine the performance of waste generation and recycling activities as none of the Townships measured the amount of waste going to disposal and there was no formal tracking system for County-wide diversion programs.

In 1989, the County assumed responsibility for blue box recycling in all of its Townships and set a 40% waste diversion goal. At that time the County entered into an agreement with the City to utilize the City owned Materials Recovery Facility (MRF) located within the City boundaries. The agreement authorized the County to transport recyclable materials to the MRF on behalf of the Townships. The MRF continues to operate under a mutual contract between the City and County with a private contractor managing the facility.

In February 1991, the County officially began the recycling program with transfer stations and curbside routes operating in all Townships with 4 top loading trucks and 25 x 30 cubic yard roll-off containers. Depots were established in 21 different locations throughout the County mainly at landfill sites. In 1993, the Blue Box program collected:

- Newsprint
- Steel and aluminum cans
- Flexible plastic film
- Telephone books
- Clear and Coloured Glass Bottles and Jars
- PET plastic soft drink bottles
- Magazines and Catalogues

In 1996, the County was tasked with establishing a joint County/City waste disposal site and set a 50% waste diversion goal to be achieved by the year 2000.

The following table summarizes waste diversion in the County since 1987:

Table 1 County of Peterborough Diversion 1987 to 2010

Year	Diversion Amount (tonnes)	Disposal Amount (tonnes)[a]	Estimated Diversion Rate
1987	Unknown	Unknown	Unknown
			1989 - Diversion Goal 40%
1992	2,366	26,034[b]	8.3%
			2000 - Diversion Goal 50%
2005	5,414	8,519[c]	38.9%
2008	8,589	12,406[c]	34.6%
2010	9,347	14,350[c]	39.4%

Notes: a. Disposal amount after diversion

b. Estimated in 1993 WMMP based on per capita generation total of 470 kgs/year.

c. Does not include disposal at local landfills

1.2 Planning and Consultation Process Overview

The development of this WMMP followed these stages:

1. reviewing relevant legislation and policies;
2. understanding and assessing the current waste management system;
3. developing a vision for future waste management initiatives;
4. understanding and assessing the options;
5. selecting waste management system components; and,
6. preparing the master plan document.

Input from numerous sources was a valuable component of the evaluation of waste management options, and has been considered throughout the development of this report. The County undertook comprehensive consultations with the public to gain an understanding of residents' facility and program usage, overall participation in waste diversion, and to learn their opinions of improvements that could be made to waste management in the County. A

Technical Advisory Committee was established to provide study direction and technical input on an on-going basis.

The County's objective for the consultation program was to ensure that the WMMP process was open and transparent, and that interested parties could maintain involvement in, and knowledge of the plan. Aboriginal communities in the County as well as First Nations associated with the William's Treaty were contacted to solicit input. Details of the consultation program are included in Appendix A.

The initial public consultation included presentations to each Township Council, and County staff hosting "Environment Days" events, attending meetings and fairs, and visiting business areas to inform residents and other waste management system users about the WMMP. Promotional materials encouraging public input into the WMMP process were distributed at such events and meetings. Public information centres were held at five locations in the County in August, 2011. Results of the initial round of public consultation suggested that residents of the County confirm agreement with the objective to reduce waste. The methods to reduce waste that were determined to be the most acceptable to the public include:

- Increase blue box items
- Increase public promotion and education
- Implement bag limits for garbage

With regard to disposal options, survey respondents ranked the presented waste disposal options in the following way:

- Increase waste reduction (extend life of landfill).
- Incineration with the potential for energy generation (if approved).
- Expand existing landfill (if approved).

The least desirable option was to export waste outside County boundaries.

The secondary public consultation included presentations to each Township Council and a County wide information centre held in November 2012. In conjunction with this open house session, an online survey was posted to the County website during both the initial and secondary consultation periods to obtain public opinion on the current waste system, preferences for system improvements, and general comments related to waste management. Results of the secondary round of public consultation suggested that seasonal residents felt that they already pay high taxes for the services they receive and therefore were unwilling to increase taxes for additional diversion.

All input received through the consultation program was considered by the County, and was used to guide the recommendations for future waste diversion and disposal.

The planning process used to develop this long term WMMP was consistent with guidance issued by the Ontario Ministry of the Environment (MOE) and its Policy Statement on Waste Management Planning. The Policy Statement sets out a series of principles to be considered in any waste management planning process, as follows:

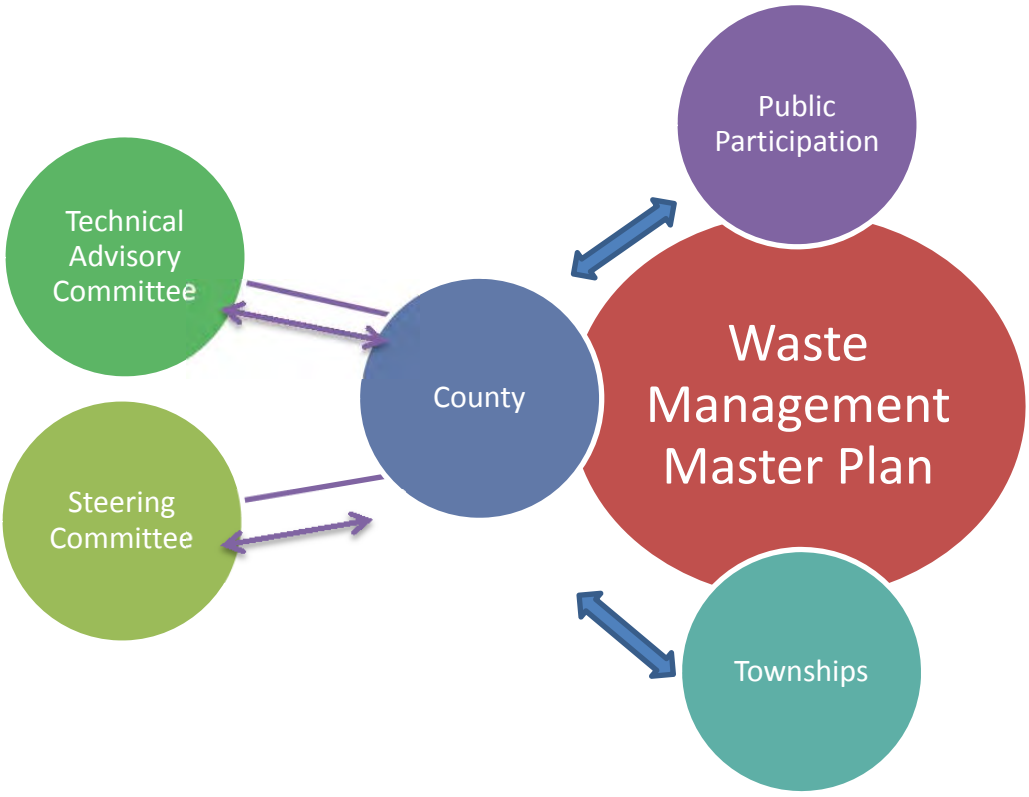
- Environmental protection is a shared responsibility;
- Integrated waste management systems that reflect local circumstances are in place;
- Diversion of materials from final disposal is maximized in consideration of the provincial 60% diversion target, including the creation of incentives where appropriate;
- Public and private sectors cooperate, where possible, to realize cost savings and maximize efficiencies;
- Waste management choices consider economic, social, and environmental costs;
- Investment in infrastructure is made to accommodate growth;
- Waste is managed as close to the source of generation as possible;
- Producer responsibility is incorporated into waste reduction and management;
- Decision-making is open and transparent;

- Informed citizens support waste management choices and participate in waste management programs;
- Maximum value from waste is recovered from the waste stream; and
- Innovative waste management technologies and approaches are incorporated as appropriate to local circumstances to achieve sustainable solutions.

A Steering Committee was established to review and direct the County's WMMP. The WMMP Steering Committee (SC) is comprised of three (3) County Councillors, all of whom are also members of the County/City Waste Management Committee (WMC). The SC provided strategic direction and made recommendations to County Council that a new WMMP be completed. A Technical Advisory Committee (TAC) was also established, which consists of local government staff, representatives from the City and the Curve Lake First Nations community, and waste management industry representatives that can help identify options, provide available and relevant information with respect to waste management in the County, and provide study direction and technical input on an on-going basis.

The following diagram displays the relationship between the major parties involved in the development of the WMMP.

Figure 3 Master Plan Development Relationships Between Parties



1.3 Roles and Responsibilities

The Policy Statement on Waste Management Planning discusses roles and responsibilities for each waste generating sector in the management of solid waste. The roles and responsibilities are largely based on legislation relevant to waste disposal and diversion in Ontario. A summary of relevant legislation has been included in Appendix B.

The following roles and responsibilities, developed by the MOE, provided some guidance in the development of the WMMP with the fundamental goal of achieving a sustainable solid waste management system for the County.

The Industrial, Commercial & Institutional (IC&I) Sectors

- Plan for, and help reduce, the amount of waste generated by their operations; and

- Comply with provincial waste management standards and requirements.

Private Sector Waste Management Industry

- Provide waste services to clients of the IC&I sectors, and in some cases, through contract to municipalities, waste services to residents; and
- Comply with provincial waste management standards and requirements.

Producers and Stewards

- Minimize the life-cycle impacts (i.e. environmental footprint) of products and their packaging through Design for the Environment; and
- Fund and implement diversion programs under the Waste Diversion Act.

The Public

- Help reduce the amount of waste generated through their activities and choices; and
- Engage in waste management decisions and participate in waste prevention and diversion programs.

Environmental Groups

- Promote the need to reduce waste and conserve our natural resources; and
- Raise public awareness of waste management issues.

First Nations

- Consideration of the presence of First Nations reserves and communities and spiritual, cultural or ceremonial and traditional use sites.
- Consultation in the waste management planning process

The Province

- Set and enforce environmental standards and requirements for waste diversion and disposal;
- Support municipalities and the private sector by providing the necessary tools for waste diversion and the disposal of residual waste; and

- Issue approvals to landfills, transfer stations, and waste haulers to ensure appropriate management;

Municipalities

- Plan for and provide direct waste management services to their residents, and in some cases, local businesses, including programs for waste diversion and disposal of residual waste;
- Plan for, site, and invest in necessary waste management infrastructure;
- Comply with provincial waste management standards and requirements; and
- Fund and implement diversion programs under the Waste Diversion Act.

For this WMMP to be successful and sustainable in its implementation, each sector must actively participate and be accountable for the burden or influence it places on waste management system. All sectors must be engaged to act in an environmentally responsible manner.

1.4 Goals and Objectives

The long-term WMMP is an essential step toward the provision of cooperative and sustainable waste management systems within the County of Peterborough. The goals and objectives of the WMMP are recognized to be as follows:

Optimize Waste Management

- Maximize life of waste management facilities
- Decrease the overall average waste per person
- Increase long term diversion target from 50% to 60%
- Review target every 5 years
- Set new target at 10 years
- Create a strategy that will increase diversion in IC&I sectors

- Explore changes in industry/technology to further increase diversion rates
- Encourage partnerships with the City and other neighboring municipalities to create efficiencies in collections, costs and staffing

Implement Best Practices for Waste Management

- Identify where waste is coming from with a focus on the seasonal, agricultural and IC&I sectors
- Establish a means to monitor/measure and report
- Undertake a disposal versus diversion cost comparison
- Identify an appropriate long term solution for waste disposal
- Continue to work with the City to find a mutually beneficial solution for waste disposal
- Establish the framework for a County-wide diversion policy and assist with implementation
- Promote and encourage cooperative waste management service delivery by reviewing other municipal waste management systems and practices
- Include performance incentives which reflect overall goals and interim targets
- Maximize potential waste funding opportunities

Expand Outreach for Waste Management

- Improve public engagement and education to residents on waste management programs
- Observe and promote positive changes to legislative policy
- Shift responsibility from general tax base to consumer and industry
- Encourage industry to change products to be more sustainable

1.5 Stated Problems

Since the 1993 Waste Management Master Plan, the County has been pursuing a more efficient solid waste management system. There are several challenges facing the County waste management system including:

- Diminishing life capacity of the County/City landfill and the remaining Township landfill sites;
- Non-uniform level of service and varying waste management policies among the Townships and on a broader scale with the City and Province-wide;
- Missed efficiencies due to distinct Township service areas and policies;
- Limited influence/partnership with IC&I sector waste generators;
- Limited potential for organics processing;
- Uncertain life capacity of the Materials Recovery Facility; and,
- Difficulty in engaging the seasonal population which can cause dramatic fluctuations and unique demands on waste management services.

While waste management in the County is a complex issue due to the problems stated above, the WMMP strives to present a variety of solutions to increase waste diversion and improve overall waste management for the Townships, and ultimately the County. Many of the stated problems can be resolved by implementing County-wide policies to increase diversion, minimize waste generation and create efficiencies in waste disposal.

2.0 Waste Management System Overview

Each Township within the County provides varying levels of waste management services to its residents. All of the Townships are responsible for their own collection and transfer of garbage, under independent waste collection contracts. They also own and operate their waste transfer stations and/or landfill sites, and enforce their respective bag tag/limits/user pay system or policy at the Township level. The blue box program, the municipal hazardous and special waste program, the source separated organics program, and other select waste diversion programs such as the campgrounds and resorts recycling programs and new resident program are managed at the County level.

Waste collected at the Township landfills, transfer stations and curbside is transferred to the PCCWMF. In June 2002, the PCCWMF became the shared property of the County and City of Peterborough. The PCCWMF encompasses 158 hectares, with an approved fill area of 27.5 hectares. The facility is located on Bensfort Road approximately 6 kilometres south of the City of Peterborough on part Lot 13, 14, and 15, Concession 14, within the Township of Otonabee-South Monaghan. The County intends to continue to work cooperatively with the City to manage the disposal of waste into the future.

The year 2010 was selected as a baseline year for the development of this WMMP as it is the most recent year that a full data set for all Townships was available at the initiation of the plan development. Equivalent data from all Townships was necessary to provide an accurate assessment of diversion and waste management programs, waste composition, and for comparison between Townships. Several changes to the waste management system have been made since 2010, which are outlined in Appendix D. Apart from those changes specifically listed in Appendix D all data and details of the waste management system in the County outlined in this WMMP were obtained from the 2010 baseline year.

A map showing the locations of the waste and recycling sites within the County as of 2010 is included as Figure 2. Table 2 provides a brief overview of the policies and collection services

each Township provides, as of 2010. A summary of the diversion programs within the County, as of 2010, is provided in Table 3.

Table 2 Summary of Policies and Collection Programs in Peterborough County (2010)

Township	Existing Policies	Waste/Recycling Collection
Asphodel-Norwood	Bag Limit (3 bags/week) All bags must be tagged ($1.25/bag) By-law 2005-75	Depot and Curbside
Cavan Monaghan	Bag Limit (2 bags/week) – Curbside (Millbrook, N. Monaghan) By-law 2010-89 (User Fees only)	Depot and Curbside
Douro-Dummer	Bag Limit (1 bag/week) Additional bags must be tagged ($2/bag); Max. of 3 By-law 2010-66 (User Fees only)	Depot and Curbside
Galway-Cavendish-Harvey	Clear Bags By-law 2005-122	Depot
Havelock-Belmont-Methuen	All bags must be tagged ($2/bag or $6 for 5 bags) By-law 2010-84	Depot and Curbside
North Kawartha	Bag Limit (1 bag/week) - Curbside Additional bags must be tagged ($1/bag); Max. of 4 By-law 2009-121	Depot and Curbside
Otonabee-South Monaghan	Bag Limit (2 bags/week) - Curbside By-law 2010-17 (transfer station fees)	Depot and Curbside
Smith-Ennismore-Lakefield	Bag Limit (2 bags/week) - Curbside Additional bags must be tagged ($2/bag) By-law 2009-64	Depot and Curbside

As demonstrated in Table 3, each Township offers a unique set of waste management services supported by their respective by-laws and/or enforcement techniques. The influence

on waste generation and diversion rates, resulting, at least in part from these services, are presented in Table 4.

The County provides curbside blue box collection services to over 24,500 households. The remainder of households, over 9,700, are required to bring their recyclable materials to Township landfills or transfer stations. Blue box materials are also accepted at all Township landfills and transfer stations, at the MRF in the City of Peterborough, and at the PCCWMF on Bensfort Road.

The County provides limited source separated organics (SSO) curbside collection services through a pilot project in the Village of Bridgenorth and transfer station collection service for SSO at three (3) Township transfer stations (Buckhorn, Havelock, and Hall's Glen).

Table 3 Summary of Diversion Programs in Peterborough County (2010)

Municipality	Site Name	Site Address	SSO	Leaf & Yard	C&D	Scrap Metal and White Goods	Tires	MHSW	WEEE	Re-Use	Other
Asphodel - Norwood	Norwood Landfill Site	187 County Road 40	✗	⊘ Collected but not diverted	✗	✓	✓	✗	✗	✗	batteries
Cavan - Monaghan	Cavan Transfer Station	1427 Syer Line	✗	✓ Curbside 2x/yr in Monaghan Ward & Millbrook	✓ dryw all only	✓ freon removed	✓	✗	✗	✓	vehicle batteries
Douro-Dummer	Hall's Glen Transfer Station	1951 County Road 6	✓ Depot	✓	✓	✓	✓	✓ County Seasonal	✗	✓	oil
Galway-Cavendish & Harvey	Cavendish Landfill Site	3405 County Road 507	✗	✓	✗	✓	✓	✗	✗	✗	
	Bobcaygeon Transfer Station	69 County Road 36	✗	✓	✗	✓	✓	✓ County Seasonal	✗	✗	
	Buckhorn Landfill Site	3166 County Road 36	✓ Depot	✓	✗	✓	✓	✓ County Seasonal	✗	✗	
	Crystal Lake Transfer Station	1018 Crystal Lake Road	✗	✗	✗	✓	✓	✗	✗	✗	
Havelock-Belmont-Methuen	6th Line Belmont Transfer Station	900 6th Line Belmont	✓ Depot	✓	✗	✓	✓	✓ County Seasonal	✗	✗	
	Jack's Lake Transfer Station	96 Shady Lane	✗	✗	✗	✗	✗	✗	✗	✗	
	Oak Lake Landfill Site	4755 County Road 46	✗	✗	✗	✗	✗	✗	✗	✗	
	West Kosh Lake Landfill Site	West Kosh Road	✗	✓	✗	✗	✗	✗	✗	✗	
North Kawartha	Anstruther Lake Transfer Station	400 Anstruther Lake Road	✗	✓	✗	✓	✓	✓ County Seasonal	✗	✗	
	Haultain Transfer Station	6879 Highway 28	✗	✓	✗	✓	✓	✗	✗	✗	
Otonabee - South Monaghan	Drummond Line Transfer Station	1594 Drummond Line	✗	✓	✗	✓	✓	✓ Township	✓	✓	
Smith-Ennismore-Lakefield	Smith Landfill Site	1480 County Road 18	✓ Curbside Bridgenorth	⊘ Collected but not diverted	✗	✓	✓	✗	✗	✗	oil, batteries and propane tanks
County and City (City Operated)	Peterborough County/City Waste Management Facility	1260 Bensfort Road	✗	✓	✓	✓	✓	✗	✓	✗	
County and City (City Operated)	Materials Recovery Facility (MRF), Municipal Hazardous or Special Waste (MHSW) and Waste Electrical and Electronic Equipment (WEEE) Facilities	390 Pido Road 400 Pido Road	✗	✗	✗	✗	✗	✓	✓	✓ Paint	styrofoam

County residents may utilize the year-round Municipal Hazardous and Special Waste (MHSW) Facility, owned by and located within the City. This facility also accepts Waste Electrical and Electronic Equipment (WEEE). In addition, the County owns and operates five (5) seasonal MHSW transfer stations and provides assistance to the Township of Otonabee-South Monaghan with the year-round Drummond Line MHSW Transfer Station.

A total of approximately 23,700 tonnes of residential waste was generated within the County in 2010 (Waste Diversion Ontario, 2011). Approximately 40% (9,350 tonnes) was reported to have been diverted through programs such as blue box recycling, leaf and yard material composting, MHSW collections, and backyard composting.

In order to compare the County blue box program with other similar jurisdictions within the WDO Blue Box Program Plan, municipalities are placed in one of nine municipal groupings. The County is placed in the 'Rural Regional' grouping and reported a blue box diversion rate of 20% which is slightly less than the average for that group of municipalities. The blue box program and the remaining waste stream are discussed in more detail below. The 2010 waste composition reported for the County is presented in Table 4 and Figure 4.

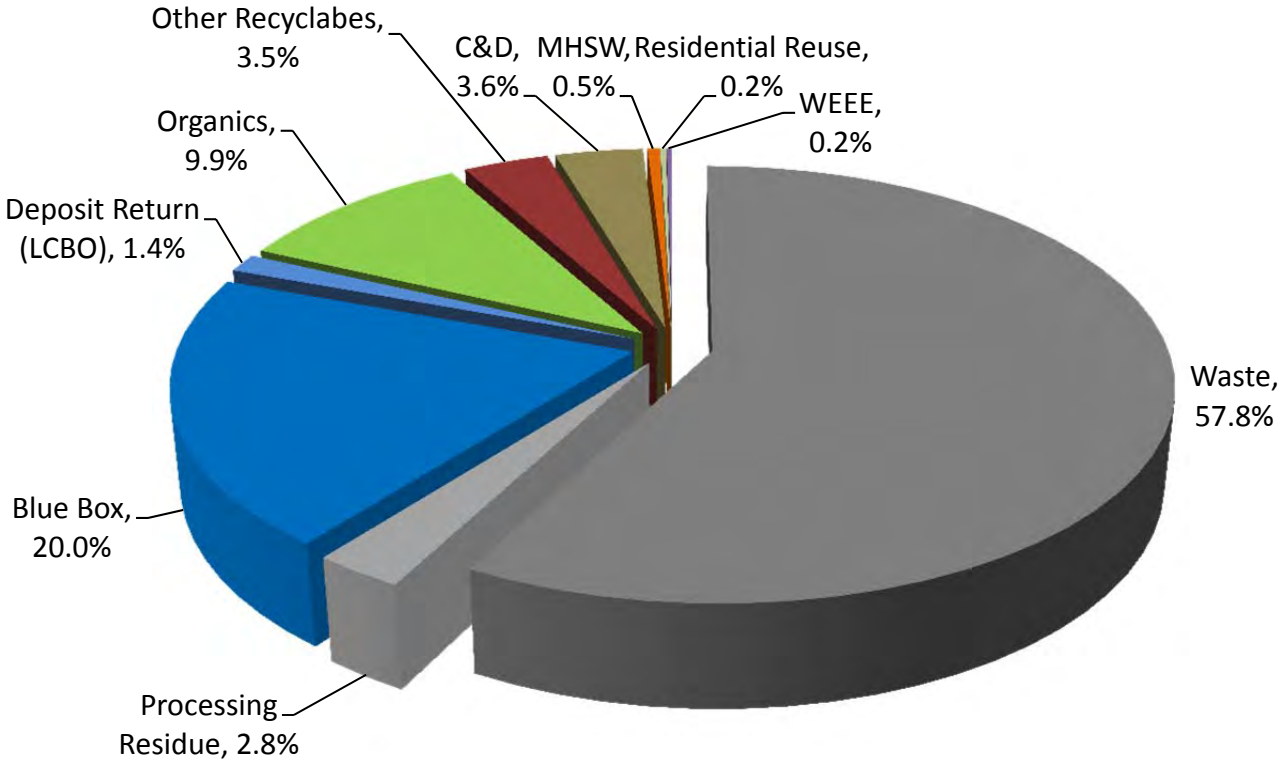
Table 4 County of Peterborough Reported Waste Composition (2010)

Material	Marketed Weight (tonnes)	Percentage of Waste Stream
Diverted		
Blue Box Recyclables	4,749	20.0%
Organic Materials	2,355	9.9%
Other Recyclables (i.e. used tires, scrap metal, white goods, etc.)	836	3.5%
Construction and Demolition Debris (C&D)	860	3.6%
Residential Deposit Return Program (LCBO – Bag it Back)	321	1.4%
Municipal Hazardous and Special Waste (MHSW)	119	0.5%
Residential Reuse (estimated)	54	0.2%
Waste Electronics and Electrical Equipment (WEEE)	52	0.2%
Total Diverted	**9,347**	**39.4%**
Disposed		
Disposed Waste	13,694	57.8%
Processing Residue	656	2.8%
Total Disposed	**14,350**	**60.6%**
Total Waste Generated	**23,697**	**100%**

Notes: Source: (Waste Diversion Ontario, 2011).

All diverted material weights listed above represent tonnes marketed, not collected.

Figure 4 County of Peterborough Reported Waste Composition (2010)



The 2010 waste summary for each Township is presented in Table 5. Based on an average of 1.7 persons per household the waste generation estimates ranged from 114 kg to 440 kg per person per year, and blue box recycling estimates ranged from 52 kg to 153 kg per person per year. It should be noted that the waste generation values presented in Table 5 only account for waste disposed at the PCCWMF and do not include waste disposed at active Township landfills. Within Table 5, the category named “overall diversion rate” includes blue box recyclables and the seven additional diverted material categories listed in Table 4.

Table 5 Township Waste Summary (2010)

Region	Households Serviced[a]	Garbage Per Person (kg/yr)	Blue Box Recycling Per Person (kg/yr)	Overall Diversion Rate (% total)
Ontario	4,935,182	250	220	44
Peterborough County	34,269	246	91	39
Asphodel-Norwood[b]	2,077	138	118	59
Cavan Monaghan	3,088	440	153	36
Douro-Dummer	3,442	279	88	34
Galway-Cavendish-Harvey	5,407	285	59	34
Havelock-Belmont-Methuen[b]	4,199	244	55	28
North Kawartha	3,433	114	52	40
Otonabee-South Monaghan	2,851	285	104	41
Smith-Ennismore-Lakefield[b]	8,988	207	104	42

Notes: Source: (Waste Diversion Ontario, 2011).

a. Population and dwelling counts from the 2006 Census, Statistics Canada

b. Values do not include or account for waste landfilled locally

2.1 Waste Management System Costs

Overall, the cost of the County's waste management system services in 2010 was estimated to be $2.9 million as shown below in Table 6.

Table 6 Summary of County Solid Waste Management System Costs (2010)

System Component	Gross Cost[a]	Revenue / Subsidy	Net Costs[b]
Blue Box Recyclables	$1,840,384	$1,325,313	$515,071
Organic Materials[c]	$65,443	$2,470	$62,973
Other[d]	$222,831	$49,714	$173,117
MHSW and WEEE	$268,336	$83,867	$184,469
Disposed Waste	$3,781,672	$1,837,051	$1,944,621
Total	**$6,178,666**	**$3,298,415**	**$2,880,251**

Notes:
a. Includes contract costs
b. Does not include levies or reserve funding
c. Includes backyard composting, leaf and yard material, and source separated organics (food scraps)
d. Includes adopt-a-road, general expenses, schools programming, and outside contracts with special interest groups

The net cost per household of the County waste management system is calculated to be $84.05 based on a single residential household count of 34,269. Using an average household assessment of $260,000, the County has calculated an annual tax allocation per household for blue box material curbside collection at $31.21 and $5.54 for transfer station collection.

Further, each Township provided waste management system costs in 2010, which were reported as follows:

Table 7 Summary of Township Waste Management System Costs (2010)

System Component	Gross Cost[a]	Revenue / Subsidy	Net Cost
Asphodel-Norwood	$ 150,909	$ 113,009	$ 37,901
Cavan-Monaghan	$ 318,982	$ 36,690	$ 282,292
Douro-Dummer	$ 383,743	$ 127,308	$ 256,435
Galway-Cavendish-Harvey	$ 746,112	$ 40,243	$ 705,869
Havelock-Belmont-Methuen	$ 377,432	$ 148,681	$ 228,751
North Kawartha	$ 391,314	$ 7,961	$ 383,353
Otonabee-South Monaghan	$ 238,144	$ 118,644	$ 119,500
Smith-Ennismore-Lakefield	$ 718,413	$ 524,300	$ 194,113

Notes: Does not include significant “one-time” costs, interdepartmental or reserve transfers, levy’s.

a. Includes contract costs plus administrative expenses.

2.2 Waste Monitoring And Measurement

In addition to tracking tonnages of material streams, the County is committed to an ongoing and comprehensive waste monitoring and measurement program through a series of waste audits.

Waste audits are completed to:

- enhance understanding of household waste practices;
- estimate waste generation;
- determine waste composition;
- monitor capture rates of recyclables; and
- track recycling residue percentages.

The data collected is used to assess the performance of existing programs, manage contracts, and to identify opportunities and priorities for improvement. The following table (Table 8) provides an overview of the full-spectrum waste audits (all streams) completed in recent years.

Table 8 Summary of Full Waste Audit Findings

Audit Location / Date	Participation Rate	Garbage Bags / Blue Boxes per week	Recyclable Materials in Garbage	Backyard and Leaf & Yard in Garbage	Hazardous Waste in Garbage	Recycling Contamination Rate (5% Target)	Notes
Cavan Transfer (Fall 2011)	Not Available	2 bags / 2 boxes	18%	20%	4%	8%	Close to Halloween Many tarps 35% put blue boxes at curb
Buckhorn Transfer (Summer 2011)	29% (of total residents on site)	1 bag / 1.5 boxes	10%	17%	1.5%	7%	High compostable content (50% organic) Corn season
Norwood (2011)	Garbage 52% Recycling 78%	1.5 bags / 1 box	15%	18%	1%	13%	Low #1 Plastic Low boxboard and fine paper Blue boxes not full
North Monaghan (May 2011)	Garbage 81% Recycling 74%	2 bags / 1.5 boxes	18%	25%	1%	15%	Unsorted boxes (11%) Low #1 plastic Low #4 Tubs and Lids plastic
Lakefield (Oct. 2010)	Garbage 87% Recycling 83%	2 bags / 2 boxes	8%	17%	1%	8%	Low fine paper Low plastic bags
Bridgenorth (Nov. 2009)	Garbage 60% Recycling 60% Organics 28%	1.5 bags / 2 boxes	11%	All Organics 45%	4%	3%	Low Green Bin Participation Paper cups in Fibres boxes

2.3 Waste Diversion Programs

Through a combination of curbside and transfer station collection, the County and Townships provide diversion programs to all residents of the County. A summary of diversion programs (2010) can be found in Table 3. Materials included vary from Township to Township but universally include blue box recyclables. Townships may or may not provide additional diversion of leaf and yard, organics, construction and demolition materials, WEEE, tires, scrap metal and white goods. The County provides MHSW and WEEE collection at strategic transfer stations to maximize resident access on a seasonal basis.

According to the City of Peterborough By-law 07-027, which regulates the disposal of waste at the PCCWMF, there are a number of materials that are banned from being disposed as garbage. Chapter 594 dealing with garbage collection excludes several other materials from being disposed as garbage. It has been noted that there are differences between what is accepted at County transfer stations and transferred to the PCCWMF, and what is banned at the PCCWMF.

Materials banned from disposal at the PCCWMF include:

- hazardous waste
- blue box materials
- clean wood waste
- drywall
- green waste (leaf and yard materials)
- scrap metal
- tires
- explosive or highly combustible material
- building materials
- automobile parts
- hot material
- industrial waste

The following sections detail the amounts and types of materials in the waste diversion programs.

2.3.1 Blue Box Recyclables

The County implemented blue box recycling in 1989 at which point a goal of 40% diversion was established. With the introduction of mandatory recycling in 1996 a waste diversion goal of 50% was set. The associated waste management By-laws relating to these two initiatives are provided in Appendix C.

In March of 2008, the County implemented a two-stream (from a five-stream) recycling collection and processing program of container materials and fibre materials at curbside and transfer stations. All Townships within the County have blue box material recycling services through curbside pick-up and/or transfer station collection.


1 Containers
Glass
Coloured and clear bottles and jars
Plastic
Food and drink containers, tubs and lids
Metal
Pop cans, pie plates and tin foil
Food and drink cans and tins
Empty metal paint cans, lids removed
Empty aerosol cans
Other
Milk cartons and juice boxes
Do Not Include
Broken glass, Pyrex®, ceramic or other dishware
Hazardous product containers, drinking straws, 6 polystyrene
Scrap metal, utensils, pots and pans
No Styrofoam of Any Kind!
2 Fibres
Paper
News/writing paper, magazines, telephone books, envelopes, junk mail and flyers
Cardboard/Boxboard
Corrugated cardboard, file folders, construction paper, food boxes (liners removed), toilet paper tubes, brown paper bags
Flattened and bundled cardboard 30" x 30" x 8" can be left beside box
Plastic Bags and Packaging
Film plastics, grocery, milk, bread bags – place all in one and tie
Do Not Include
Chip bags, chocolate bar wrappers, plastic stretch wrap
Waxed cardboard, frozen food boxes
Liners from cracker/cereal boxes

In 2010, the County of Peterborough recycled 4,749 tonnes of blue box material which translates to a blue box diversion rate of approximately 20%. All blue box material collected is taken to the Materials Recycling Facility located at 390 Pido Road in the City of Peterborough, Ontario. An additional 321 tonnes of material was calculated to have been diverted through the Residential Deposit Return Program provided by the LCBO.

In 2010, the net cost for the County's blue box program (as reported by WDO) was $253.49 per tonne (Waste Diversion Ontario, 2011). The net cost includes all aspects of blue box materials collection and management, including: staff, administration, collection, processing, marketing and sale of recycled materials and the promotion of programs. As Table 9 illustrates, the County's blue box program is better than average in cost efficiency when compared against others in the Rural Regional municipal grouping as evidenced by the reported lower cost per tonne.

Table 9 2010 Net Cost Per Tonne for the Rural Regional Municipal Grouping

Program Name	Net Cost per Tonne (2010)
City of Kawartha Lakes	$494.77
District Municipality of Muskoka	$444.86
County of Northumberland	$391.27
Bluewater Recycling Association	$350.34
County of Norfolk	$339.44
City of Greater Sudbury	$302.83
County of Wellington	$267.71
County of Peterborough	$253.49
Municipality of Chatham-Kent	$226.35
Bruce Area Solid Waste Recycling	$198.87
City of Kingston	$198.54
Restructured County of Oxford	$188.74
City of North Bay	$160.32
Quinte Waste Solutions	$157.85
Average for Rural Regional Grouping	$331.93

Notes: Source: (Waste Diversion Ontario, 2011).

2.3.2 Organic Materials

Based on the data submitted to WDO (Waste Diversion Ontario, 2011), the quantities of organic material diverted was reported as 1,623 tonnes by backyard composting, 642 tonnes for leaf and yard material programs, 71 tonnes for the pilot SSO collection, and 19 tonnes for grass-cycling. Therefore, a total of 2,355 tonnes of organic material was diverted, which represents approximately 10% of the total waste generated.

2.3.2.1 Backyard Composting

Since the late 1980s the County has promoted backyard composting by providing educational materials on how to compost and offering backyard composters at discounted prices to

residents. Backyard composting diverts food and leaf and yard materials from the landfill. Based on cumulative sales of 16,230 composters over the years and an assumed 100 kg of organic material processed per composter per year, approximately 1,623 tonnes material is estimated as being diverted through backyard composting in 2010 (Waste Diversion Ontario, 2011).

2.3.2.2 Leaf and Yard Organics

Leaf and yard materials collected at landfills and transfer stations are either left to decompose on site, burned, utilized for facility operations (for example as landfill cover), or transported to the City of Peterborough composting facility on Harper Road for processing. For specific details regarding collection activities, refer to Table 3. Only those materials that are composted are included in the total diverted in Table 4. Leaf and yard material burned or utilized as Landfill cover is not included as diversion.

2.3.2.3 Source Separated Organics (SSO)

As of January 2010, three transfer stations within the County provide SSO material collection services through a pilot program to 13,048 households. Molok© brand deep well collection systems have been installed at select transfer stations and are utilized by residents at the following locations:

- Hall's Glen Transfer Station, Township of Douro-Dummer.
- Buckhorn Transfer Station, Township of Galway-Cavendish and Harvey.
- 6th Line Belmont Transfer Station, Township of Havelock-Belmont-Methuen.

The County also provides curbside SSO collection to 697 single-family households and three (3) multi-family households, in the Village of Bridgenorth.

2.3.2.4 Grass-cycling

Grass-cycling is a waste minimization method that involves leaving grass clippings on the lawn rather than bagging and disposing of the clippings. Grass mulch provides a wide range of benefits, including less dependence on purchased fertilizers, better water retention, and greener lawns. Based on values reported and determined by WDO, approximately 19 tonnes of material are diverted in the County annually by grass-cycling (Waste Diversion Ontario, 2011).

2.3.3 Other Recyclables

In addition to the above noted diversion material, select landfills and transfer stations within the County provided collection of construction and demolition materials, tires, scrap metal and white goods, which are listed in Table 3. The collection of these materials is managed by the Townships.

2.3.3.1 Construction and Demolition Debris (C&D)

A total of 860 tonnes of C&D debris was recycled as reported in the 2010 WDO Municipal Datacall (Waste Diversion Ontario, 2011), which represents approximately 3.6% of the entire waste stream.

2.3.3.2 Used Tires

A total of 300 tonnes of used tires were recycled as reported in the 2010 WDO Municipal Datacall (Waste Diversion Ontario, 2011), which represents approximately 1.3% of the entire waste stream.

2.3.3.3 Scrap Metal and White Goods

A total of 451 tonnes of scrap metal material was recycled as reported in the 2010 WDO Municipal Datacall (Waste Diversion Ontario, 2011), which represents approximately 2.4% of the entire waste stream.

A total of 85 tonnes of white goods (large appliances) was collected and reported in the 2010 WDO Municipal Datacall (Waste Diversion Ontario, 2011), which represents approximately 0.4% of the entire waste stream. This material is generally included in the scrap metal calculation above.

2.3.4 Residential Deposit Return (LCBO – Bag It Back)

In 2006, the Province announced a deposit-return system for Liquor Control Board of Ontario (LCBO) wine, beer, and spirit containers. Consumers may return their containers and receive a $0.10 or $0.20 refund, depending on the bottle or can type. Appropriate containers are returned to the Beer Store for refund. The program began on February 5, 2007. A total of 321 tonnes of deposit-return goods was collected as calculated by WDO (Waste Diversion Ontario, 2011), which represents approximately 1.4% of the entire waste stream.

2.3.5 Municipal Hazardous and Special Waste (MHSW)

The County has five (5) seasonal and two (2) year-round collection locations for MHSW, which includes materials such as paint, batteries, used oil, solvents, and other household hazardous materials. The collection locations are located at the following sites:

- Bobcaygeon Transfer Station, Township of Galway-Cavendish and Harvey.
- Buckhorn Transfer Station, Township of Galway-Cavendish and Harvey.
- Hall's Glen Transfer Station, Township of Douro-Dummer.
- 6th Line Belmont Transfer Station, Township of Havelock-Belmont-Methuen.
- Anstruther Lake Transfer Station, Township of North Kawartha.
- Drummond Line Transfer Station, Township of Otonabee-South Monaghan (year-round; OSM residents only).
- City/County Municipal Hazardous or Special Waste Facility at 400 Pido Road in Peterborough (year round; all County residents).

All MHSW material collected is transferred and processed by a licensed contractor.

A total of 119 tonnes of MHSW material was recycled as reported in the 2010 WDO Municipal Datacall (Waste Diversion Ontario, 2011), which represents approximately 0.6% of the entire waste stream.

2.3.6 Residential Reuse

Residential reuse involves the donation of functional reusable items (including small appliances, toys, clothing etc.) for use by other residents. Residential reuse includes only tonnages collected at Township operated sites, which include the Cavan Transfer Station, Hall's Glen Transfer Station and the Drummond Line Transfer Station. Reuse activities operated by other agencies within the community (e.g. Goodwill, Salvation Army, etc.) are not considered municipal tonnages. Through municipally operated reuse activities the County diverts approximately 54 tonnes annually (Waste Diversion Ontario, 2011), which represents approximately 0.2% of the entire waste stream.

2.3.7 Waste Electronic and Electrical Equipment (WEEE)

As of January 2010, the following locations within the County provide ongoing WEEE collection services:

- MRF, Pido Road, Peterborough;
- PCCWMF, Bensfort Road, Township of Otonabee-South Monaghan;
- Drummond Line Transfer Station, Township of Otonabee-South Monaghan.

A total of 52 tonnes of WEEE material was recycled as reported in the 2010 WDO Municipal Datacall (Waste Diversion Ontario, 2011),

2.4 Disposed Waste and Processing Residual

While the County is involved with the creation and implementation of waste diversion programs, each of the Townships are responsible for their own disposed waste (garbage)

collection and have independent collection contracts. Townships also own and operate their waste transfer stations and/or landfill sites. Each Township is responsible for any local system disposal limit administration and policy enforcement.

All materials collected at Township transfer stations and curbside are transferred to the PCCWMF; thus, the County of Peterborough disposed of 13,694 tonnes of residential waste in 2010 at the PCCWMF, and had a calculated processing residue of 656 tonnes for a total of 14,350 tonnes, which equates to approximately 227 kg per capita. The processing residue of 656 tonnes is made up of 262 tonnes from the blue box program, 126 tonnes from organics processing residues, and 268 tonnes from other diversion programs (e.g. MHSW and WEEE) The existing contract between the County and the MRF operators only allows for a disposal rate of 5% for blue box program processing residual, which is closely monitored. The residuals from the blue box and organics processing programs (388 tonnes) are disposed at the PCCWMF. The residuals from the remaining diversion programs (268 tonnes) are disposed after the processing of the materials in landfill(s) outside of the County. The disposal estimates presented above do not include estimates of waste that is landfilled locally by the Townships at active landfills within their boundaries.

In comparison with other municipalities within the Rural Regional municipal grouping, the County disposes more waste per capita than the average (see Table 10). The higher waste generation rate is likely influenced by the seasonal population and differing waste management policies between Townships.

Table 10 2010 Waste Disposed for the Rural Regional Municipal Grouping

Program Name	Waste Disposed (kg/capita)	Overall Diversion Rate (%)
Municipality of Chatham-Kent	301	31.6
County of Norfolk	268	29.4
City of Greater Sudbury	268	46.1
City of North Bay	252	30.5
County of Peterborough	227	39.4
County of Northumberland	193	39.9
Quinte Waste Solutions	190	41.2
Restructured County of Oxford	175	54.1
District Municipality of Muskoka	165	49.9
City of Kawartha Lakes	162	43.7
City of Kingston	161	55.2
Bruce Area Solid Waste Recycling	144	31.9
County of Wellington	140	40.7
Bluewater Recycling Association	139	39.6
Average for Rural Regional Grouping	**199**	**41.0**

Notes: Source: (Waste Diversion Ontario, 2011).

As of 2010, the PCCWMF will provide waste disposal capacity for the County and City of Peterborough for an estimated 12 to 15 years, based on an assumed annual waste disposal rate of 60,000 tonnes for the City and County combined, and an assumed waste density of 0.65 tonnes/ m^3 (Genivar and Urban & Environmental Management Inc., 2011). The assumed annual waste disposal rate noted above includes waste from all sources, including residential and IC&I waste.

A few local Township landfills remain active in the Townships of Asphodel-Norwood, Havelock-Belmont-Methuen, and Smith-Ennismore-Lakefield. Because some waste is disposed of locally, within the Townships at their own landfill sites, the continued operation of these sites has the ability to influence the volume of waste transferred to the PCCWMF. Closure of any of

the Township landfills as they reach capacity will result in a direct increase in the annual waste disposal rate at the PCCWMF. Table 11 provides an overview of the site specific details for the remaining active landfills.

Table 11 Active Township Landfills

Township	Landfill Site	Certificate of Approval #	Estimated Site Life
Township of Havelock-Belmont Methuen	West Kosh Landfill	A340611	21 years
Township of Smith-Ennismore-Lakefield	Smith Landfill	A341601	13 years
Township of Asphodel-Norwood	Norwood Landfill	A340502	6.5 years

The most recent disposal capacity study, (Genivar and Urban & Environmental Management Inc., 2011) did not consider the future waste from local landfills upon their eventual closure; however, all future capacity studies completed for the County should account for this reality.

2.5 Current Waste Management System Summary

The management of residential waste in the County has been focussed primarily on implementing an effective blue box program in tandem with the collection of garbage. Other programs, including promotion of the use of backyard composters, and proper separation and disposal of other divertible materials including leaf and yard material, scrap metal, WEEE, SSO and MHSW have also led to increases in waste diversion.

The following summary details some important points regarding the current waste management system in the County:

- Approximately 23,700 tonnes of residential waste was generated within the County in 2010.
- The results of the 2010 WDO Datacall submission indicate 9,350 tonnes (39.4%) of residential waste produced in the County was diverted through programs such as blue box material recycling, leaf and yard material composting, MHSW collections, and backyard

composting. The County's diversion rate is less than the 2010 Rural Regional municipal grouping average of 40.9%.

- In 2010, the net cost for the County's blue box program was $253 per tonne. When compared to the average net cost of $332 per tonne for municipalities of a similar circumstance by municipal grouping, the County is considered more cost efficient than others in the Rural Regional setting.
- The County disposed of 14,350 tonnes of residential waste in 2010 at the PCCWMF, which is calculated as 227 kg per capita. In comparison with other municipalities within the Rural Regional municipal grouping, the County disposes more waste per capita than the peer average (199 kg per capita). The higher waste generation rate is likely influenced by the seasonal population and differing waste management policies between Townships.
- While most waste diversion programs, including blue box materials, are managed at the County level each of the Townships is responsible for disposal of their waste either through transfer to the PCCWMF and/or landfilled locally (See Table 11).
- Each Township within the County provides varying levels of waste management services to its residents and is responsible for the operation of their waste transfer stations and/or landfill sites, and any bag tag/limits/user pay system or policy enforcement.

Overall, when comparing the County to other municipalities within the Rural Regional municipal grouping,

- o total waste diversion is average;
- o the blue box program is cost effective; and,
- o the residential waste per capita generated is more than average.

The waste management system of the County provides a solid foundation on which to enhance and expand to meet the sustainability needs (i.e. social, economic, and environmental) of the County over the next 20 years. Several changes to the waste

management system have been implemented since the baseline year of 2010 and are listed for reference in Appendix D.

3.0 Projected Waste Needs and Future Options Development

3.1 Waste Composition Overview

A key component of the waste planning process was a comparison between the County's current system and its desired goals and objectives.

In 2010, the County reported an overall diversion rate of 39.4% with the remaining 60.6% being sent to disposal. Therefore, the County has reported a gap of greater than 20% between their current overall diversion rate and the target diversion rate of 60% to be reached by 2030.

3.2 Divertible Waste Opportunity Analysis

A divertible waste opportunity analysis was conducted to assess the performance of the County's diversion programs. The results are included in Appendix E and are summarized in Table 12. Due to the way that waste quantities are monitored and reported, the actual quantities of certain materials were not available and had to be estimated as outlined below.

To estimate the current waste composition in the County, residential waste audit data has been used to determine potential blue box material diversion. Based on 2009 and 2010 waste audits, it may be assumed that approximately 40% of the total residential waste generated is blue box material.

Of the grand total of 23,697 tonnes of waste generated in 2010, 18,443 tonnes was residential waste (includes garbage and blue box material collected at the curb and transfer stations and transferred to the PCCWMF. It should be noted that these tonnages are only the material collected by the Townships (which may include commercial materials); this does not include any material collected privately. Given the estimate of 40% of the total residential waste being blue box materials, the total potentially available blue box material is an estimated 7,651 tonnes.

A Bridgenorth waste audit completed in 2009 (County of Peterborough, 2009), concluded that the organics comprised 59% of waste (if 100% participation in the green bin pilot was achieved). A study report entitled Residential Waste Composition Study (Ministry of the Environment, 1991) suggests that organics material comprises approximately 37% of residential solid waste in Southern Ontario. To calculate the amount of organic material remaining in the County waste stream the estimated value for Southern Ontario, which was considered to better reflect the waste composition of the entire County, was used. The 37% was estimated to be 15% leaf and yard materials and 22% SSO material.

It is estimated that C&D debris accounts for approximately 20 to 25% of all waste sent to landfills. As noted on Table 12, the County diverted 860 tonnes of C&D debris in 2010. This does not represent the total C&D debris generated in the County, as there are private sector companies that provide collection to the C&D sectors that may utilize diversion or disposal facilities outside the County. To calculate the amount of C&D debris remaining in the County waste stream, an estimate of only 5% of the waste stream for this type of material was used as a precautionary measure.

To estimate the amount of tires remaining in the waste stream, the Used Tires Program Plan (Ontario Tire Stewardship, 2009) was used. The purpose of this study is to foster the implementation of a sustainable used tire stewardship program in Ontario. The total used tires that are currently being recycled or disposed Ontario-wide was reported to be 106,500 tonnes. This tonnage was then interpolated to determine the tonnage of used tires that would be available for collection annually within the County of Peterborough. The result was that approximately 510 tonnes of used tires are available for diversion within the County annually.

To determine the amount of MHSW material remaining in the waste stream, the MHSW Program Plan (Stewardship Ontario, 2009) was used. This study provides information for all MHSW materials collected under the Stewardship Ontario Program Plan. This study included an analysis of all MHSW material sold, available for collection, and reported collected and transported in Ontario over an 8-month period in 2008 and 2009. The total MHSW material

available for collection Ontario-wide was reported to be 40,612 tonnes over 8 months. This tonnage was then interpolated to determine the tonnage of MHSW material that would be available for collection annually within the County of Peterborough. The result was that approximately 290 tonnes of MHSW material is available for diversion within the County annually. Although overall tonnage is small, the potential environmental impact of these materials is highly significant.

To estimate the amount of WEEE material remaining in the waste stream, the WEEE Study (Waste Diversion Ontario, 2005) was used. This WDO study was completed to determine the state of WEEE management in Ontario. This study included an analysis of all WEEE material sold, discarded, collected for processing, and disposed in Ontario in 2004. The total WEEE material collected Ontario-wide was reported to be 70,659 tonnes. This tonnage was then interpolated to determine the tonnage of WEEE material that would be available for collection within the County of Peterborough. The result was that approximately 340 tonnes of WEEE material is available for diversion within the County annually.

Achieving a capture rate of 100% requires that all recyclables be placed in the recycling stream (at source and through transfer) and that the waste going for disposal consist solely of non-recyclable materials. It is recognized that in reality 100% capture of divertible materials is not possible or realistic. The target capture rate set by WDO for the “Rural Regional” category is 75%. The County has demonstrated that the Townships and its residents are able to capture well over half of the recyclables in their waste stream (approximately 69% in waste audit findings); however, it is recommended that a target capture rate of 75% for recyclables, organics and other materials remain as the goal.

A complete overview of the anticipated diversion is presented in Table 12, which presents the amount of material currently diverted, how much more could potentially be diverted by achieving a 75% capture rate, and the total future diversion after implementation of potential options.

Table 12 Divertible Waste Opportunity Analysis

Waste Material	Current Diversion[a]		Potential Diversion[b] (at 75% capture)		Future Diversion	
	Tonnes	% of waste stream	Additional Tonnes	Additional % of waste stream	Total Tonnes	Total % of waste stream
Blue Box	4,749	20.0%	2,177	9.2%	6,926	29.2%
SSO (food waste)	1,706	7.2%	2,628	11.1%	4,334	18.3%
Leaf & Yard Materials	650	2.7%	2,179	9.2%	2,829	11.9%
Construction and Demolition Debris	860	3.6%	881	3.7%	1,741	7.3%
Scrap Metal and White Goods	531	2.2%	0	0.0%	531	2.2%
Tires	305	1.3%	153	0.6%	458	1.9%
Residential Deposit Returns	321	1.4%	0	0.0%	321	1.4%
WEEE	52	0.2%	215	0.9%	267	1.1%
MHSW	119	0.5%	129	0.5%	248	1.0%
Residential Reuse	54	0.2%	0	0.0%	54	0.2%
Totals	**9,347**	**39.4%**	**8,362**	**35.3%**	**17,709**	**75%**

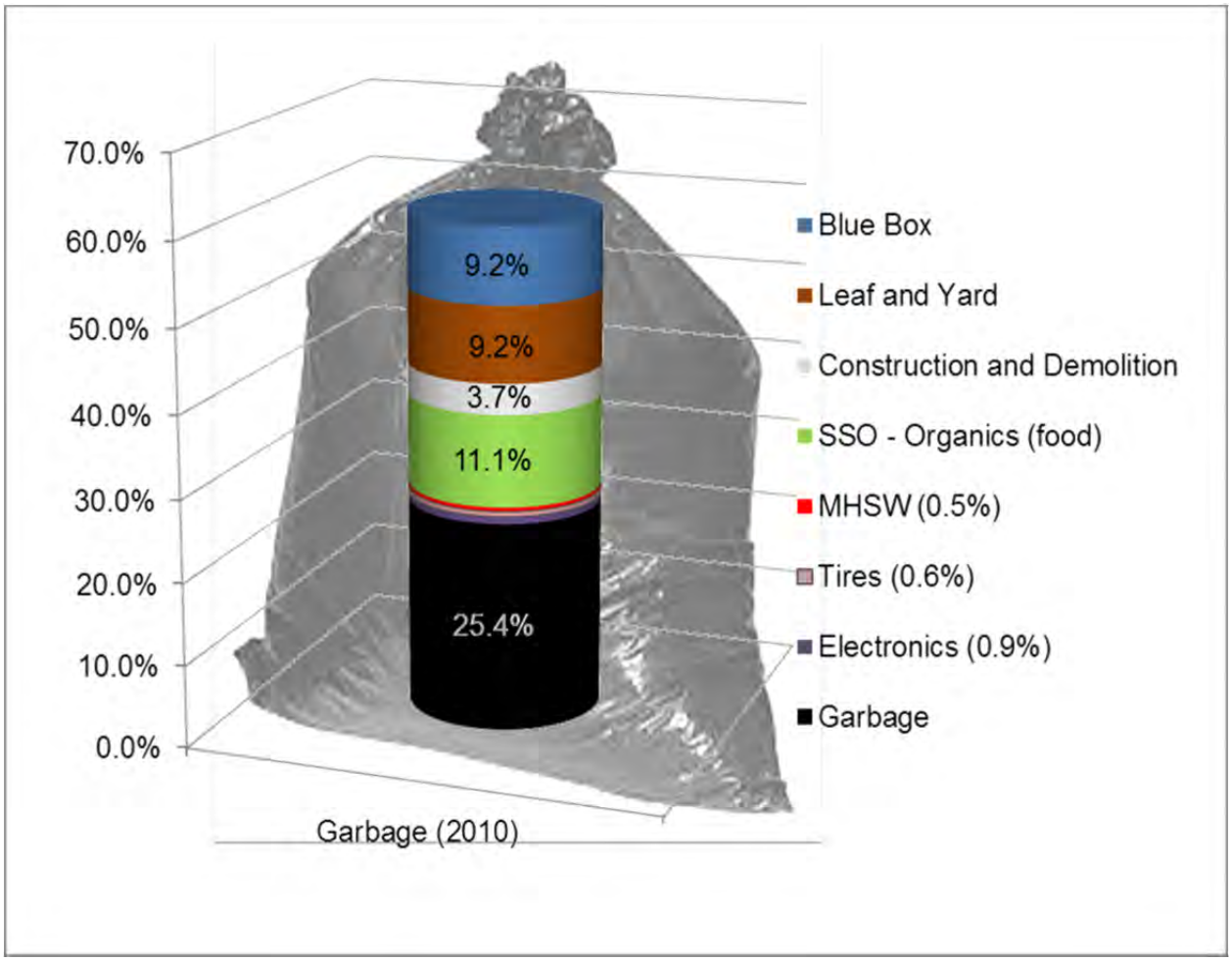
Notes: Shaded cells indicate target materials for waste diversion
Source: Waste Diversion Ontario 2010
Based on waste audit data

The divertible waste opportunity analysis shows that of the 10 material categories reviewed, the greatest increase in waste diversion is possible through increased capture of organics; specifically, leaf and yard material and SSO (food waste). Using the 75% capture rate, an additional 2,628 tonnes of SSO food waste, and 2,179 of leaf and yard material could be diverted. A large increase in diversion is also possible through increased capture of blue box material and C&D debris. An increase of 9.2% diversion would be realized with the additional capture of 2,177 tonnes of blue box materials, and the quantity of C&D debris diverted could

be doubled. Overall, the quantity of waste that can be diverted in the County is estimated to be 17,709 tonnes at a possible diversion rate of 75%.

The graph below demonstrates how much more material of each type could be diverted from garbage bags by achieving a 75% capture rate. The black bar, illustrating garbage, shows the percentage of material that would be remaining for disposed at the landfill (25.4%) if 75% capture is achieved for all divertible materials. As illustrated, the greatest gains in diversion would be realized through increased capture of blue box, food waste, leaf and yard materials and construction and demolition debris, which is consistent with the data outlined in Table 12. Although smaller gains would also be achieved for MHSW, WEEE, and tires, it is imperative that these materials be diverted from landfill given their toxicity and environmental impact.

Figure 5 Potential Changes in Material



3.3 Disposed Waste Needs

It is recognized that even with increases in waste diversion in the County, there will still be a need for disposal of materials that cannot be, or are not, diverted. Depending on future diversion momentum, the quantity of waste requiring disposal is estimated to be approximately 60,000 tonnes per year for the City and County combined (Genivar and Urban & Environmental Management Inc., 2011) which includes waste from all sources, including residential and the IC&I waste sectors.

In 2010, approximately 14,350 tonnes of waste was landfilled from County residents, as shown in Table 4. While an increase in diversion will reduce the amount of waste that is landfilled, other factors, such as changes in population and population demographics, and packaging shifts (e.g. glass to plastic) can add to the quantity of waste that requires disposal.

To determine future disposal needs, Cambium reviewed the future growth projections of the County and consulted the Greater Golden Horseshoe Places to Grow Growth Plan policy. Based on these reviews, the population of the County is projected to grow to 60,960 by 2030. From this anticipated growth, assuming no further increases in waste diversion and using the historic residential waste generation rate (2010), it can be projected that the annual residential waste disposal rate over the next 20 years will be as follows in Table 13:

Table 13 Residential Waste Generation Projection Rates to 2030

	2010	2015	2020	2025	2030
Population	58,000	59,200	60,405	60,685	60,960
Residential Waste (tonnes)	14,350	14,648	14,945	15,014	15,082

Note: Projected numbers are based on status quo operations, at the 2010 diversion rate of 39.4%

At this time, there is approximately 12 to 15 years of capacity remaining at the PCCWMF, based on current waste disposal and diversion rates. After that time, an alternate solution will be required to dispose of residual (non-divertible) waste. Several solutions are explored in Section 5.0, each of which has distinct strengths and challenges, which make them more or less suitable for the County. The County intends to continue to work in partnership with the City to manage residual waste when existing disposal capacity at the PCCWMF is no longer available.

3.4 Future Options Overview and Evaluation Methodology

A long list of waste management options was assembled and assessed for suitability, based on the County's unique waste management system and circumstances. Fifty seven (57)

options for waste diversion and three (3) categories of waste disposal options were reviewed. The complete list of the options evaluated is in Appendix E.

The assessment of the options was based on the following criteria:

Primary
Economic feasibility – the net cost burdens of the option and affordability for the County and Townships, considered on a cost per household basis. Environmental effects – a broad estimation of the generally understood environmental effects of the option.
Secondary
Social acceptance – includes consideration of public and stakeholder input received through the planning process and an understanding of public opinions expressed in similar communities. Sound approach/technology – consideration of proven use and success in other jurisdictions. It should be noted that this criteria did not apply to all options considered. Ease of implementation – consideration of what is required for successful execution and maintenance of the option by the County and/or Townships (Unilateral Action, Partnership, and Promotion & Education).

The evaluation of options was completed after receiving initial WMMP survey results and feedback during consultations with the public, Townships and County staff. The description of the options was presented to County staff and discussed using the above noted criteria categories as a guide. The public consultation program is summarized in Appendix A.

While some of the options evaluated were determined to be unsuitable for the County and Townships at this time, a brief description and the complete evaluation of all options is presented in Appendix E. The County and Townships may decide to revisit the long list of options in the future as some options may be determined to be suitable at a later date, in a specific circumstance or jurisdiction, or based on conditions that are not foreseen at this time.

The options will receive further consideration under the environmental assessment (EA) that will be completed to determine the most suitable option for future waste disposal in the County. The EA will provide a broader and more thorough evaluation of the waste disposal options available.

4.0 Opportunities to Increase Waste Diversion

Waste diversion rates in the County have been slowly increasing in recent years, with an overall growth of 4.8% between 2008 and 2010. Even though the goal of 50% diversion was established 16 years ago, from 2007 through 2010 waste diversion rates have remained below 40% (Waste Diversion Ontario, 2011). Therefore, the County has a long way to go in order to meet the socially desired and politically guided diversion rate of 60%. The divertible waste opportunity analysis shows that it is possible to divert 75% of the waste in the County; therefore, achieving the 60% diversion target is a realistic goal over the next 20 years.

To reach the diversion goal, a number of waste diversion options have been evaluated, as noted in Appendix F. Several considerations were included when evaluating options such as: waste diversion potential, ease of implementation, social acceptance, and net costs. The waste diversion options were grouped into five (5) broad categories:

- collection strategies
- policy and enforcement approaches
- promotion and education strategies
- IC&I strategies
- monitoring and reporting strategies.

A summary of the options that were determined to be most suitable for the County are presented in the following sections. Diversion rates presented have been referenced from Table 12 and costs have been derived from Appendix F.

Some waste types are better suited to an increase in diversion because of the amount of the material that is produced, or because the material is not effectively captured in existing diversion programs. As per Table 12, the waste types that have the greatest anticipated potential to increase the waste diversion rate include:

1. Blue Box Recyclables;
2. Organics – Leaf and Yard materials;
3. Organics – Food materials; and
4. Construction and Demolition;

Because of their greater potential for increase in waste diversion, these materials have been prioritized for the County and Townships to meet the planned goals and objectives, and the long term waste diversion target of 60%.

To achieve maximum diversion in an affordable way, the implementation of options is anticipated to occur in the short (next 5 years), medium (within 5 - 10 years) and long (10 - 20 years) term.

It is important to note that the implementation of the waste diversion options is likely to occur over several years, with some options requiring substantial lead time for public notification, planning, financing, and preparation. Due to the structure of the County, some of the programs would be led by the County while others would be managed at the Township level. In some cases, the diversion strategies discussed in the following sections will overlap in terms of content and overall impact on the diversion rate. The maximum diversion rate anticipated to result from each strategy has been presented; however, it should be noted that actual gains in waste diversion will be lower than the combined maximum increase in diversion presented in instances where the strategies overlap.

4.1 Collection Strategies to Increase Diversion

Opportunities to maximize waste diversion depend on having appropriate, efficient and affordable infrastructure and operations in place to collect the materials. An ideal collection strategy must:

- allow for modular implementation opportunities working cooperatively between the County and Townships;
- be flexible enough to be accessible and understood by residents;
- be structured enough to allow for short and long term planning; and,
- be affordable for all.

Collection strategies include specific activities such as curbside collection, and broader strategies for the collection, marketing and recycling of materials.

The table below illustrates the collection strategies evaluated. The preferred options for the County are discussed in detail in the following sections.

Strategy Category	Option Name and Description	Preferred Option	Timeline
Collection Strategies	Blue Box Recyclables		
	Special Events and Public Spaces	✓	S
	Multi-Residential Research	✓	M
	Organics		
	Leaf & Yard Materials	✓	S
	Food Materials (SSO Collection)	✓	M-L
	Backyard Composting	✓	S
	Other Recyclables		
	Construction and Demolition Debris	✓	S
	"Environment" and Seasonal Days	✓	S
	Reuse		
	Centres	Optional	S
	Events	✓	S
	Municipal Hazardous and/or Special Waste (MHSW)	✓	S
	Central Depot (Permanent Facility)	Optional	S
	Events	✓	M
	Limited MHSW at all landfills and transfer stations		
	Waste Electrical & Electronic Equipment (WEEE)	✓	S
	Waste Services Optimization		
	• Cooperative Collection	Optional	M
	Collection Frequency	✓	L
	Standardized Depot Operations	✓	M
	Capacity Review/Enhancement (for example: larger blue boxes)	✗	✗

Note: S = Short term; M = Medium term; L = Long term

As illustrated above, several of the options in the collection services category are considered to be “optional”. The “optional” strategies relate to programs that are already in place in some Townships and not in others; or, strategies that are related to independent contracts for the collection and transfer of waste, which are different for each Township. Since each Township owns and operates the waste transfer stations and/or landfills within their boundaries, it is the responsibility of each Township to determine which options are best suited to their particular waste management conditions. It is recommended that all Townships consider applying the “optional” strategies to their collection systems.

4.1.1 Blue Box Recyclables Collection Improvements

Approximately 20% of all waste generated in the County is currently diverted through the blue box program; however, there is a significant quantity of blue box material landfilled each year. Notably, an increase in diversion of blue box materials involves a significant onus on residents to assume responsibility for waste generated through the proper sorting and diversion of items through the existing program.

Increasing the capture of blue box material using enhanced diversion programs would increase the diversion rate of the County by 9% in the long term.

Although the County’s blue box recycling program is comprehensive, due to changes in packaging, residents need to be constantly re-educated on what can go “into the blue”. The County can lobby through stewardship organizations to encourage producers to use readily recyclable materials in products and product packaging.

4.1.1.1 Special Events and Public Spaces

Considerable blue box materials could be diverted by establishing a program for collection at private or public special events (e.g. large family reunion, wedding, festival or fair) at outdoor public places, arenas, community centres and similar venues.

Due to the number of tourists visiting the County's Lakes, there are many visitors that generate and dispose of waste in public places within the County every year.

Permits may be required by organizations interested in setting up a festival or special localized event. The permit requirement provides an opportunity for the Townships and/or the County to ensure that event organizers approach waste management in a fashion consistent with the municipal waste management program.

Making diversion convenient for tourists and residents when they are visiting locations outside of their homes will go a long way toward increasing the capture of divertible material in the County. A convenient option to collect recyclables in public places includes providing a bin for the collection of blue box materials (containers only) at all locations where garbage bins are currently located and maintained by the Township or the County.

It is anticipated that implementing a waste diversion program or policy geared toward collection at special events and in public spaces would result in a minimum increase in waste diversion of 1% at a cost of $1 per household.

4.1.1.2 Multi-Residential Research

Multi-residential recycling and waste diversion programs throughout Ontario face a number of cultural and structural challenges resulting in poor recycling participation. The number of multi-residential buildings in the County of Peterborough is estimated to be about 10; therefore, the ability to increase the blue box rate from this residential sector is minimal. Even so, existing multi-residential buildings in the County should consider the implementation of best management practices for waste management including: having enough storage space for

recyclables; increasing the number of recycling containers at buildings; and distributing promotion and education materials (printed and tools) to residents and building staff.

The number of multi-residential buildings in the County is anticipated to increase in the future. The Provincial Policy Statement (PPS; 2005) promotes the intensification of development within settlement areas, and other areas where such intensification can be supported by infrastructure and public service facilities. As the population in the County increases, the intensification of development (e.g. multi-residential developments) is anticipated to increase near service areas.

Ontario Regulation 103/94 (O. Reg. 103/94) requires any owner of a building containing six (6) or more residential units to implement a source separation program for waste, provided that the building is located within a municipality with a population greater than 5,000 persons.

It is recommended, due to the potential for an increase in the number of multi-residential building over time, that a database be developed of all multi-residential buildings within their jurisdiction. The database will allow for accurate management and monitoring of multi-residential facilities if programs of this type become applicable in the future.

4.1.2 Organics Collection

Approximately 37% of residential solid waste in the County is comprised of organic material; therefore, the current organics diversion rate of approximately 10% could increase substantially, with improved participation in the leaf and yard material program as well as an expanded SSO program.

Currently, all organic material collected in the County is transferred to the City of Peterborough Harper Road composting facility for processing. The City composting facility has limited capacity for SSO processing but has unlimited processing capacity for leaf and yard material. An alternative processing facility will be required in order for the County to maximize the diversion of organic materials through an expanded SSO program.

A review and survey of Canadian SSO and household organics facilities was completed by the Recycling Council of Alberta (RCA) and Municipal Waste Integration Network (MWIN) in April 2006 (RCA & MWIN, April 2006). As part of that study, capital and operating costs for typical compost technologies were estimated.

Total costs for capital and operation of compost facilities ranged from:
$40 - $60 dollars per tonne per year ($/tonne/yr) for a turned windrow process
$100 - $150 dollars per tonne per year ($/tonne/yr) for an anaerobic in-vessel facility

Turned windrow facilities are much more cost effective; however, this type of facility is not suitable for large quantities of food waste. Cost savings on anaerobic facilities can be realized through the collection of heat from the composting of organic material as a source of renewable energy. Heat capture, through air or water, is an option for generating energy from compost that should be examined if determined to be desirable for the County.

4.1.2.1 Leaf & Yard Materials

Optimizing the diversion of organics, including leaf and yard material, has the potential for the greatest increase in waste diversion within the County, as compared with other waste types.

Leaf and yard material can be locally converted into an environmentally beneficial, reusable material through composting. Leaf and yard material can be diverted from landfill by residents appropriately separating this material at the source. Out of 8 Townships, 12 transfer stations and landfills accepted leaf and yard materials in 2010 (see Table 3). However, the majority of this material is currently not considered to be diversion, and is used as either landfill cover material or is left to decompose at the collection site. Curbside collection of leaf and yard material is minimal. County residents can drop off leaf and yard materials directly at the PCCWMF on Bensfort Road.

Within the next 2 - 5 years it is recommended that the County offer seasonal collection of leaf and yard materials in strategic settlement areas and at all landfills and transfer stations, and that the material is formally diverted, such as through a composting operation.

It is estimated that a seasonal leaf and yard material program could divert up to an additional 9.2% at an annual cost of approximately $6 per household.

4.1.2.2 Food Materials (SSO)

The County has Molok© collection systems at three (3) transfer sites, and has launched P&E in support of SSO programs in an attempt to establish participation, grow the programs, and obtain tonnages.

Within the next 5 - 15 years it is recommended that the County expand SSO collection for food materials. Program expansion would be hinged on a high participation rate, supportive policies & enforcement, and costs. A phased approach would include:

- extending weekly curbside collection of “green bin” organics to settlement areas with at least 600 households
- installation of additional collection systems in suitable locations throughout the County (ideally one organics collection station per Township)

A phased expansion of SSO programming focused on food materials collected at curbside and transfer station could divert an additional 11.1% at an annual operational cost of $45 for transfer station collection to $95 for a curbside collection system.

The County will need to secure processing capacity for the food material collected, and should consider a multi-municipal partnership to site and construct a composting facility. The County

should monitor the marketplace for alternate technologies to process food materials (e.g. agricultural anaerobic digester).

4.1.2.3 Backyard Composting

It is well understood that the amount of organic waste diverted to backyard composters is difficult to estimate; however, the importance of this waste diversion method should not be underestimated. The County encourages backyard composting, promotes and sells backyard composters to the public to facilitate this initiative. Composters are available from the County Public Works department for a discounted fee.

The Federation of Canadian Municipalities acknowledges that the simplest and most cost effective way to remove residential food waste and yard materials from the waste stream is through backyard composting (FCM, March 2004).

Programs to increase participation in backyard composting should be supported and implemented in the short term to remind and provide residents an opportunity to manage organics in their own backyard, and take responsibility for their waste.

According to the WMMP public survey's (Appendix A), approximately 50% of the population is currently using a backyard composter. Barriers to backyard composting include: time constraints, unsuccessful previous experiences, vermin/wildlife issues and inconvenience. A program that addresses these barriers and promotes backyard composting would increase the backyard composting participation rate and the overall diversion of organic material.

Backyard composting results in the diversion of 100kg of organic material per year per composter and has the potential to increase the waste diversion rate by up to 1% at a cost

4.1.3 Other Recyclables

4.1.3.1 Construction and Demolition Debris

Construction and demolition (C&D) debris represents just less than 5% of the entire waste stream, based on a conservative estimate of current C&D generation rates. Presently, C&D debris is not accurately quantified, but based on information provided by the Townships and the County (reports from site attendants and the quantity of C&D observed to be entering the PCCWMF) the conservative estimate used in this plan is likely less than the actual quantity of C&D debris generated.

Bulky, easily recognizable items such as scrap metal are generally sorted out of the C&D debris and recycled by residents; however, the majority of C&D debris is typically landfilled, since sorting the waste by residents or contractors can be time consuming.

C&D debris includes: wood, metal, drywall, porcelain, and interior and exterior building materials

Townships can divert C&D debris by using local private companies to collect these materials from landfills and transfer stations. Materials that can be diverted will be processed by the private company and sold for reuse or recycling.

Currently, most C&D debris is accepted at waste transfer stations and mixed with the general waste stream and is ultimately landfilled. In an effort to increase the diversion rate for this material type, residents should be provided with a separate drop-off area for this material. Diverting C&D debris would assist in preserving landfill capacity, which is rapidly consumed by this bulky, durable and non-readily decomposable material. Enforcement capacity would be required to ensure that C&D debris is appropriately separated and deposited at the transfer stations and landfills for haulage to a C&D processing facility.

Enhancing the C&D program could increase the diversion rate by 3.7% at an annual cost of approximately $1 per household.

4.1.3.2 Environment and Seasonal Days

Collections events, such as “Environment Days” are an effective way to increase one-on-one communications with residents regarding recycling and other diversion programs. These events allow for direct communication between County staff and residents to increase motivation to divert materials that require special handling (MHSW and WEEE), to introduce residents to composting, and to celebrate waste reduction activities (free compost is provided in locations where SSO collection exists). “Environment Days” offer residents opportunities to recycle items collected “beyond the blue” in order to assist diversion efforts. “Beyond the blue” refers to divertible materials that are not accepted under the blue box program.

The collection of special, non-standard items could take place on advertised dates at existing transfer stations, or at an alternate convenient location in the County. Collections events could be held on a Township basis, as a partnership between Townships, or at a County wide level and with the assistance of industry organizations.

The target materials for these events are items that are not always marketable for recycling (e.g. polystyrene) and/or are discarded on a seasonal basis in bulk (e.g. boat and bale wrap). This allows the County to take advantage of spot markets and be more cost effective when offering recycling services for these items. Collection events can be established in the short term for an immediate increase in waste diversion and can be made available in certain locations depending on local activities (for example: boat wrap in the north and bale wrap in the south). Scheduling of these events should align with favourable market conditions and appropriate approvals.

Examples of recyclable non-blue box include:

- polystyrene
- durable/hard plastics
- boat wrap
- shingles
- bale wrap
- carpet
- textiles / clothing
- mattresses
- plastic twine
- empty feed bags

It is expected that popularity in these events will continue to grow and other activities be incorporated into the mix of offerings, for example “trunk” sales to promote the benefits of reuse (see Section 4.1.4 for more detail on reusable items). “Trunk” sales involve organizing a central meeting place where residents can bring reusable items and set up a display on or surrounding their vehicle. The reusable items are made available for trade or free of charge.

4.1.4 Reuse Centres and Events

Reuse Centres promote the reuse of functional items by other people, or for alternate uses. Reuse extends the life of durable products, reduces packaging and waste associated with newly produced products, and saves landfill capacity.

Examples of items suitable for reuse include:

- furniture
- appliances
- toys
- clothing
- flooring/carpet
- building materials

Residents are encouraged to reuse items (personally or by sale) or to donate them to a charitable organization, or to deliver the items to a Reuse Centre. Many municipalities have official reuse centres at designated locations within their jurisdictions, typically at landfills and transfer stations. In some cases the establishment of reuse centres is initiated by residents who recognize that their previously enjoyed items may be of use to someone else.

Some municipalities in Ontario have entered into partnerships with non-profit organizations or community groups who agree to set up and staff reuse centres at transfer stations and/or

landfills. Community based partnerships such as this one are beneficial for the municipality by reducing time and costs to operate such facilities, and also benefit the partner organization by increasing their access to reusable goods and exposure to the community. Programs such as The Clothesline Program, owned by the National Diabetes Trustee Corporation, offer a mobile service which would set up at a central location during a reuse event to collect clothing for donation. This program has been used successfully by the County's neighbour municipality, the City of Kawartha Lakes.

Establishing reuse centres at several landfills and transfer stations in the County within 5 - 10 years' time would be a win/win situation for the County and residents by increasing waste diversion and providing sources of free, functional items to residents who may be in need.

A similar approach to reuse centres, though available only on a periodic basis, is the organization of goods exchange days ("swap days"). The County, Townships, or partnerships of Townships can plan and promote "swap days", during which residents are encouraged to place functional, but no longer used items at the roadside for others to take for free, if they wish. All items that are not taken by another interested party during the designated time frame would be properly disposed of or donated by the owner.

It is anticipated that enhancements to collections in the form of special collections, reuse centres and "swap days" have the potential to increase the diversion rate of the County by approximately 1% at an annual cost of approximately $1 per household.

4.1.5 Municipal Hazardous or Special Waste (MHSW)

According to the divertible waste opportunity analysis presented in Section 3.2, MHSW represents a very small portion of the total waste generated, and the total waste diverted, in the County. While the quantity of this waste type is low compared with other waste types, it is important to divert as much MHSW as possible to protect land and water resources from the

risk of pollution. The separation of MHSW from the general waste stream is a mandatory requirement of the Ministry of the Environment.

Commonly used hazardous household items include:

- paints
- cleaners
- solvents
- pharmaceuticals
- batteries
- compact fluorescent light bulbs

Three (3) options for MHSW were determined to be suitable for the County in the short term (within the next 5 years):

- continue to provide MHSW events at convenient times and locations throughout the County;
- establish a centrally located MHSW collection station (recommended Smith Landfill due to the geographically central location and the frequent use of this site); and,
- establish a program to accept limited MHSW (batteries, compact fluorescents and propane tanks) at all landfills and transfer stations in the County.

Average costs for these MHSW programs range from $1,000 to $1,350 per tonne, per program.

Enhancements to the MHSW program could increase the diversion rate by 0.5% at an annual cost of approximately $5 to $6.50 per household.

4.1.6 Waste Electronic and Electrical Equipment (WEEE)

In response to the growing quantities and turnover of Electronics, WEEE became a designated material under the Waste Diversion Act on December 14, 2004, and a regulation under this Act was developed specifically for WEEE material (Ontario Regulation 393/04). One of the key factors driving WEEE stewardship programs, and the legislation behind them, is the concern

over the potential hazardous and toxic substances to be contained in the products and the potential health and environmental impacts associated with these contaminants.

A province wide WEEE Program Plan was developed by Ontario Electronic Stewardship (OES), which requires electronic manufacturers to cover disposal and recycling costs to divert electronic waste. This arrangement shifts the cost burden for the management of waste electronics from municipal property taxpayers and individual businesses to producers and consumers who utilize these products.

Limited locations within the County provide WEEE collection services. WEEE is generally collected where economically and operationally feasible. In the County this can include special events and seasonal collection bins placed in strategic locations. An estimated 20% of WEEE generated in the County in 2010 was diverted. While WEEE materials make up a relatively small percentage of the overall waste generated in the County the diversion of this material type will become increasingly important due to the continually increasing amount of household, commercial and institutional electronics. Based on the divertible waste opportunity analysis, it is possible to increase the County waste diversion rate by up to 1.2% overall, if all WEEE materials are captured and diverted from disposal.

It is anticipated that enhancements to the WEEE diversion program could increase the diversion rate of the County by approximately 1% at an annual cost of less than $1 per household.

4.1.7 Waste Services Optimization

4.1.7.1 Cooperative Collection

The purpose of cooperative collection is to collect waste using fewer financial, capital, and human resources while at the same time encouraging diversion activities. It is recommended that an objective assessment of the current collection and processing systems be completed to identify and explore opportunities for improvement.

Potential methods to increase efficiency and optimize collection operations include, but are not limited to:

- collect more material with fewer trucks (for example: larger trucks with larger geographic area covered);
- collect more material with fewer stops (for example: garbage and recycling collected together on private roads);
- have fewer staff and/or less time; and,
- collect materials in less time.

It is recommended that the County and Townships investigate multi-municipal collection partnerships (bundling of services) with the intention of attracting lower cost bids from contractors, which would result in an overall cost savings for waste management services. The bundling could consist of all collection services, including: garbage, blue box recyclables, bulky materials, and organics (leaf & yard and food materials). To facilitate this process the Townships should align their collection contract timelines so that all contracts are renewed at the same time or allow for flexibility in altering the terms of the contract for alignment purposes.

A comprehensive assessment of collection practices at landfills and transfer stations should be co-ordinated with the Townships and actions should be taken to resolve inefficiencies and discrepancies to improve the overall effectiveness of collections and operations.

4.1.7.2 Curbside Collection Frequency

A number of Ontario communities have moved to bi-weekly collection of garbage from the curbside, coupled with weekly organics and blue box collection programs. This makes the collection of multiple streams of waste more cost efficient and has also shown raised participation in diversion programs.

In the County, garbage collection is the responsibility of and is managed by each Township either through curbside and landfill/transfer station collection, or a combination of the two. The County would benefit from exploring bi-weekly garbage collection as a long term enhancement

to the waste management system for all Townships in areas that are offered curbside collection at the time of implementation. Bi-weekly garbage collection would be coupled with weekly collection of organics, recycling and leaf and yard material (seasonally).

Bi-weekly collection increases diversion because residents do not have the convenience of weekly garbage. Participation in the organics program becomes desirable to reduce the volume and odours associated with storing organic waste for a two (2) week period.

4.1.7.3 Operations Contract

As noted in Section 1.1, the MRF operates under a mutual contract between the County and City with a private contractor (HGC Management Inc.) managing recyclable materials. The private recycling contract ends in 2014, at which time the County and City will be in a position to request an expression of interest from qualified contractors for the continued management of the facility. A recent publication produced for the WDO through the Continuous Improvement Fund (CIF) indicates that small to medium sized MRFs may become centralized to larger facilities in the future to increase efficiencies in recyclables management (StewardEdge Inc. and Resource Recycling Systems, June 2012). Speculation of such changes leaves small to medium sized municipalities in Ontario, including the County, hesitant to invest in infrastructure and contracts for these services due to the pending changes to the system in Ontario. Based on these potential changes, shorter term recyclable material management contracts for the existing MRF may be a prudent option as compared with longer term contracts.

4.1.7.4 Standardized Depot Operations

A review of site accessibility and layout should be undertaken for all transfer station and landfills in the County. Simple logistical enhancements to entrance and drop off areas will increase efficiency, communications and enforcement with site attendants, participation in diversion, and ease of site use. Installation of these features would be the responsibility of the

Townships, and can be completed in the short term with a potentially immediate impact on efficiency at the sites:

- improved and consistent signage indicating hours of operation and fees;
- notification of restrictions/limitations; and,
- signage to direct traffic flow and material placement.

In the medium term, Townships should aim to have a minimum of one multi-purpose drop off centre which would accept all currently divertible materials. The waste types accepted at each drop off centre should be consistent with PCCWMF, the new waste management by-law (see Section 4.2.1) and across Townships, to promote equal accountability for waste diversion within the next 5 – 10 years.

Recommended waste types to be accepted at the multi-purpose drop off locations for diversion include:

- Leaf and yard materials (seasonally)
- C&D
- Tires
- Scrap Metal and White Goods
- Limited MHSW (batteries, compact fluorescent light bulbs, and propane tanks)
- WEEE

Multi-purpose drop off centres will require amendments to existing approvals for changes of operation; however, proper design of the application will allow Townships greater flexibility and adaptability in the types of waste managed within their boundaries. The County could potentially coordinate a single application that would be adaptable to all Township sites saving consultant fees, time, and staffing costs.

Additionally, Townships with landfills and/or transfer stations that are suitable (distance, utility service, size) may benefit from implementing compaction for waste. Compactors can decrease haulage costs by directly reducing the number of trips required from the transfer station to the landfill. Savings and onsite space gained by compacting waste can be used to

fund and accommodate additional diversion activities. The use of compactors also results in environmental benefits such as decreasing fuel demands and wear and tear on roads by requiring less trips, and reducing blown litter at landfills and transfer stations.

In the long term, computerized household tracking systems and weigh scales could be installed to more accurately quantify incoming waste volumes at individual landfills. A tracking system would allow for more accurate records of the quantity of waste landfilled by source; for example, the percentage of waste that is from residential versus commercial and/or industrial users.

Weigh scales would also assist site attendants in collecting fees. Tracking at the household level would increase participation in diversion programs and reinforce waste minimization principles as residents tend to send less waste to the landfill when they are being charged/tracked directly for landfill or transfer station usage.

It is anticipated that the optimization and standardization of services offered across the County has the potential to increase the diversion rate by up to 5%.

4.1.8 Collection Strategies - Summary of Strengths and Challenges

All of the options evaluated to improve the collection of diverted waste have a unique set of strengths and challenges as outlined in the table below.

Diversion Category	Option	Strengths	Challenges
Blue Box Recyclables	Special Events and Public Space Recycling	• Consistent with municipal goals • Positive message to the public and visitors to the area • Will increase knowledge and amounts of recycling • Potential for advertising on bins other diversion programs (MHSW?)	• Initial capital costs • Additional time to implement and manage • No financial benefits within contracts for garbage (flat fee vs. cost per tonne) • Limited enforcement
	Multi-Residential Database	• Consistency in requirements for all applicable buildings • Increase in knowledge will allow for more efficient program implementation at a later date	• Currently there are a small number of applicable buildings
Organics	Leaf & Yard Materials	• Large increase in diversion possible with enhancements to existing program • Converted to a beneficial end product (compost) • Low cost and minimal technology required	• Township support
	Food Materials (SSO Collection)	• Growing social acceptance • Greatest potential for diversion • Synergistic impact on recycling and landfill capacity • Beneficial end product (compost)	• High capital costs • No policy to force participation • No local processing facility
Other Recyclables	C&D Debris	• Easy to separate • Cost neutral with fee collection • Increases in diversion	• Space at landfills and transfer stations • Staffing
	Environment and Seasonal Days	• Efficient • Cost effective • Can be implemented in the short term • Can be tailored to be sector specific (i.e. residential, agricultural, C&D) • Can be scaled according to markets	• Market fluctuations • Managing resident expectations based on previous experiences
Municipal Hazardous and/or Special Waste (MHSW)	Permanent Centralized Depot, Events, and Limited Materials	• Removes hazardous materials from landfill • Enhancements/promotion of existing programs would increase participation • Stewardship programs available to offset costs	• Small quantity = small potential for increase in diversion
Reuse	Centres and Events	• Positive public perception • Win/win for public and County/Townships • Possibility to work with non-profit organization to offset costs	• Tracking impact of activities • Costs associated with implementing and staffing

Continued next page

Diversion Category	Option	Strengths	Challenges
Service Optimization	Cooperative Collections	• May identify inefficiencies that can be addressed through existing or new contracts • Expected cost savings with multi-municipal partnerships	• Costs associated with implementation • Township support
	Collection Frequency (Bi-weekly Collection)	• Cost savings • Increased diversion	• Mixed public response to curbside collection • Long term implementation
	Operations Contract	• Flexibility in long term recyclable material management	• Uncertainty of future of small to medium sized MRFs and Blue Box program funding
	Standardized Depot Operations	• Research easy to complete • Increases accessibility of sites • Promotes diversion activities • Consistent message across the County • Convenience • Increase in collection of MHSW • Relatively inexpensive	• Costs associated with implementing results of review • Requires cooperation between Townships • Amendments to government approvals required • Additional staffing • Ownership of system

4.2 Policy and Enforcement Approaches to Increase Waste Diversion

The creation of new policies, including by-laws, partnerships, best management practices and other high level guidance establishes a good foundation for diversion programs. Regular review of existing policies, with amendments or revisions as required, is critical to the long term success of waste management programs. Due to continually changing waste composition that is directly related to variations in products on the market, it is critical for policies to be flexible and adaptable to change as required, to allow for appropriate and efficient management of waste into the future. Some policies are guided by legislation, and as such are less flexible in nature.

The table below illustrates the policy approaches evaluated. Policy approaches that were evaluated to be the most suitable for the County based on the pre-determined criteria are discussed in detail in the following sections. Options with similar attributes, such as by-laws, fees, bans and enforcement have been grouped for discussion purposes.

Strategy Category	Option Name and Description	Preferred Option	Timeline
Policy Approaches	Align By-laws • County and PCCWMF (50/50 partnership with the City) • Township and County Waste Management (e.g. planning) • Other Applicable Departments • Enforcement of Policies	 ✓ Optional Optional ✓	 S M M S
	Specific Material Bans from Disposal • Curbside • Landfill / Transfer Stations	 ✓ ✓	 M S-M
	User Pay • Variable / Differential Tipping Fees • Pay-as-you-throw/Bags and Sustainable Financing Strategies	 ✓ ✓	 S L
	Building Permit Waste Reduction Plans	✓	M
	Clear Bags for • Excess Waste • All Waste	 ✗ ✗	 ✗ ✗

Note: S = Short term; M = Medium term; L = Long term

As illustrated above, the use of clear bags is not considered to be suitable for the County at this time, mainly due to input received from the public through the WMMP survey (Appendix A). It is difficult to accurately predict increases in diversion that directly result from improving policy approaches; therefore a breakdown of the anticipated increase in diversion has not been provided for all options evaluated in this category. It is generally understood that policies designed to support waste diversion initiatives are valuable, and aid in the implementation of waste diversion programs. The cost associated with policy approaches are most often associated with increases in staff time for policy development and implementation, and staff training.

4.2.1 Align By-Laws

The County has initiated the development of a County-wide Waste Management by-law that will align with that of the PCCWMF. The County will work with the Townships to continue efforts to align all waste services, by supporting common by-laws and policies. The goal is to provide standardized waste management services and implementation of waste programs across the County. Alignment of services would result in increased efficiencies for service delivery, contracting, promotion and education and enforcement.

Aligning services can be anticipated to: increase awareness; reduce confusion related to programs, operations and/or materials; and, improve diversion program performance.

The proposed County waste management by-law should support activities and policies designed to increase waste diversion and preserve landfill capacity at the PCCWMF. At a minimum, the by-law should consider the following items:

- Create a formal link to the goals and targets of the WMMP
- Make direct reference to the responsibilities of the Townships and of the County and re-establish mandatory recycling

- Promote equality of services between the City of Peterborough and the County by establishing bag and bulky item limits
- Establish mandatory recycling
- Allow for seamless implementation of organics program for leaf and yard, food materials and organic collection system (Molok©) transfer
- Enhance existing waste diversion programs for residential and IC&I, improve diversion of C&D debris, MHSW and WEEE and offer financial compensation to the County for IC&I and excess residential waste (greater than 2 bags) at curbside, landfills and transfer stations
- Allow flexibility for future adjustments to waste management services
- Establish a review and update strategy/schedule
- Increase enforcement

The adoption of an aligned waste management by-law would have a direct impact on waste diversion. It is anticipated that the formal consideration of the options listed above, and a commitment to providing consistent waste management services across the County would have numerous measurable benefits.

Reduced container limit by-laws is a common method to encourage diversion in many municipalities throughout Canada. The by-law limits the number of bags or containers that each household is allowed to dispose of over a given period of time. These by-laws are implemented by waste collection services accepting only the prescribed number of bags or containers from each household, at the landfill, transfer station or curbside. The number of bags or containers allowable is designed to encourage better sorting of divertible from non-divertible waste. To conserve capacity at the PCCWMF for all users, bag limits consistent with those set by the City should be in place for all Townships in the County. A two bag or less limit was determined to be a priority initiative in the County MWRS (Cambium Environmental Inc., 2011), approved by County Council in December, 2011.

With all households expected to abide by the same limits, the idea of personal responsibility for contributing to waste diversion will be reinforced.

Applying this option is possible in the short term due to the minimal cost associated with implementation and little requirement for infrastructure or staffing upgrades.

It is anticipated that the implementation a two (2) bag limit by-law could increase the diversion rate of the County by 3% at an annual cost of approximately $0.05 per household.

4.2.2 Specific Materials Bans From Disposal

Materials bans prohibit the disposal of certain material types and can be effectively implemented at the curbside,. Enforcement of these bans is straightforward, but can be time consuming.

Prohibited material types can result from:

- provincial legislation (e.g. blue box recyclables);
- provincial stewardship initiatives (e.g. MHSW, WEEE and tires); or,
- needs of the jurisdiction (e.g. organics and C&D).

Curbside bans are often more restrictive than bans at landfills or transfer stations. Curbside bans include items such as C&D debris, wood waste and recyclables.

The timing to implement materials bans is dependent on targeted material type, and the infrastructure available to accept the influx of diverted waste. In the short term, it is feasible for the County and Townships to establish a materials ban for WEEE as handling and processing infrastructure for WEEE exists. Bans on C&D debris and tires could be achieved in the short term with a simple change to the existing by-law. Adequate promotion of all materials bans is

critical to the success of the ban. A ban on organic materials should be considered in the long term.

An organics ban in garbage has the greatest potential to influence diversion of all options evaluated; *however,* the implementation of an organics ban requires significant lead time to implement infrastructure and prepare promotions.

Planning for the implementation of an organics ban in the long term (i.e. 10 – 20 years) will allow suitable lead time to create the social and physical (infrastructure) conditions required for successful implementation.

There are a number of banned materials that are not accepted at the PCCWMF. These materials should be included in the new waste management by-law being developed by the County and member Townships, to ensure that waste disposal at the PCCWMF is consistent for all users.

Considerable enforcement and by-law support will be required in the initial stages of program implementation to affect the behaviour of change for any type of materials ban. The cost for anticipated increases in enforcement has been factored into the evaluation.

It is anticipated that material bans could increase the diversion rate of the County by 3% at an annual cost of approximately $1.20 per household.

4.2.3 User Pay

Variable / Differential Tipping Fees

Financial incentives and disincentives act as tools to change the waste disposal behavior of residents and other waste management system users. Offering incentives for the proper source separation of waste reduces the quantity of garbage being landfilled.

Variable/differential tipping fee programs are most effective when combined with comprehensive recycling and SSO programs that are established and convenient to use.

Variable/differential tipping fees can involve increasing fees for garbage contaminated by blue box materials (co-mingled waste), and decreasing fees charged for source separated, recyclable or reusable materials such as leaf and yard material, scrap metal and wood.

Differential tipping fee programs, when well understood by residents, are typically well received. Residents value the opportunity to reduce the cost of waste disposal based on their diversion efforts. Charging lower fees for properly separated divertible materials encourages people to reduce the amount of garbage sent to the landfill. Increased diversion of materials such as scrap metal, wood and some other C&D debris can create opportunities for recovery and reuse of these materials on an economically feasible scale.

Disincentives can include an increase in cost to dispose of difficult to manage materials and poorly or non-separated garbage. The higher fee can be applied toward the true cost of handling and disposing of these materials, offsetting some costs that are typically borne by the County or Townships.

Differential tipping fees may assist subsidizing the Townships' collection and haulage costs and the County's disposal costs.

Pay-as-you-throw System and Sustainable Financing Strategies

Pay-as-you-throw (PAYT) has the potential to have a two-fold positive impact on waste diversion by reducing waste generation and increasing the performance of existing waste diversion programs. Some jurisdictions have observed dramatic performance increases using PAYT type programs.

PAYT and sustainable financing options include a number of methods available to charge residents and waste management system users a variable fee depending on their use of the

system. Financing strategies can be used to promote waste diversion, including: full or partial bag tag systems; variable and hybrid rates; pay by collection frequency; variable cart rates; and, weight based waste collection. They can be carried out in a number of ways from a very basic bag tag approach to a high-cost, high capital cart system. A partial user-pay strategy can be tailored to suit the needs of the jurisdiction and may consist of a container or bag limit and bag tags for additional garbage. In this scenario, excess bags would be accepted only if tagged. PAYT systems can be expected to result in the diversion of additional material through the blue box and eventual organics programs.

The County could also consider revising the current property-tax based funding approach for municipal waste management system to a more sustainable financing structure, such as a full user pay system. An example of a full user pay system for waste is the County of Wellington. There is no bag limit but there is a fee for every bag of garbage picked up at curbside or dropped off at a waste facility. This system provides a fair method of charging for garbage services. The full user pay system is administered through the purchase of special County of Wellington issued bags required to be used for curbside collection. Any item which does not fit within a user pay bag will not be collected. Larger items may be taken to any County of Wellington waste facility where a tipping fee applies. The full user fee system encourages people to practice the 3Rs (Reduce, Reuse, Recycle) and gives them some control over how much they want to spend on their garbage each week by diverting more or less waste, or by altering purchasing decisions to buy less non-divertible packaging.

The results of a study completed by Stewardship Ontario indicate that implementing a successful sustainable financing system for waste management is achievable and is considered to support waste diversion policies (Stewardship Ontario, February 2009a). The County and Townships should consider conducting a feasibility study to determine the most equitable way to charge for waste management services. The fees generated by a PAYT or sustainable financing system would provide long term sustainable financing for the waste management system. An annual administration cost of approximately $1 per household for a basic system could be incorporated into the user pay fees.

It is anticipated that a PAYT system could increase the diversion rate of the County by 3% and the cost could be completely covered by user pay fees.

4.2.4 Building Permit Waste Reduction Plans

Preparation of waste reduction plans during project planning for development, demolition and construction projects has the potential to contribute significantly to the diversion of C&D debris and to promote the responsible management of waste. A Construction Waste Reduction Program would encourage applicants seeking a building permit to meet or exceed the 60% waste diversion target. Applicants seeking a building permit would be required to review a guidance document provided by the Townships with input from the County, and then complete a Project Waste Reduction Summary. The summary would outline the types and amount of waste that would be recycled from the project.

The following materials would be the focus of Construction Waste Reduction Programs:

- Scrub & Brush
- Concrete & Masonry
- Asphalt
- Wood Products
- Drywall
- Metal (includes appliances)
- Asphalt Shingles
- Cardboard
- Ceramics (sinks and toilets)

At the discretion of the Townships, these plans could be a requirement for all sectors, or applicable only to larger scale projects. A program of this type is intended to allow for accurate tracking of C&D debris quantities and to promote recycling and reuse of C&D debris where possible and at the source. This initiative should be implemented over the medium term, since adequate time would be required to prepare the guidance document and to establish the infrastructure and long-term stable markets required to divert large amounts of C&D debris.

The cost for this program could be covered by charging a review fee for each Project Waste Reduction Summary submitted, or through a slight increase to the building permit application fee.

It is anticipated that a requirement for building permit waste reduction plans could increase the diversion rate of the County by 5%. The cost for plan development and review would be paid directly by the applicant.

4.2.5 Policy Approaches - Summary of Strengths and Challenges

All of the options evaluated to design and implement policy approaches to support waste diversion have a unique set of strengths and challenges as outlined in the table below.

Option	Strengths	Challenges
Align Services, Policies, By-laws	• Reduce confusion surrounding divertible/recyclable materials • Consistent message across County • Formal support of waste diversion initiatives	• Diversion rate measurable
Reduced Limits for Garbage	• Promotes equity among households and Townships • More accurate estimates of residential waste are possible • Low cost • Generates funds for Townships (bag tag fees for additional bags)	• Staff time • Enforcement at all levels
Enforcement	• Effective • Impacts directly on residents to change behaviour	• Staff time • Mixed acceptance by public • Support required at all levels • Potential increase in roadside dumping
Curbside Materials Bans	• Can be tailored to a variety of materials • Effective for improving diversion • Low cost	• Increases enforcement and staff costs • Initial reluctance from public
Landfill/Depot Material Bans		
Variable/Differential Tipping Fees	• Resident has some control over fees (i.e. can alter behaviour to be charged less for disposal) • Positive influence on diversion behaviour	• Most effective when combined suitable diversion options

Option	Strengths	Challenges
	• Ability to offset disposal and processing costs for difficult to manage materials	
Pay-as-you-throw and Sustainable Financing Strategies	• Can significantly increase diversion • Well received by public • Variety of options for flexible implementation	• Staff time for implementation and management
Building Permit Waste Plans	• Promotes responsible management and reuse of C&D • Effective for tracking C&D	• Staff time • Mixed acceptance by public and industry

4.3 Promotion and Education Strategies to Increase Diversion

Well-designed Promotion and Education (P&E) programs lead to higher resident participation rates, improved collected material quality, lower residue rates and increased customer satisfaction, according to the Blue Box Program Enhancement and Best Practices Assessment Project Final Report (KPMG, 2007).

To increase the current diversion rate and to decrease the amount of waste sent to landfill, the County requires ongoing P&E. The County has an annually updated active P&E Strategic Plan, developed for the years 2010-2013. The strategic plan outlines historical, current, and future promotions that aim to assist diversion activities. An update to the strategic plan should be completed to cover years beyond 2013, and should be based on the recommendations provided in this WMMP. The Greater Peterborough Area Community Sustainability Plan (Sustainable Peterborough, March 2012) contains several ideas for P&E to reduce waste and increase waste diversion.

The purpose of P&E programs is to encourage proper solid waste management practices within the County, including waste awareness, source reduction, and ultimately waste

diversion. This is achieved by increasing citizens' knowledge of local waste management options and their costs and benefits.

Funding for P&E programs can be subsidized by provincial and private stewardship programs. It is important to note that the P&E program in the County is partially reliant on funding from these sources. The success of the P&E program into the future may be influenced by the continued ability to acquire this type of funding.

4.3.1 Ongoing General P&E

General P&E includes the use of existing County, public or provincial tools and resources to promote waste diversion. Examples of resources that can be promoted to residents to encourage participation in waste diversion initiatives include:

- Websites: County, Townships, waste management companies, blogs, social networking sites
- Educational Resources: Recyclopedia, schools programming, My Waste App
- Media: advertisements, articles, press releases, radio and TV spotlights, flyers, posters, road side signage
- Promotional Materials: permanent and mobile signage, brochures, stickers/labels, containers, calendars

These promotional resources and materials can be focussed toward the topic of waste diversion in general, or can be directly related to problematic or valuable materials (i.e. addressing blue box materials contamination or increasing the diversion of recyclable plastics). Continual modification to the delivery of P&E messaging is required to maintain the interest of the public. Ongoing P&E for existing programs will continue through a variety of methods throughout the active life of each program.

Costs associated with ongoing general P&E are already included in the County annual budgeting process and equate to an annual cost of $1 per household.

4.3.2 Recommended Future P&E Campaigns

New programs require a focussed and well-designed P&E campaign to gain the interest and participation of the public.

The County and Townships should coordinate their P&E materials in order to maximize resources and time, and to deliver a consistent waste reduction message to the community.

Several smaller scale initiatives were explored to assist with increasing waste diversion in the short-term including:

- Increase participation of County staff in attending community events and association meetings (e.g. cottage and agricultural association meetings etc.).
- Improve one-to-one interactions with residents through surveys and focus groups.
- Develop and implement reward programs for residents that participate in the recycling program using approaches such as financial rewards, media recognition, or awards ceremonies.
- Increase training of County and Township staff, through attendance at workshops and industry events to gain valuable information to apply to local waste management.
- Enhance the promotion of MHSW collection locations and events with the goal of achieving increased traffic to seasonal collection locations (i.e. transfer stations).
- Provide tools to increase participation in SSO programs (leaf and yard and food materials) to maintain and/or increase tonnages.
- Active promotion of the benefits of backyard composting which may include the use of incentives (e.g. installation program) to increase participation.

- Implement a new program for collection of leaf and yard materials at the curbside, landfills and transfer stations.

Slightly more involved campaigns are proposed to be initiated in the medium term, including:

- Implement green procurement policies at municipal facilities, which would include the consideration for resource sustainability, environmental impact, waste reduction and local production in municipal purchasing decisions. Green procurement policies can include sourcing and using environmentally friendly products in the work place, such as natural cleaning supplies, biodegradable bags and 100% post-consumer recycled paper.

Small to medium scale enhancements to P&E over the short and medium term could increase the diversion rate by up to 5% at an annual cost of approximately $2 per household.

4.3.3 Promotion and Education - Summary of Strengths and Challenges

All of the options evaluated to design and implement P&E to support waste diversion have a unique set of strengths and challenges listed in the table below.

Option		Strengths	Challenges
Ongoing General P&E		• Reach a broad audience • Flexible presentation • Cost effective • Support for waste diversion programs	• Preparation of materials is time intensive • Cooperation between County and Townships • Some “hard to reach areas” • Materials may become dated quickly
Recommended Future P&E Campaigns	Increase Interaction Between County and Public	• Become more approachable • Increase dialog flow	• Staff time
	Reward Programs	• Increased interest • New residents participation	• Financial costs • Ensuring uptake
	Training	• Learn new and innovative ways to help reduce waste	• Costs associated with training
	Increase Participation in Existing Programs (MHSW, SSO, leaf and yard, backyard composting)	• Increase participation in existing programs will result in increased waste diversion • No increase in infrastructure required	• Staff time • Cooperation between Townships
	Green Procurement	• Set a positive example • Closing the loop on programs	• Costs may be higher than traditional • Finding “green” products that perform as well as traditional
	New Program for Leaf and Yard	• Greatest potential for increase in diversion at lowest cost • Beneficial end product	• Effective promotions • Staff time • Additional vehicle usage • Cooperation with Townships • Competition with local service providers

4.4 IC&I Waste Diversion Strategies to Increase Diversion

IC&I waste is made up of mixed materials in unpredictable quantities, and is dependent on regional economic activity, local industry, manufacturers and the business community. The majority of IC&I waste is composed of recyclable or compostable material, with 67% of the waste comprised of mixed paper, corrugated cardboards, food waste, plastics and ferrous metals. IC&I waste also includes waste generated in the agricultural sector.

> Regardless of policies and regulations, it is estimated that the IC&I sector produces as much as 55% of Ontario's waste and has an estimated diversion rate of 20%.

IC&I waste does not meet the waste diversion target of the County, or the existing average waste diversion rate and consumes a large amount of landfill capacity annually.

Few details are known about the IC&I sector waste habits in the County; however, it is known that an undetermined quantity is received at Township landfills and transfer stations and then transferred to the PCCWMF. Thus, it should also be noted that Townships, transferring mixed waste loads (residential and IC&I) to the PCCWMF, currently do so at no cost (i.e. tipping fees). The remainder is expected to be disposed of outside of County boundaries, possibly in Michigan and New York States as well as private sector landfills in Ontario. Some Townships are more restrictive than others in the acceptance of IC&I waste. Townships that collect IC&I materials should handle and haul IC&I independently of residential waste to allow for better tracking of this waste type.

The IC&I waste stream should be considered in waste management planning. It is not feasible for the County to handle IC&I waste in the same manner that residential solid waste is handled, due to implications on disposal capacity and waste diversion rates, which can be greatly influenced by the large quantities of IC&I materials. It is advantageous for the County and Townships within it, to develop strong relationships with IC&I waste generators, and to encourage a culture of waste reduction and diversion.

There are several policies and programs in place in Ontario that could target IC&I waste for increased diversion. Five (5) regulations, referred to as the 3Rs Regulations, were made under the Environmental Protection Act in March 1994 to promote waste diversion among designated IC&I and C&D generators:

- Ontario Regulation 101/94: Recycling and Composting of Municipal Waste; amended by O. Reg. 251/11.
- Ontario Regulation 102/94: Waste Audits and Waste Reduction Workplans
- Ontario Regulation 103/94: Industrial, Commercial and Institutional Source Separation Programs; amended by O. Reg. 230/11.
- Ontario Regulation 104/94: Packaging Audits and Packaging Reduction Workplans
- Ontario Regulation 105/94: Definitions (Amendments to Regulation 347); amended by O.Reg. 234/11.

Several options were explored to increase waste diversion in the IC&I sector. For any diversion program to be successful, a considerable commitment of resources (staffing and equipment) to support these initiatives would be required at the County and Township level. The table below illustrates the IC&I strategies evaluated:

Strategy Category	Option Name and Description	Preferred Option	Timeline
IC&I Recycling and Diversion Programs	Build IC&I Database	✓	M
	IC&I Working Group	✓	M
	Enhancing County's Website	✓	M
	Promotion and Support for IC&I Recycling Program Strategies	✓	L
	Designated Goods Diversion (e.g. MHSW, WEEE)	✓	L
	Waste Diversion/Reduction Plans	✓	L
	SSO Implementation	✓	L
	Two-tiered Waste Rates with Preference to Recycling IC&I's	✓	L

Strategy Category	Option Name and Description	Preferred Option	Timeline
	Feedback to Participants	✓	L
	Penalties Targeting IC&I	✓	L
	Termination of Service for Failure to Recycle	✓	L

Note: M = Medium term, L = Long term

All options evaluated are considered to be applicable to the County, and Townships would benefit from reviewing the options for applicability to implementation in each jurisdiction. It is recommended that all Townships in the County consider the implementation of one to several of the IC&I diversion options in the long term.

The following is a brief description of each of the options evaluated:

- Build IC&I Database – A database would be designed to manage and monitor IC&I waste. Information on applicable programs would be easily accessed to provide relevant program information to IC&I participants.
- IC&I Working Group – The County would lead the establishment of a focus group to meet on a regular basis to discuss waste diversion challenges and strategies in the IC&I sector.
- Enhancing County Website – Enhancements to the County Waste Management webpage would include a section dedicated to IC&I waste management and diversion matters. Information provided may include case studies, green rental information, a waste diversion handbook and waste diversion tips.
- Promotion and Support of IC&I Recycling Program Strategies – A targeted P&E strategy would be developed for IC&I, which would provide support and tools to optimize recycling opportunities.
- Two-Tiered Waste Rates with Preference to Recycling IC&I Participants – Businesses and institutions with recycling and/or other diversion programs would receive lower waste

disposal rates than those without diversion programs. A variation on this initiative would be to provide preferred rates based on positive performance in waste diversion programs.

- Designated Goods Diversion – Specific collections programs would be proposed for small IC&I participants to encourage the diversion of designated goods for recycling and/or reuse.
- Waste Diversion/Reduction Plans – All businesses and institutions must complete diversion/reduction plans that would be submitted to the County for review and approval.
- SSO Implementation – Implementation of SSO programs within the IC&I sector to be consistent with municipal residential program requirements.
- Feedback to Participants – Visual representations (i.e. barometers) would be provided to IC&I participants to illustrate successes and shortcomings in the areas of recycling and waste diversion. Penalties Targeting IC&I – Financial penalties could be instated for poor performance in waste diversion programs, or for failure to meet recycling or compostable material targets.
- Termination of Service for Failure to Recycle – Businesses or institutions that fail to meet recycling program objectives may be refused municipal garbage collection and landfill service. Participation in waste diversion programs, such as recycling, would be mandatory for municipal waste collection and landfill or transfer station service.

Through the implementation of a well-tailored IC&I waste diversion program, it is anticipated that waste diversion in the IC&I sector could be increased significantly. While IC&I waste is not technically included in the residential diversion rate, an undetermined quantity of IC&I waste enters the PCCWMF within the materials transferred from the Townships. Removal of this IC&I waste from the residential waste stream would both decrease the per capita waste generation rate in the County, and would increase the diversion rate. It is recommended that an audit or investigation of the quantity and composition of waste generated by the IC&I sector be completed and that tracking of IC&I waste from the Townships be recorded.

It is assumed that a modest increase in diversion from the IC&I sector could increase the diversion rate of the County by 5% to 10%. The costs for implementation cannot be determined at this time due to limited knowledge of the quantity and characteristics of IC&I waste in the County.

4.5 Monitoring and Reporting Diversion Strategies

Monitoring and reporting on the status of waste management and the success of waste diversion programs will allow for adjustments to be made over time to ensure that maximum diversion potential is being realized.

The table below illustrates the monitoring and reporting strategies evaluated. All three strategies evaluated were determined to be suitable for the County based on the pre-determined criteria. The three strategies should remain in place in the short term to track and evaluate the progress of the County and Townships toward waste diversion goals and objectives.

Strategy Category	Option Name and Description	Preferred Option	Timeline
Monitoring & Reporting	**Audit** to confirm waste composition and available material for recovery	✓	S
	Report results annually to Townships and County	✓	S
	Feedback to residents on a specific activity or areas of improvement	✓	S

Note: S = Short term

Auditing, reporting and feedback work together to determine the success of the County and Townships in achieving the waste diversion target of 60% set by the Province and adopted by the County.

Regular waste audits should be completed at representative locations in each Township to confirm waste composition and to determine the quantity and type of divertible materials

remaining in landfilled waste. The following benefits will be provided by completing waste audits:

- Audits provide valuable data that is used to guide waste diversion initiatives, including P&E campaigns to target the remaining materials;
- Results of the waste audits can be presented to the County and member Townships so that all parties are aware of the status of waste management and diversion within the County as a whole;
- Increased knowledge will lead to increased efficiency in the management of waste for all parties;
- Valuable feedback can be provided to residents on the success of their waste diversion efforts with the objective of resolving short-comings in the diversion program (such as contamination of recycling bins with non-recyclable material).

Regular monitoring and reporting over the short term is expected to have a positive influence on the waste diversion rate of the County. Costs will vary depending on the type and frequency of audit and the methods chosen to relay the gathered information to the public, and whether the County conducts the audits and reporting using internal staff or contractors. Historically the County has also received external funding to complete these tasks, and such funding may be available periodically in the future.

4.6 Anticipated Diversion and Associated Costs

There are many options available to increase waste diversion in the County and the Townships will have some flexibility to choose the most suitable options for their area. Gains in waste diversion will be easier to attain using a cooperative approach, including the proposed aligned Waste Management By-law and other partnerships between the Townships and the County. Simple modifications to existing operations, in the form of improving site access, signage and providing consistent service availability throughout the County will increase the efficiency of site use and operations.

The greatest gains to waste diversion will be realized by increasing the capture of leaf and yard material and C&D debris. These two initiatives offer the greatest value by increasing the waste diversion rate by 12.9% at a cost of $7 per household combined.

Several key goals should be considered as the driving force of the need for an increase in waste diversion, including;

- preserving waste disposal capacity at the PCCWMF and other active landfills;
- providing up to date and accessible services for residents;
- increasing the efficiency of the waste management system; and,
- generating opportunities for cost savings.

The following table includes a list of the preferred waste diversion options, as determined through the evaluation of all options discussed in Section 4.0. The options have been ordered according to the projected implementation timeline (i.e. short-, medium-, and long-term) and then by greatest to least potential for increased diversion.

Option Name and Description	Increased Diversion Potential (%)	Annual Net Cost Per Household	Implementation Timeline
Leaf and Yard Material Collection	9.2%	$6	**S**
C&D Collection	3.7%	$1	**S**
Align Services, Policies, By-laws (bag limit)	3%	$0.05	**S**
Stronger Enforcement	1%	$0.40	**S**
WEEE Collection	1%	$1	**S**
Back Yard Composting	<1%	$0.22	**S**
“Environment” and Seasonal Days	1%	$1.50	**S**

Option Name and Description	Increased Diversion Potential (%)	Annual Net Cost Per Household	Implementation Timeline
Ongoing General P&E	0%	$1	**S**
Monitoring and Reporting (audit, report, feedback)	<1%	$0	**S**
Recommended Future P&E Campaigns	5%	$2	**S-M**
Re-use Centres and Events	1%	$1	**S-M**
Blue Box Recyclables Collection (special events, public spaces and multi-residential research)	1%	$1	**S-M**
MHSW Collection (permanent facility, events, multi material drop off at transfer stations)	0.5%	$5-$6.50	**S-M**
Specific Materials Bans (curbside, landfill and transfer station)	3%	$1.20	**S-L**
Building Permit Waste Reduction Plans	5%	OBP	**M**
Standardized Depot Operations	5%	$1-$3	**M**
Goods Exchange Events ("Swap Days")	1%	$1	**M**
SSO Collection (additional transfer station locations and curbside)	11.1%	$45-$95	**M-L**
IC&I Waste Diversion	5%-10%	TBD	**M-L**
Curbside Collection Frequency	3-7%	7% savings	**L**
User Pay (PAYT and Sustainable Financing Strategies)	3%	OBP	**L**

Note: S = Short term; M = Medium term; L = Long term; OBP – offset by program

The average waste diversion rate for the County was 39.4% in 2010; therefore, each Township needs to increase their diversion rate by a minimum of 20% over the next 20 years to meet the 60% waste diversion target.

As noted in Section 4.0, many of the diversion strategies presented overlap in terms of content and overall impact on the diversion rate. The maximum diversion rate anticipated to result from each strategy has been presented; however, it should be noted that actual gains in waste diversion will be lower than the combined maximum increase in diversion presented, in instances where the strategies overlap. For example, the sum total of the increased diversion potential presented in the table above is greater than the actual diversion that would be achieved if all options were implemented, because overlap between strategies was not considered. Overlap was not considered to allow each of the Townships flexibility in determining the most suitable diversion options for their jurisdiction, independently of all other options.

Through the implementation of a number of the preferred options presented above, each Township will be well positioned to meet the waste diversion goals and objectives of the County.

The list of preferred options presented in the table above has been compiled based on the most suitable options as determined through the evaluation, as well as the recognized need to provide a variety of options to meet the diverse requirements of each Township in the County. While the goal is to achieve 60% diversion over the long-term, it is recommended that all Townships begin to work toward this target in the short-term, with the implementation of several short to medium-term options that are well suited to particular waste management circumstances.

5.0 Disposed Waste Options

Notwithstanding current efforts to divert waste from disposal, and the potential to increase diversion in the future, the County will still need to manage the materials that cannot be diverted. To implement many of the solid waste disposal options discussed, the County will be required to follow a provincial environmental assessment process (individual or screening), depending on the option selected. The environmental assessment process can also be used to assist in determining the most suitable option for disposal.

The County and City facility currently has sufficient landfill capacity to meet disposal needs for the next 12 to 15 years; however, landfill capacity is a limited resource and the County will eventually need to find and/or develop resources in order to manage future disposed materials.

As part of the public consultation process, a survey was distributed to residents on the County website, at landfills and transfer stations, and at information centres to determine the public opinion on the preferred waste disposal method for the County. Respondents to the WMMP survey ranked several options to manage solid waste. A summary of the survey responses can be found in Appendix A.

The following is an ordered list of the preferred options, from most to least preferred, as derived from public opinion. It should be noted that factors such as economic and environmental objectives or social acceptability were not used to prioritize the options presented below:

1. increased waste reduction as a method to preserve landfill capacity;
2. thermal combustion with the potential for energy generation;
3. expanding the existing landfill; and,
4. waste exportation.

Although increased waste reduction to preserve landfill capacity was the publically preferred option, it will not provide disposal needs for the County in the long-term; therefore other options need to be explored. To prepare for filling the existing disposal capacity at the PCCWMF, the County will be required to complete an EA under the Ontario Environmental Assessment Act (EAA) to gain additional disposal capacity, or to manage residential waste in an alternative way (i.e. thermal treatment, waste exportation). The County intends to move forward with the EA process in partnership with the City to determine the most suitable option for waste disposal for both jurisdictions into the future. All disposal methods referenced in the categories below would be considered under the same individual EA to determine the most suitable option for the County and City.

The disposal methods and/or technologies available to the County include the following general categories:

- Do Nothing - continuation of the current practice with no changes.
- Status quo – continuation of the current practice with increased waste reduction.
- Thermal technologies with the potential for energy generation (energy from waste) – site and construct a thermal facility (e.g. incineration, gasification, plasma) within the geographic boundaries of the County to provide long-term disposal. Development of a thermal treatment facility would require an Environmental Compliance Approval (ECA), the completion of an EA and possibly Planning Act Applications (Official Plan and Zoning By-law amendments).
- Landfill - through either a capacity expansion at the existing facility or construction of a new site; would require an amendment to the ECA to provide long-term disposal capacity within the geographic boundaries of the County, the completion of an EA and possibly Planning Act Applications (Official Plan and Zoning By-law amendments).

- Export through contract with private sector and/or public sector – contracted use of private sector or other municipal disposal options (landfill or thermal combustion) outside the County over the long-term.
- Alternative waste disposal methodology – review and evaluate alternative methods including landfill mining, anaerobic digestion and partnerships with surrounding municipalities.

A description of each of these methods or technologies is provided in the sections below. A summary of the strengths and challenges associated with each of the options is included in Section 5.7.

5.1 Do Nothing

It is common practice in an EA process to include the "do nothing" alternative as a base case. This alternative identifies what would happen if the County did nothing to respond to its future waste disposal needs.

The County will run out of landfill disposal capacity in 12 to 15 years' time. The "do nothing" alternative would mean that the County would not provide waste disposal beyond current landfill capacity. However, the County has been mandated through By-law #21-1991 to provide disposal options for all Townships; therefore, the "do nothing" option is not an actual option for the County.

5.2 Status Quo

The status quo method is a continuation of the existing disposal practice with increased waste reduction. Waste collection is managed by each Township either through curbside and/or transfer station collection. Some material is landfilled locally in the Townships; however, the majority is transferred to the PCCWMF for disposal.

As of 2010, the PCCWMF will provide adequate waste disposal capacity for the County and City of Peterborough for an estimated 12 to 15 years, based on an assumed annual waste

disposal rate of 60,000 tonnes (City and County combined) and an assumed apparent waste density of 0.65 tonnes/ m^3 (Genivar and Urban & Environmental Management Inc., 2011). The assumed annual waste disposal rate noted above includes waste from all sources, including residential and IC&I waste.

If the County and City combined were to meet the 60% diversion rate for residential waste (an additional 20% and 10% respectively) it is estimated that the life of the PCCWMF could be extended one additional year.

Additional, but modest, life could be gained with the combination of other waste diversion options noted in the previous section including overall waste reduction and addressing C&D debris and the IC&I sector.

5.3 Site and Construct Thermal Treatment Facility

Construction of a thermal treatment facility offers the best potential to eliminate or minimize the amount of waste destined for landfill. Thermal treatment includes a range of technologies that can be generally grouped into two (2) main categories: conventional combustion and advanced thermal treatment. Thermal treatment of waste would be used to manage the remaining waste stream after source-separated diversion of recyclables and organics.

Thermal processes could reduce demands on landfill capacity by 75% or more.

Based on recent industry activity in Ontario and facilities operating in other jurisdictions, it is evident that this alternative may be commercially and technically feasible for the County.

5.3.1 Current Thermal Treatment Technologies

The most common energy-from-waste (EFW) technology used to treat municipal solid waste (MSW) is:

- Conventional combustion

Conventional combustion is the most widely and successfully used EFW technology because it has been developed and tested over many decades which has led to: higher conversion efficiencies; lower maintenance; higher reliability; and, reduced emissions.

Several additional advanced EFW technologies are being used to treat a portion of the waste stream (i.e. biomass such as wood waste, leaf and yard waste, biosolids and wastewater treatment residues), or are in the experimental phase for treating mixed refuse in North America (Stantec, 2011). These technologies include:

- gasification,
- pyrolysis, and
- plasma arc gasification.

The applicability of any EFW treatment technology is heavily influenced by a number of factors including: municipal, provincial and federal legislation and policies; climate; and, waste composition and quantity. For any EFW technology to be suitable for the County, its effectiveness should be previously proven in North America. Further description of each technology is provided below.

Conventional Combustion

Conventional combustion technologies are well established in North America and many facilities have been upgraded with enhanced pollution control technologies to meet stringent air emission regulations. These types of upgrades are a fact of operating any thermal technology and must be accounted for and maintained when planning such a facility.

Conventional combustion technologies include:

- single-stage combustion (mass burn incineration);
- two stage combustion; and,
- fluidized bed combustion.

Aspects of conventional combustion that should be considered when selecting this type of facility include:

- With all combustion technologies, steam is generated that may be used for electricity production and/or heating.
- The bottom ash from conventional combustion technologies is usually processed to recover metals for recycling, is non-hazardous, and can be used as landfill cover. In some jurisdictions the bottom ash can be converted into products for the construction industry. Recent advancements have seen bottom ash used as an additive to asphalt, reducing or eliminating the dependence on landfills to dispose of this material.
- 'Fly ash' is generated and is typically treated or disposed at a facility designed and approved to receive hazardous waste. There is the potential to reduce the toxicity of fly ash, so that it can be used in asphalt and other construction projects, if it is permitted to be mixed with bottom ash and tested for toxicity before use.
- Facilities must meet Ontario's emissions standards (MOE Guideline A-7).

Canadian examples of conventional combustion technologies treating MSW include:

- Charlottetown, P.E.I.
- Sydney, N.S.
- Quebec City, Que.
- Wainwright, AB
- Region of Peel, ON
- Greater Vancouver Regional District, B.C

It should also be noted that although not yet in operation, the Durham York Energy Centre project has received both EA and EPA approval and is in the construction stage with an expected operational start time in 2014.

Gasification

Gasification involves the partial oxidation of a substance. There are three primary types of gasification technologies used to treat waste:

- fixed bed;
- fluidized bed; and,
- high temperature.

Of the three types of gasification technologies, the high temperature method is the most widely used. The temperatures employed are typically above 2,000ºC.

Gasification produces a bottom ash and synthetic gas (syngas).The syngas can be burned in a boiler to generate steam, which can be used to generate electricity or to heat the facility. The syngas can also be used as a liquid fuel in a gas engine.

Enerkem Technologies Inc. of Montreal, Que., has built a demonstration gasification unit in Sherbrooke, Que., modelled on a full-scale unit existing in Spain. The Sherbrooke unit employs fluidized bed technology and is being used to drive a hydrogen fuel-cell for electricity production.

Pyrolysis

Pyrolysis is thermal decomposition at high temperatures in the absence of oxygen. It requires an external heat source to maintain the temperature required, typically of between 300ºC and 800ºC for municipal solid waste.

The end product is a mixture of solids (char), liquids (oxygenated oils), and gases (methane, carbon monoxide, and carbon dioxide). Similar to conventional combustion, bottom ash and syngas result from the process. The condensable fraction of the syngas can be collected through cooling, potentially for use as a liquid fuel. Gases produced can be utilized in a separate reaction chamber to produce thermal energy which can then be used to produce steam for electricity production.

The pyrolysis of solid waste has not been successful due to the inherent complexity of the system, and difficulties associated with producing a consistent feedstock. There are no known pyrolysis based WTE treatment facilities processing municipal solid waste in North America.

Plasma Arc Gasification

Plasma arc gasification converts organic matter into syngas by using plasma processing. Currently, plasma arc gasification is not commercially proven to treat municipal solid waste. There are no large scale commercial plants operating in North America or Europe at this time. Two technologies which are currently being pilot tested in Canada are the Alter NRG process (proposed in Dufferin County) and the Plasco process (Ottawa).

5.3.2 Emerging Thermal Treatment Technologies

The thermal treatment industry has changed in recent years due to an increase in new technologies. Many of these technologies have yet to be proven, and an understanding of associated costs is limited. A list of the known new thermal treatment technologies is provided below.

- Gasplasma
- Thermal Oxidation
- Kearns Disintegration System
- Thermal Cracking
- Waste to Fuels
- Steam Reformation

These options can be further explored, if determined to be feasible, during the future waste disposal EA.

5.3.3 Key Considerations for Thermal Treatment Options

Key aspects in considering the thermal treatment option would be centred on developing a solid waste thermal combustion facility within the County. Consideration of the following items would be necessary:

- assess the status of new technology facilities in Ontario, Canada and North America;
- identify a location for the facility within the County through an environmental screening process (ESP) under the EAA;

- address possible Planning Act Applications (e.g. Official Plan and Zoning By-law amendments)
- waste importation from other municipalities would be required for the operation of the facility to be economically sustainable;
    - alternatively, IC&I waste could be used as feedstock, which could result in a partnership or agreement with other municipalities or large industries;
- energy and steam generated would result in revenues to off-set costs; and,
- the combustion facility would be required to meet applicable Ontario standards for air emissions.

Cost estimates for disposal systems incorporating thermal technologies to process waste at a scale of 10 tonnes to up to 1,000 tonnes per day range from $100 to up to $450 per tonne. Combined annualized capital and operating costs (net of recovered energy revenue) for thermal treatment facilities with capacities for 25,000 households range from $125 to $150 per tonne of waste processed, estimated over a 25-year capital payback period (FCM, March 2004).

The minimum time frame to complete all required studies and acquire the necessary approvals is in the range of 5 – 8 years. Depending on complexity, an additional 2 – 3 years can be expected to complete the construction of the facility.

5.4 Continued Landfilling

5.4.1 Expand Existing Landfill

Expansion of the capacity or footprint of the existing landfill would be subject to major studies, municipal and provincial approvals and possibly federal approvals. The intent of the studies and approvals is to make sure that the expansion, and subsequent operation, does not have a negative impact on the environment. Components of the environment considered in the

required studies include natural, cultural, social and economic aspects. The following major studies and approvals would be required, at a minimum:

- An individual EA must be completed and then approved by the province under Part II of the EAA and Ontario Regulation 101/07 Section 2(1)1; and,
- Approval under the Environmental Protection Act (EPA) and Ontario Regulation 232/98, related to landfill site investigations and design.
- Potential Planning Act Approvals (e.g. Official Plan and Zoning By-law amendments)

The cost to expand an existing landfill is estimated to range from $5,000,000 to $10,000,000, depending on the size and characteristics of the proposed development area. The time frame to complete all required studies and acquire the necessary approvals is in the range of 5 – 8 years. Operational costs would be expected to be similar to current costs.

5.4.2 Construct New Landfill

The development of a new landfill (greenfield site) within the geographic boundaries of the County would be subject to the same approval requirements as a landfill site expansion as detailed in Section 5.4.1. Due to the change in land use for a new waste disposal site, additional planning requirements of the County would need to be met (change in land use designation and zoning amendments).

The EA undertaken would be similar to one prepared for an expansion scenario, with additional effort related to site characterization including hydrogeology, hydrology, air, noise, traffic, and natural heritage due to the greater potential for negative impacts to the environment associated with a change in land use.

A greater degree of public resistance is also encountered with the establishment of a new landfill; therefore, additional time and resources would need to be dedicated to public relations.

The cost to construct a new landfill is estimated to range from $6,000,000 to $12,000,000, depending on the size and characteristics of the proposed development area. The time frame to complete all required studies and acquire the necessary approvals is in the range of 5 – 8 years. Operational costs would be expected to be similar to current costs.

5.5 Waste Exportation

Waste exportation relies on the waste disposal capacity offered by the private sector or another municipality located outside of the County. Wastes could be transported to a location within Ontario or the United States (i.e. New York). In 2010, the MOE and the State of Michigan signed an agreement eliminating cross border haulage and disposal of residential waste from Ontario, which came into effect on December 31, 2010.

The key aspects in considering this option are:

- A minimum contracted disposal of 15,000 tonnes per year would be required for County residents alone.
- The County would have little control over the ultimate disposal of the waste, which may be contracted to a thermal combustion facility or landfill.

Opportunities currently exist to export waste to privately owned disposal facilities in Ontario. Options in Ontario that could accept waste from the County without the need for amendments to existing approvals include:

- Lafleche landfill in Moose Creek near Cornwall;
- Walker Industries landfill near Thorold;
- Navan and Carp landfills near Ottawa; and,
- more distant options in southern Ontario including Waste Management of Canada Twin Creeks landfill near Watford, the Petrolia landfill and Blenheim landfill.

All other sites, private or municipal, within Ontario would require some form of approvals to expand their service area. Additional options still remain in the United States although the

status and practicality of exporting municipal waste to landfills in the United States for the long term is unknown.

Costs associated with waste export are dependent on hauling distances and landfill tipping fees and can range between $90 and $135 per tonne

5.5.1 Existing Options for Waste Exportation to Thermal Treatment Facilities

In June 2011, the Regions of Durham and York received approval for the development of an energy from waste (EFW) facility in Clarington, Ontario.

- The proposed facility will be capable of processing 140,000 tonnes of waste annually and is targeted to commence operations in 2014 (Region of Durham and Region of York, 2012).
- The facility is currently approved to receive only wastes generated within the Regions of Durham and York; therefore, an amendment to the approvals for the facility would be required to allow receipt of waste from the County.
- In 2007, staff of the County and City had been involved in detailed discussions with the Region of Durham related to the possible partnering of these municipalities with respect to disposal of waste materials from the PCCWMF at the proposed Durham York EFW facility. Due to the initially reported high tipping fees of $150 - $170 per tonne for the EFW facility, the County chose to follow a recommendation to discontinue negotiations with the Region of Durham related to involvement with this option at that time.

A thermal treatment facility is located in Brampton and is owned by the Algonquin Power Company.

- It processes 500 tonnes of non-recyclable materials per day, including municipal solid waste, which results in the production of a maximum of 15 megawatts of electrical energy.

- The facility is currently approved to receive wastes generated within the Province of Ontario.
- Costs associated with utilizing this facility are not known at this time, and would need to be explored.

Plasco Energy Group Inc. has been operating a waste gasification facility in Kanata, Ontario. Initially a pilot project, the City of Ottawa has recently agreed to a 20 year commitment to supply the facility with waste.

- The Certificate of Approval for this facility currently allows for a throughput of 85 tonnes of waste per day (Plasco Energy Group, 2011). Under the arrangement, Plasco would take 300 tonnes of waste per day, processing it into burnable gas and slag, for $83.25 per tonne in the first year, and increasing with inflation beyond that time.
- Costs associated with the County utilizing this facility are not known at this time, and would need to be explored.

5.6 Alternative Solutions

Landfill Mining

Landfill mining, reclamation and reuse is another emerging method of gaining landfill capacity in North America. Due to the fact that waste disposal takes place in an area previously used for that purpose, there can be decreased public opposition as compared with siting a new facility. Landfill mining generally entails excavating the site, separating cover material from waste material, and some limited recovery of recyclable material like metal. New landfill capacity can be gained within the same footprint by more efficient placement and compaction of remaining waste and more effective and controlled use of landfill cover.

Anaerobic Digestion

A landfill, such as the PCCWMF would be an appropriate location to place an anaerobic digestion facility. Anaerobic digestion (AD) is the biological treatment of organic and biodegradable waste. The process works in the absence of oxygen (anaerobic) to produce

methane gas, carbon dioxide, water, and digestate. A 60 to 90 day period of aerobic curing follows, for pathogen kill at high temperatures within the compost pile. There are two types of AD:

- wet (SSO from residential and non-residential sources); or,
- dry (mixed municipal solid waste from residential and small-scale commercial).

For the County and the current number of households, a plant size of 10,000 tonnes per year would be more than adequate, if the facility were used solely for SSO. If the facility were to be used for SSO and MSW, post diversion, a facility of 50,000 tonnes per year would be more than adequate. The larger facility could also process biosolids, fats, oils and greases, and waste sludges (FCM, March 2004).

Benefits of AD include:

- generate methane as an energy source
- small footprint requirement for setbacks from adjacent land uses, and approval requirements in comparison to compost, landfilling, and other thermal treatment facilities
- revenues may be generated through the sale of compost and methane gas

The AD technology is widely accepted in Ontario and Canada on a small scale and there are several facilities already in operation in central Ontario. A study completed in May 2011 by ReGenerate Biogas provides an assessment of the general resources available and the applicability for community-owned biogas plants within the Kawartha Region (ReGenerate, May 2011). The County should monitor the potential for use of private AD facilities that may be constructed regionally in the future.

Partnerships with Surrounding Municipalities

Similar to the current agreement with the City related to the PCCWMF, this method considers the potential to obtain disposal capacity through an agreement with neighbouring municipalities or to establish a partnership to share resources/infrastructure on some equitable basis. There may be additional municipal partnering opportunities available to the County, however this is

not typical. It is far more typical for municipalities to preserve their own capacity for their own use. Further, Certificates of Approval (or newer ECAs) for each municipality usually confine waste receipt from within their own municipal boundaries (although this doesn't preclude a Certificate of Approval/ECA amendment). Neighbouring municipalities with the potential for partnering in such an initiative include:

- City of Kawartha Lakes
- County of Northumberland
- County of Hastings (and cities within)
- County of Haliburton
- Region of Durham

A list of surrounding facilities for waste disposal, thermal treatment, and organics processing are presented in Figure 6.

Facilities Reference List

1	Navan Landfill	19	IMS Site
2	Ottawa Landfill	20	Halton Recycling
3	Eastern Ontario Waste Handling Facility	21	Gravenhurst Landfill Site
4	Algonquin Power Energy From Waste	22	Stisted (Muskoka) Landfill Site
5	Durham York Energy Centre	23	Rosewarne Landfill Site
6	Nepean Landfill (Closed)	24	Kingston Area Recycling Centre
7	Norterra Organics Processing Facility	25	Quinte Waste Solutions
8	Ottawa Valley Waste Recovery Centre	26	County of Northumerland MRF
9	Trail Road Landfill	27	Peterborough MRF
10	Leaf and Yard Waste Depot	28	Manco Recycling Centre
11	Clarington Compost Facility	29	Belleville MRF
12	Pickering Compost Facility	30	Renfrew MRF
13	Miller Leaf Composting Site	31	Wesleyville Recycling and Renewable Energy Facility
14	Dufferin Transfer Station	32	Halton Recycling MRF
15	Region of Peel Integrated Waste Management Facility	33	Orenda Recycling Centre
16	Kawartha Biogas	34	Columbus Recycling Centre
17	Lindsay Ops Landfill	35	Two-Tyme Recycling
18	Community Environmental Recycling Centre	36	Durham MRF

WASTE MANAGEMENT MASTER PLAN

Province of Ontario

Legend

- Available Landfill Site
- Composting Facilty
- Energy from Waste Facility
- Material Recovery Facility
- Landfill/Composting
- Highway
- Water Area
- Municipal Boundary
- Wooded Area
- Built-Up Area

CAMBIUM ENVIRONMENTAL
P.O. Box 325, 52 Hunter Street East
Peterborough, Ontario, K9H 1G5
Tel: 1 (705) 742.7900
Fax: 1 (705) 742.7907
www.cambium-env.com

WASTE FACILITIES LOCATION PLAN

Project No.: 1803-001		Date: August 2012	
Scale: 1:3,000,000		Projection: NAD 1983 UTM Zone 17N	
Created by: SNS	Checked by: CMT	Figure: 5	

5.7 Disposed Waste Options – Summary of Strengths and Challenges

All of the options evaluated to manage disposed waste into the future have a unique set of strengths and challenges, as outlined below:

Option	Strengths	Challenges
Do Nothing	• No change	• Lead to closure of landfill and would not meet mandate to provide disposal capacity
Status Quo	• Ease of implementation	• Limited disposal capacity available • Insufficient capacity to meet the needs for the entire planning period
Expand Existing Landfill	• A local solution • A high level of control and input • Experience with previous expansion • Currently available land	• Extensive environmental studies and approvals • A lengthy and capital intensive process • Social acceptance
Construct New Landfill	• A local solution • A high level of control and input • Experience with EA process • Potential for available land	• Extensive environmental studies and approvals • A lengthy and capital intensive process • Contentious issue
Site and Construct Thermal Treatment Facility	• A local solution • A high level of control and input • Technologies proven to be capable of meeting air emission standards • Energy and revenue generating potential	• Extensive environmental studies and approvals • A lengthy and capital intensive process • Contentious issue • Limited options for suitable sites may be available • A guaranteed source(s) of high quantities of feedstock is required • A waste disposal site may be required for by-products • High initial capital costs
Waste Exportation	• No capital expenditures • Reduces future liability • Facilities nearby (possibly Durham York EFW)	• Reliant on others for approvals and capacity • Limited potential sites within Ontario to accept exported waste outside of borders • Poor public perception

Option		Strengths	Challenges
Alternative Solutions	Landfill Mining	• No new disposal footprint required • Practicality	• Approvals required • On-site space required for processing • Limited volume can be created

Anaerobic Digestion	• Small footprint and setback requirements • A local solution • A high level of control and input • Revenue generating potential from energy, compost and accepting outside waste • Better environmental perception and controls • Assist with biosolids management	• A lengthy and capital intensive process • Extensive environmental studies and approvals • Existing facilities owned by County could accommodate new AD facility on site • Guaranteed tonnage of feedstock required • Social acceptance • Waste disposal site would still be required for downtime and composting/curing of digestate
Partnership with Surrounding Municipalities	• Considerable input and a level of control	• Limited options with surrounding municipalities

Consideration should be given to the following items when determining the most suitable option for waste disposal into the future;

- the remaining site life of the existing facility as compared to the estimated timeframe for assessment and approval of a new disposal option;
- the degree of control the County and Townships would like to maintain over the facility, it's capacity and operations;
- whether an adequate quantity/quality of waste is available in the County and through partnerships to support the optimal operation of the technology; and,
- generating opportunities for cost savings, recovery or income generation.

Several options that may be suitable for waste disposal in the County have been presented in the preceding sections. The selection of the most preferred option will be the result of the EA that will be required to be completed as the County and City cooperatively move forward with long-term waste management planning.

5.7.1 Regulatory Requirements Associated with Future Waste Management

Most of the waste disposal options presented would be subject to major studies, municipal and provincial approvals and possibly federal approvals. The intent of the studies and approvals is to make sure that the expansion or creation of a new facility, and subsequent operation, does not have a negative impact on the environment. Components of the environment considered in the required studies include natural, cultural, social and economic aspects. The following major studies and approvals would be required, at a minimum:

- An individual EA must be completed and then approved by the province under Part II of the EAA and Ontario Regulation 101/07 Section 2(1)1; and,
- Approval under the EPA and Ontario Regulation 232/98, related to landfill site investigations and design.

In the case of waste disposal site expansions and new site development, the duration of an EA is approximately 2-5 years. During this time significant supporting studies are prepared to assess potential impacts to the components of the environment, as presented above, which may result from each disposal option. Public and aboriginal consultation is a fundamental component of the EA process.

Due to the limited capacity of 12 to 15 years remaining at the PCCWMF, the County should consider beginning the EA process within the next five (5) years to ensure that approvals are obtained prior to capacity running out at the PCCWMF.

5.8 Future Direction of Waste Disposal

Waste management systems and approaches have changed dramatically over the past several decades, and it is likely that new technologically superior options for disposal will continue to become available. Advancements will continue to be seen in the implementation of:

- recycling collection and processing programs;
- composting collection and processing programs;
- engineered landfill facilities; and,
- incineration / energy from waste (EFW) facilities.

As outlined in the preceding sections, several valid options presently exist for disposed waste management for the County. Each of the options has an array of strengths and challenges that make the option more or less suitable for use by the County and Townships.

A detailed assessment of the best option for disposal of solid waste into the future, up to and beyond the 20 year planning period, should be conducted to identify the most suitable future approach.

To ensure that the most suitable and feasible options for waste management are considered, ongoing consideration of new and emerging waste management technologies is important so that municipalities can continue to improve waste management and diversion methods. As such, it is recommended that the County undertake a formal review of waste management technologies on a regular basis (i.e. every 3 - 5 years) as part of its solid waste management planning program. As a component of these reviews, the County should monitor the progress of the Durham York EFW facility and investigate options for use of this facility if such opportunity is made available. Concurrently with the formal review, the County should continue to investigate internal and external sources of capacity for compost processing.

In the interim, the County should monitor existing landfill capacity, landfill expansions and potential greenfield locations over time to allow the widest selection of suitable options for future solid waste management. A waste diversion plan for the IC&I sector should be undertaken by the County, in co-operation with the City, to ensure that this sector is contributing to achieving the waste diversion targets.

Focus should be directed to increasing waste diversion as much as is feasible to preserve existing landfill capacity at the PCCWMF.

The City is currently completing an independent WMMP for its jurisdiction. Where feasible, the County should continue to partner with the City to mutually benefit from waste management infrastructure, planning and promotions in the future. The WMMP's completed by the County and the City have drawn together preliminary information that will be useful as they move forward with the EA process for long term waste management planning.

Disposed waste options are capital intensive and a proper cost assessment for all options must be considered to determine what options are feasible for the County. The County should undertake a cost/benefit assessment for future disposed waste capacity, which should include

an assessment of management within its jurisdiction or with other municipal/private sector partners outside its jurisdiction. The process should be developed so that it may progress from one that is a 'feasibility' type study to one that would meet the requirements of the EAA and other relevant legislation as the County and City proceed with the EA process to determine the most suitable disposed waste management option.

6.0 Key Recommendations

The waste management system in the County is a complex one, due to the independent collection of garbage within each Township combined with the County wide collection of recyclables, and co-managed diversion programs. Though garbage is collected in each Township, it can also be delivered by residents directly to the PCCWMF, and all garbage collected at transfer stations is transferred to the PCCWMF. While this arrangement is relatively effective, it makes tracking waste composition and quantities challenging, especially for waste generated by the IC&I and C&D sectors. The Key Recommendations are intended to increase diversion and allow for better tracking of waste.

6.1 Waste Diversion

The WMMP has identified a number of strategies that will allow the County to meet or exceed the 60% diversion target set by the Province, which has been accepted by the County as a realistic and achievable goal. Reducing waste sent to the landfill, through diversion programs, waste reduction initiatives and changes to consumer behaviours, will preserve landfill capacity to accommodate waste that cannot be diverted through recycling or reuse. Preserving landfill capacity will delay the financial investment required to secure approvals for, and develop a new facility or additional capacity at the PCCWMF.

The following Key Recommendations are made on a County-wide level to take a positive step toward meeting the 60% waste diversion target. Key Recommendations are made within each of the five categories of waste diversion options, as discussed in Section 4.0, and are suggested to be implemented over the short to long term.

Short Term Actions (1-5 years)

Collection Strategies

- Enhance Collection of Leaf and Yard Materials - Establish seasonal curbside collection of leaf and yard materials in strategic population centres and allow for collection at all

landfills and transfer stations within 2 years. All material collected should be formally diverted, such as being processed at a composting facility. The anticipated increase in diversion is 9.2%.

- Increase Diversion of C&D Debris - Create designated drop-off areas at all landfills and transfer stations to allow for proper separation of C&D debris from other waste types within the next 2 - 5 years. The C&D debris should be hauled to a C&D processing facility for proper sorting for eventual recycling, reuse or disposal. The County should work with local companies and individuals in the construction and demolition trade to promote the proper sorting and collection of C&D debris. The anticipated increase in diversion is 3.7%.
- Promote Backyard Composting - Assist and promote the use of backyard composters to all residents. The anticipated increase in diversion is up to 1%.

Policy and Enforcement Approaches

- Align By-laws - Introduce the new County-wide waste management by-law, which will support activities and policies designed to increase diversion and preserve landfill capacity at the PCCWMF (e.g. 2 bag limit, bulky item limits, encourage and improve diversion, outline responsibilities of the Townships and County, etc.), within the next 2 years. The anticipated increase in diversion is 3%.
- Increase Enforcement - Provide increased enforcement for all existing, enhanced and new diversion programs, beginning within the next 5 years. Increasing enforcement is anticipated to help all of the key recommendations reach their noted diversion potential.
- Mandatory Recycling - Re-establish mandatory blue box recycling and establish proper diversion of tires, MHSW, WEEE and C&D debris, banning these materials from disposal within the next 5 years.

Promotion and Education Strategies

- Coordinate P&E Campaigns - Provide consistent messaging through current on-going P&E for all County-wide diversion programs within the next 5 years and beyond. Use a variety of materials, techniques and approaches to capture and maintain the interest of the public. Consistent public messaging is anticipated to help all of the key recommendations reach their noted diversion potential.

Monitoring and Reporting

- Measuring Success - The overall success of waste diversion programs should be monitored on a regular basis to allow for modifications to increase or maintain waste diversion as necessary to meet the desired waste diversion targets. Section 8.0 includes a description of the items to be monitored on a regular basis. The first review should be completed in 2015, with reviews completed every five years thereafter.

Medium Term Actions (5-10 years)

Collection Strategies

- Expand SSO Collection at Curbside and Transfer Stations - Provide “green bin” service to strategic population centres and install additional collection systems (i.e. Molok©) at strategic landfill or transfer stations. The anticipated increase in diversion is 11.1%.

Policy and Enforcement Approaches

- Building Permit Waste Reduction Plans - Establish the requirement for waste reduction plans during project planning for development, demolition and construction projects. Applicants seeking a building permit would be required to review a guidance document and then complete a Project Waste Reduction Summary. The anticipated increase in diversion is 5%.

IC&I Diversion Strategies

- Investigation of IC&I Waste - Measure the quantity and composition of waste generated by the IC&I sector, including agricultural waste, that is collected in the Townships and report the data to the County.

Long Term Actions (10-20 years)

Policy and Enforcement Approaches

- Materials Ban (Organics) - Once the expanded SSO collection program has been introduced, prepare for and mandate an organics disposal ban within the next 10 - 20 years. Considerable lead time will be required to have the appropriate infrastructure in place to support an organics ban; therefore, the County and Townships should begin to work toward this goal. The anticipated increase in diversion is 3%.

Due to the differing needs of each Township, some flexibility in selecting tailored and appropriate diversion programs is necessary. Each Township should review all waste diversion options presented in Section 4.0 of this WMMP for applicability and suitability to their jurisdiction, and work with the County to implement programs as required to supplement the County-wide initiatives recommended above.

6.2 Waste Disposal

It is recognized that there is limited capacity remaining at the PCCWMF, and that despite best efforts toward waste diversion, eventually additional waste disposal capacity will be required. Several methods and technologies for waste disposal were explored in Section 5.0 of this WMMP, to suit the needs of the County into the future. The following Key Recommendations will bring the County closer to identifying the most suitable means of waste disposal once capacity is no longer available at the PCCWMF.

- Investigate Suitable Options for Future Landfill Capacity
    - Monitor existing landfill capacity, landfill expansions and potential greenfield locations over time to allow the widest selection of suitable options.
- Undertake a Formal Review of Waste Management Technologies
    - As a component of these reviews, the County should monitor the progress of the Durham/York EFW facility and investigate options for use of this facility. The County should also continue to investigate internal and external sources of capacity for

compost processing. Reviews should be completed on a regular basis (every 3 - 5 years).

- Undertake a Full Feasibility Study for Waste Disposal
    - A cost/benefit assessment for future residual waste capacity within the County should be completed. Options to create mutually beneficial partnerships with other municipalities and the private sector outside its jurisdiction should be investigated.
    - The study should be developed so that it may be used as necessary to meet the requirements of the EAA and other relevant legislation, should the County decide to proceed with implementation of a specific residual waste disposal option.

As detailed in Section 5.7.1, for most solid waste disposal options the County will be required to follow an EA process (individual or screening), depending on the option selected. The EA process can also be used to assist in determining the most suitable option for disposal. While there are 12 to 15 years of capacity remaining at the PCCWMF, it is recommended that the County initiate the EA process a minimum of 8 to 10 years prior to reaching capacity at the existing facility, to ensure that sufficient time is allocated for necessary supporting studies.

The 60% waste diversion target set by the Province and adopted by the County can be met by implementing the Key Recommendations, as presented in Figure 7 on the following page. As illustrated, increasing diversion through backyard composting, aligning waste management By-laws and increasing the collection of leaf and yard materials and C&D debris will take place within the next several years. Longer term actions to increase diversion beyond the 60% target include curbside SSO collection, building permit waste plans and materials bans.

Figure 7 Program Implementation Timeline

7.0 Next Steps

Recommended steps to move each of the Key Recommendations toward implementation are provided in the table below. A chart illustrating the implementation schedule for the Key Recommendations is included as Appendix G.

Key Recommendation	Steps Toward Implementation
• **Short Term Actions (1-5 years)**	
Enhance Collection of Leaf and Yard Materials	• Secure composting capacity for processing leaf and yard materials • Secure collection contract for urban areas • Establish a designated collection area for leaf and yard materials at all landfills and transfer stations for seasonal implementation
Increase Diversion of C&D Debris	• Obtain appropriate approvals as required • Review landfill and transfer station layouts for optimal location of sorted C&D area • Make alterations to site layouts as required • Training for site attendants • Communicate separation of C&D debris to the public and building/demolition industry
Promote Backyard Composting	• Engage residents to promote backyard composting (i.e. Garbage to Garden Program) • Offer education resources and subsidized materials (i.e. composters) to encourage composting
Align By-laws	• Work with Townships and service providers in development of by-law and to address existing challenges • Develop by-law in consideration of input from Townships and seek Township support of by-law • Obtain Council approval • Communicate by-law to the public and waste management service providers
Increase Enforcement	• Confirm opportunities for enforcement • Define conditions of when enforcement is required • Assign enforcement resources (hiring may be necessary)
Mandatory Recycling	• Identify long-term stable markets for enhanced recycling opportunities • Identify materials for ban (e.g. blue box, tires, C&D, WEEE) • Train site attendants and enforcement personnel • Communicate material bans and alternate diversion methods for banned materials to the public
Coordinate P&E Campaigns	• Develop a detailed solid waste communications plan co-ordinated with Townships • Build partnerships within the County and with boundary municipalities • Develop and deliver a communications strategy
Investigation of IC&I Waste	• Communicate importance of accurately tracking IC&I waste quantities and composition to Townships • Engage stakeholders from IC&I sector to discuss ways to improve IC&I waste diversion and management • Prepare a work plan, including activities to be completed and resources required
Measuring Success	• Develop a waste diversion program review schedule • Monitor the status of waste diversion programs and report findings to all Townships
• **Medium Term Actions (5-10 years)**	

Key Recommendation	Steps Toward Implementation
Expand SSO Collection • Additional Molok© Systems • Curbside Green Bin Service	• Develop a detailed implementation plan for SSO (food materials) collection, including: • Type of processing (secure capacity or new facility) • Determine the most strategic locations for installation of Molok© Systems (i.e. minimum of one per Township) • Cost analysis for collection, implementation and operations • Renegotiate garbage collection contracts to reflect the decrease in garbage that will result from the increase in diverted organics • Determine the most strategic locations for phased in roll-out of curbside green bin collection • Cost analysis and funding options for curbside collection, implementation and operations • Communicate SSO program (participation and sale of compost) to residents
Building Permit Waste Reduction Plans	• Consult with building/demolition industry to determine existing diversion challenges • Develop a communications strategy for the building/demolition industry to promote the proper sorting and diversion of C&D debris
• **Long Term Actions (10-20 years)**	
Materials Ban – Organics	• Secure sufficient compost processing capacity for SSO materials • Successfully implement the expanded SSO program at landfills, transfer stations and curbside (i.e. green bin) • Ensure adequate enforcement capacity is available • Develop a public communications strategy informing residents of the intent to introduce the ban

8.0 Measuring Success

The implementation and performance of the waste management system improvements identified in the WMMP should be monitored on a regular basis, to ensure that the system continues to evolve with waste generation, diversion and disposal conditions. A review of the following items should be completed annually and documented in an annual monitoring report:

- A comparison of annual waste diversion rates against the 2010 rate of 39.4%;
- The participation rate in waste diversion programs;
- The actual amount of residential and IC&I waste received at the PCCWMF;
- All waste audit data collected within the review period;
- A summary of remaining waste disposal capacity and any future waste disposal options investigated;
- Consultation with stakeholders (public, IC&I sector, C&D sector, Townships, etc.) for input on how the Key Recommendations made in the WMMP could be adjusted to better suit the needs of waste system users; and,
- Recommendations for future actions to ensure the WMMP remains effective and efficient into the future.

The review will allow the County to adjust waste management programs to suit the needs of the waste system users, and will provide invaluable information on system use. The information obtained will lead to an accurate assessment of system performance and will highlight areas of potential improvement that may be addressed through new or modified programs, targeted P&E or enforcement.

The WMMP is intended to be a living document that will be occasionally revised to reflect the ever changing conditions of waste management. An update to the WMMP should be undertaken every five (5) years.

The 60% waste diversion target set by the Province and adopted by the County can be met by implementing the Key Recommendations according to the schedule provided in Section 7.0 and as outlined in the following table.

Key Recommendation	2010 Baseline	2018 5 years	2023 10 years	2028 15 years	2033 20 years
Enhance Collection of Leaf and Yard Materials	Programs Start 2013	3.7%	5.5%		
Increase Diversion of C&D Debris		1.5%	2.2%		
Promote Backyard Composting		0.6%	0.4%		
Align By-laws		1.8%	1.2%		
Increase Enforcement					
Mandatory Recycling					
Coordinate P&E Campaigns					
Investigation of IC&I Waste					
Measuring Success					
Expand SSO Collection – Curbside Green Bin Service			8%	2%	
Expand SSO Collection – Additional Molok© Systems			0.9%	0.2%	
Building Permit Waste Reduction Plans			1%	4%	
Materials Ban - Organics					3%
Total Anticipated Diversion Rate	39.4%	47.0%	66.2%	72.4%	75.4%
Anticipated Implementation Costs		$0.480	$3.7	$0.135	$0.040

Note: - indicates diversion amount not available
Costs presented in millions of dollars

It is understood that diversion programs can take several years to reach their full potential. In the case of the County, it is assumed that all programs will reach maturity (i.e. the maximum sustainable diversion rate) in 5 years from implementation. This assumption has been adopted to illustrate the progress that the County will make toward meeting the 60% waste diversion target over the next 20 years, as outlined in the table above. Based on the implementation schedule provided, it is anticipated that the County will reach the 60% diversion rate target between 2021 and 2022.

It was recognized through the public consultation program that residents feel they are currently paying high taxes for the services they receive. Moving forward, it will be important to ensure that Key Recommendations of this Plan are implemented in a financially accountable manner, in order to reach the 60% diversion rate target. The County and Townships should work together to identify opportunities to off-set the costs associated with the addition of diversions programs to minimize the tax burden to residents. Funding for some diversion programs is made available through government initiatives and stewardship programs. Funds can also be made available by seeking efficiencies within all waste management services, at the Township, County and co-operative levels, to increase finances available to use for improvements in County-wide waste management services. The County should continue to monitor funding availability from internal and external sources throughout the planning period to assist with program implementation and operating costs.

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Glossary of Terms

Agricultural waste	Waste, other than sewage, resulting from farm operations, including animal husbandry and where a farm operation is carried on in respect of food packing, food preserving, animal slaughtering or meat packing.
Anaerobic digestion	A biological process using microbes to break down organic material in the absence of oxygen. Digestion takes place in an enclosed chamber, where critical environmental conditions (e.g., moisture content, temperature and pH levels) can be controlled to maximize microbe generation, gas generation, and waste decomposition rates.
Approval	Permission granted by an authorized individual or organization for an undertaking to proceed. This may be in the form of program approval or Environmental Compliance Approval.
Approved site or facility	A landfill site or waste management facility with a current valid Environmental Compliance Approval.
Ash	The non-combustible, solid by-product of incineration or other combustion process.
"At-source"	A waste minimization or management activity occurring at the source of waste generation.
Backyard composting	Composting of residential organic materials by a household, usually in the backyard. Generally considered a method of source reduction.
Bag tag	A clearly identifiable sticker approved for sale by resolution of the Council of the Municipality and used to indicate that a fee has been paid.
Best practices	Waste system practices that affect Blue Box and other recycling programs and that result in the attainment of provincial and municipal Blue Box and other material diversion goals in the most cost-effective way possible.
Bi-weekly collection	The collection of material set out at curbside one day every two weeks.
Biodegradation	A natural process of breaking down materials by decomposition/decay by the action of organisms.
Biogas	Gas formed during the anaerobic decomposition of organic material, mainly consisting of methane and carbon dioxide.

Biological treatment	A treatment technology that uses bacteria to process organic waste.
Biomass	Plant material, vegetation, or agricultural waste used as a fuel or as an energy source.
Blue box	A plastic container, often blue in colour, for conveying acceptable recyclable materials. Also refers to a municipal curbside or transfer station recycling program.
Capture rate	The amount of materials recovered from the waste stream for recycling, typically measured in tonnes per person per year.
Co-collection	The collection of multiple streams of waste (e.g. recyclables, waste, and organics) together in one truck; separated later for recycling and composting/digestion or disposal.
Collection	The process of picking up waste, recyclables, or compostable material from a household or business.
Co-mingled	Recycling programs where a number of different materials are mixed together, not collected separately.
Co-mingled recyclables	Materials recovered from the waste stream for recycling which are dry (e.g. paper, cardboard, plastic, glass)
Commercial waste	Waste originating from commercial businesses, and includes asbestos waste.
Co-mingled containers	Mixed food and beverage containers, usually plastic, metal and glass.
Community recycling centre (CRC)	A waste management facility that offers waste management services to small businesses and residents. A CRC is a place to drop off items such as electronics, white goods, household hazardous waste, leaf and yard waste, and blue box recyclable items.
Compactor vehicle	A collection vehicle using high-power mechanical or hydraulic equipment to reduce the volume of solid waste.
Composting	The controlled microbial decomposition of organic matter, such as food and yard wastes, in the presence of oxygen, into humus, a soil-like material. Compost can be used in vegetable and flower gardens, hedges, etc.
Composting	A facility/site licensed to process organic (i.e. plants) waste to produce

facility/site	compost
Construction & demolition debris (C&D)	Solid waste produced in the course of residential, commercial, industrial, or institutional building construction, demolition or renovation (e.g. lumber, concrete, brick, plaster, glass, stone, drywall, wire, paint, etc.)
Contaminant	Any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of these, resulting directly or indirectly from human activities that may cause an adverse effect.
Contamination	A chemical which is present in soil, water, air, sediment, or other material at a concentration greater than background, or which is not naturally occurring in the soil, water, air, sediment or other material.
Cover material	Material used in sealing waste cells in landfilling operations.
Curbside recycling	A program whereby individual residents separate recyclable materials from general wastes, and place them at the curb in bundles or designated containers for collection and further processing.
Digestion	The biochemical decomposition of organic matter.
Design capacity	The total volume of waste that has been calculated as having the potential to be disposed of at a landfill site for a particular landfill engineering design. This is typically measured in cubic metres.
Disposal	Final placement or destruction of wastes. Disposal is typically accomplished through use of approved sanitary landfills or incineration with or without energy recovery.
Disposal bans	Regulation prohibiting disposal of materials or products (e.g., yard waste, or lead-acid batteries) in landfills and/or incinerators; typically targets items that contribute substantial volume or toxicity to the solid waste stream.
Disposal facilities	Facilities for disposing of solid waste, including landfills and incinerators, intended for permanent containment or destruction of waste materials.
Diversion rate	A measure of the effectiveness/efficiency of a program aimed at diverting materials in the waste stream from disposal. This is typically measured in tonnes of waste diverted per person per year.
Drop-off/depot	Facilities (staffed or unstaffed) where the public brings recyclable materials, organics, or garbage for management by the municipality.

	Separate drop boxes may be available for different materials, such as newspaper, glass, or metal.
Energy recovery	The process of using wastes to generate energy, and can include capturing of methane gas from a landfill site.
Environmental assessment (EA)	A systematic planning process that is conducted in accordance with applicable laws or regulations aimed at assessing the effects of a proposed undertaking on the environment. Includes evaluation of need, alternatives, impacts, and mitigative, remedial, monitoring and/or compensatory measures.
Environmental Compliance Approval (ECA)	A license or permit issued by the Ministry of the Environment for the operation of a waste management site/facility.
Evaluation criteria	Evaluation criteria are considerations or factors taken into account in assessing the advantages and disadvantages of various alternatives being considered.
Exportation	In solid waste programs, municipal solid waste and recyclables transported outside the municipal jurisdiction or locality where they originated.
Extended producer responsibility (EPR)	A policy to shift the responsibility of a product's life cycle away from the municipality to the producers and to provide incentives for producers to consider the environmental impacts into the selection of materials and the design of the product.
Fibre	Paper materials, such as cardboard, newsprint, and mixed papers.
Fluidized-bed incinerator	A type of incinerator in which the stoker grate is replaced by a bed of limestone or sand that can withstand high temperatures. The heating of the bed and the high air velocities used, cause the bed to bubble, which gives rise to the term "fluidized".
Fly ash	A highly toxic particulate matter captured from the flue gas of an incinerator by the air pollution control system.
Food waste collection	The collection of household organic waste such as food scraps and non-recyclable paper (tissues, paper toweling, etc.). It does not include yard waste. Food waste requires greater processing requirements than yard waste, so it is identified as a separate collection component.

Garbage	Black/green bag or reusable container of waste set at the curb for disposal in the landfill. It has no practical or feasible further use; it cannot be recycled or biologically treated.
Grass-cycling	Leaving grass clippings on the lawn and allowing them to decompose naturally instead of collecting them for composting, digestion, or disposal.
Green bin program	Diversion of organic wastes including food waste, non-recyclable paper and sometimes including diapers, sanitary products and pet waste. Term often used interchangeably with SSO.
Hazardous waste	Any residual hazardous materials which by their nature are potentially hazardous to human health and/or the environment, as well as any materials, wastes or objects assimilated to a hazardous material. Hazardous waste is defined by Ontario Regulation 347 and may be explosive, gaseous, flammable, toxic, radioactive, corrosive, combustive or leachable.
Household hazardous waste	Substances labelled as corrosive, flammable, poisonous, or explosive originating from household use, which requires special handling for disposal.
IC & I waste	Waste originating from the industrial, commercial and institutional sectors.
Incineration	The use of solid waste as a fuel in a combustion process with the aim of reducing the volume of waste.
Landfill mining	Materials are recovered from a landfill by excavation. Organic matter may be reused as a daily cover, and material, such as wood, metal, brick, plastics and glass, may be recovered and recycled.
Landfill site	An approved, engineered site/facility used for the long-term or permanent disposal of waste. See also “approved site or facility” and “engineered facility”.
Leaf & yard materials	Refers to leaves, grass, weeds, trimmings, brush, and woody materials (twigs, branches, etc.).
Markets	Persons, corporations, organizations or partnerships willing to purchase or accept in exchange for a fee, recyclable material processed through or at a recycling facility.

Massburn incinerator	A type of incinerator in which solid waste is burned without prior sorting or processing.
Materials Recovery (or recycling) Facility (MRF)	A facility where recyclable materials are processed through shredding, baling, pulverizing, separating, sorting, or otherwise treated or altered to facilitate further transfer, processing, utilization or disposal.
Monitoring	A scientifically designed system of continued or periodic measurements or observations of environmental or operating conditions.
Multi Residential buildings (MR)	Buildings which contain multiple self-contained residential dwelling units (typically greater than 6 units).
Municipal Hazardous or Special Waste (MHSW)	Includes the following materials that are considered hazardous waste materials generated from the municipal sector (paints, solvents, adhesives, pesticides, acids/bases, aerosols, fuels and batteries). Also sometimes referred to as Household Hazardous Waste (HHW).
Municipal Solid Waste (MSW)	A waste type that predominantly includes household waste (domestic waste), except industrial and agricultural wastes, with sometimes the addition of commercial wastes collected by a municipality within a given area. The C & D debris and special wastes like hazardous wastes – usually not categorized under MSW - may also enter the municipal waste stream to an extent. It is sometimes also defined to mean all solid wastes that a city authority accepts responsibility for managing in some way.
Natural environment	The air, land and water, or any combination or part thereof, of the Province of Ontario.
Non-hazardous waste	Non-hazardous wastes include all solid waste that does not meet the definition of hazardous waste and includes designated wastes such as asbestos waste.
Ontario Electronic Stewardship (OES)	The Industry Funding Organization (IFO) for Waste Electrical and Electronic Equipment. Companies that are designated as stewards for Waste Electrical and Electronic Equipment can discharge their legal obligations under the Waste Diversion Act by registering, reporting and paying fees to OES.
Ontario Tire Stewardship (OTS)	The Industry Funding Organization established to develop a diversion program for Used Tires. Companies that are designated as stewards for Used Tires can discharge their legal obligations under the Waste

	Diversion Act by registering, reporting and paying fees to OTS.
Organics	The organic fraction of the waste stream, consisting of material that is biodegradable, typically food, yard waste, and paper.
Organic waste	Waste of animal or plant origin. It is what feeds a compost site.
Pay as you throw/User pay	A program in which every individual unit, bag or container set out for collection is paid for directly by the resident, commonly by the purchase of bag tags. Other examples of user pay systems would be the utility based system and the subscription based system.
Promotion and Education materials	Materials prepared and distributed by a municipality to help promote the proper participation in waste management and waste diversion programs.
Processing	Preparation of solid waste for sale to markets through such activities as hand sorting, magnetic and/or mechanical separation or shredding, composting, or digestion.
Pyrolysis	The chemical decomposition of a substance by heat in the absence of oxygen, resulting in the production of various hydrocarbon gases and carbon-like residue.
Recovery rate	Proportion of material recovered from the total waste stream.
Recyclables	Any material destined for recycling. In a curbside recycling program, includes materials such as: glass, metal food and beverage cans, aluminum foil, rigid shell plastic containers, newspaper, cardboard, fine paper, boxboard.
Residual/disposed waste	Waste which cannot be reduced, reused or recycled further. It is also referred to as garbage, which must ultimately be disposed in a landfill site.
Reuse	The use of a product, such as a refillable beverage bottle, more than once, possibly with slight modification.
Service area	The area from which a landfill site is allowed to accept waste materials for disposal or processing.
Site life	The period of time during which the landfill can continue to accept wastes.

Source separation	The separation of materials suitable for recycling or composting from solid waste at the source of generation (e.g., households, businesses).
Source Separated Organics (SSO)	This includes residential organic waste such as food waste and non-recyclable paper that is segregated for composting or other organic waste processing. Some municipalities have widened the definition of SSO to include diapers, sanitary products and pet waste.
Stewardship Ontario	The Industry Funding Organization (IFO) established to develop diversion programs for both the Blue Box and MHSW Programs.
Thermal treatment	Technologies that process waste using high temperatures to reduce the quantity of material requiring disposal, stabilize the material requiring disposal, and recover energy and potentially material resources.
Total waste disposal volume (site capacity)	For a landfilling site, the maximum volume of waste, including the volume of any daily or intermediate cover materials, to be deposited at the site in the fill area.
Transfer station	Facility where material is transferred from collection vehicles to larger trucks or rail cars for longer distance transport.
Waste	Includes ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse and such other materials as are designated in the regulations.
Waste audit	Exercise of determining the quantity and composition of waste which is disposed.
Waste composition	The various component materials of the waste stream, typically described as a percentage of the entire waste stream by weight.
Waste disposal site	Includes: any land upon, into, in or through which, or building or structure in which, waste is deposited, disposed of, handled, stored, transferred, treated or processed, and any operation carried out or machinery or equipment used in connection with the depositing, disposal, handling, storage, transfer, treatment or processing referred to in clause (a).
Waste diversion	The redirection of generated wastes away from disposal through reuse, recycling, or recovery. It does not include source reduction.
Waste Diversion	A non-crown corporation created under the Waste Diversion Act (WDA)

Ontario (WDO)	on June 27, 2002. WDO was established to develop, implement and operate waste diversion programs for a wide range of materials (Blue Box Waste, Used Tires, Used Oil Material, Waste Electrical and Electronic Equipment and Municipal Hazardous or Special Waste) under the WDA.
Waste diversion rate	Waste diversion rate is the percentage of waste diverted from landfill through means of diversion programs (Blue Box, composting, etc). Waste diversion rate is determined by dividing the total quantity of waste diverted by the total amount diverted and disposed.
Waste Electrical and Electronics Equipment (WEEE)	Any broken or unwanted electrical or electronic appliances including computers, phones and other items that have reached the end of their usable life.
Waste generation rate	The amount waste generated by a person(s) on a daily basis, typically measured in tonnes per person per year.
Waste generator	The person, business, institutional facility or industry which created the waste.
Waste management system	Any facilities or equipment used in, and any operations carried out for, the management of waste including the collection, handling, transportation, storage, processing or disposal of waste, and may include one or more landfills or transfer stations.
Waste minimization	Measures or techniques, including plans and directives that reduce the amount of wastes for disposal to the greatest degree practical. (Getting as close to zero waste as practical.) Methods to achieve minimization include source reduction, reuse, environmentally sound recycling, and recovery.
Waste Recycling Strategy	A Best Practice initiated by Waste Diversion Ontario and funded through the CIF to optimize Blue Box programs. It includes forecasting waste and recyclable material generation, planning how to optimize recycling of identified materials and implementing and monitoring a plan to improve overall Blue Box capture rates and performance.
Waste reduction	The decreasing to some extent of the waste stream, requiring disposal through source reduction, reuse, recycling, or recovery. It is often confused with the more limited "source reduction," which deals with policies and approaches only from the curbside on, not further upstream.

Waste stream	The waste output of a community, region, or facility. Total waste can be categorized into different waste stream components (e.g., wet organic waste, construction waste, household hazardous waste, or white goods).
Waste-to-Energy (WTE) plant	A facility that uses solid waste materials (processed or raw) to produce energy. WTE plants include incinerators that produce steam (for district heating or industrial use), or generate electricity and also include facilities that convert landfill gas to electricity.
White goods	Refers to household appliances such as refrigerators, stoves, freezers, washers, dryers, dishwashers, dehumidifiers, water tanks, air-conditioning units, heat pumps.
Windrow composting	Composting process whereby piled organic material is placed in a series of rows, usually two metres deep. The rows are turned periodically for natural aeration.
Zero waste	The philosophy of taking a cradle-to-cradle approach to managing waste where "industry has to redesign products and processes to reduce waste before it is made, as well as designing products for greater reuse."

Acronyms and abbreviations

AD	Anaerobic Digestion
AWT	Alternative Waste Treatment
C&D	Construction and Demolition
EA	Environmental Assessment
EAA	Environmental Assessment Act
EAB	Environmental Approvals Branch
EFW	Energy From Waste
EPA	Environmental Protection Act
EPR	Extended Producer Responsibility
ERA	Environmental Risk Assessment
FCM	Federation of Canadian Municipalities
GAP	Generally Accepted Practices (or Principles)
GHG	Greenhouse Gas
HHW	Household Hazardous Waste
hhld	Household
IC&I	Industrial Commercial and Institutional
LFG	Landfill Gas
MHSW	Municipal Hazardous or Special Waste
MOE	Ministry of the Environment
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
OTS	Ontario Tire Stewardship
P&E	Promotion and Education
PAYT	Pay As You Throw
PCCWMF	Peterborough County/City Waste Management Facility
SO	Stewardship Ontario
SSO	Source Separated Organics
tpy	Tonnes per year
WDA	Waste Diversion Act
WDO	Waste Diversion Ontario
WEEE	Waste Electrical and Electronics Equipment
WMMP	Waste Management Master Plan

UNITS OF MEASUREMENT and conversions

Length			Mass		
1 metre (m)	=	3.28 feet	1 metric ton (tonne)	=	1.10 Imperial tons
1 millimetre (mm)	=	0.039 inches	1 kilogram (kg)	=	2.20 lbs
1 kilometre (km)	=	0.621 miles	pound (lb)	=	453.6 g
			gram (g)	=	---
Area			milligrams (mg)	=	1×10^{-3} g
1 hectare (ha)	=	2.47 acres	microgram (µg)	=	1×10^{-6} g
1 square metre (m^2)	=	10.76 square feet	nanogram (ng)	=	1×10^{-9} g
			kilogram (kg)	=	1000 g
Volume			pictogram (pg)	=	1×10^{12} g
1 cubic metre(m^3)	=	35.29 cubic feet	metric tonne (t)	=	1000 kg
1 litre(L)	=	0.220 gallons			

Appendix A

Public Consultation Program

Appendix A-1: Initial Consultation

INITIAL PUBLIC CONSULTATION

Presentations were made to each Township Council and County staff hosted "Environment Days" events, attended meetings and fairs, and visited business areas to inform residents and other waste management system users about the Waste Management Master Plan (WMMP). Promotional materials encouraging public input into the WMMP process were distributed at such events and meetings. It is estimated that the County spoke directly to an estimated 1,150 residents. Several additional methods of consultation were used by the County in an effort to inform and engage various groups, individuals, and interested parties in the development of the WMMP. The Technical Advisory Committee provided input on the initial phase of the WMMP development. Aboriginal communities in the County as well as First Nations associated with the William's Treaty were contacted to solicit input. A summary of the consultation is detailed below.

In 2011, the County held five (5) initial Public Information Centres (PICs) at different locations in the County to:

- present information on the existing waste management system;
- highlight areas for improvements to waste diversion; and,
- solicit input from the public with respect to the current and future waste management system in the County.

Notice of the date, time and location for each PIC event was published in local newspapers, including: Peterborough Examiner; Cambellford/Northwest EMC; Lakefield Herald; and, Millbrook Times. Notification was also posted on the County website "Events Calendar" and "News" webpages, and notices were handed out at all landfills and depots in the County leading up to the events. A Public Service Announcement was issued by the County on August 16, 2011, providing the details of each PIC. Copies of the notices and Public Service Announcement have been included within this Appendix.

The PICs were held at the following locations:

- Wednesday, August 24, 2011 - Cavan Monaghan Township Office (4 - 7 pm)
- Saturday, August 27, 2011 - Lakefield Arena (9 - 11:30 am)
- Saturday, August 27, 2011 - Buckhorn Community Centre (1:30 - 4 pm)
- Saturday, September 3, 2011 - Havelock Township Office (9 - 11:30 am)
- Saturday, September 3, 2011 - North Kawartha Community Centre (1:30 - 4 pm)

Turnout to the PIC events ranged from a single attendee at the PIC event held in Buckhorn, to eleven (11) attendees at the Lakefield session. An open house format was used for all PICs, with a poster board display containing pertinent information related to the development of the WMMP. Representatives of the County and Cambium were on hand to answer questions throughout the course of the PICs.

Surveys were distributed at the PIC that attendees could complete during the event, or take home to complete at a later time. The survey was also available for completion online. The results of this survey are discussed in the following section.

SURVEY NO. 1

Concurrent with the first series of PIC events, an online survey was designed by the County, and was available for residents to complete. Survey participants were asked to:

- provide information on their current use of the waste management system;
- provide input on methods to reduce waste; and,
- voice their opinions on the future of waste management in the County.

In total 237 participants in the survey were documented and 222 of those produced usable results. The highest participation rate in the survey was documented for the Township of Smith-Ennismore-Lakefield, which is consistent with the highest turnout for the PIC events. Responses were low in Asphodel-Norwood, Cavan-Monaghan, and Otonabee-South-Monaghan. Most respondents (77%) were permanent residents of the County. A summary of the online survey has been included in the following pages.

Notable results of the survey included:

- 87.4% of respondents confirmed that they would like to *at least* meet the 60% waste diversion target set by the Province
- 89.6% of respondents thought that the waste reduction rate in the County should be *at least* equal to waste reduction achieved in other similar municipalities
- Respondents indicated that the preferred methods to increase waste diversion would be to: increase the blue box items allowed; have annual large article/appliance pick up; provide re-use centres; and have more hazardous waste events
- 59.2% of respondents backyard compost
- Residents were 50/50 (not needed vs. needed) on collection food and leaf & yard wastes
- 66.5% of respondents would buy products with recyclable packaging to contribute to waste reduction
- 58.3% of respondents indicated that they would prefer increased waste reduction (diversion) as a method to preserve landfill capacity for future waste disposal needs in the County

Comments were requested at the close of the survey, and 76 respondents provided individual comments to address at least one question of the survey. Common topical areas for comment included:

- Expand blue box items to include other materials including polystyrene
- Consider curbside pick-up of garbage, recycling and green waste
- Extend hours at depots
- Bear populations and other nuisance wildlife prevent many people from backyard composting
- Increase public education
- Bag limits should be in place
- Decrease in packaging at the producer level

Based on the above comments and survey results, residents of the County confirm agreement with the objective to reduce waste. The methods to reduce waste that were determined to be the most acceptable to the public include:

- Increase blue box items
- Increase public promotion and education
- Implement bag limits for garbage

With regard to disposal options, survey respondents ranked the options in the following way:

1. Increase waste reduction (extend life of landfill).
2. Incineration with the potential for energy generation (if approved).
3. Expand existing landfill (if approved).

The least desirable option was to export waste outside County boundaries.

DEPOT / LANDFILL SITE SURVEYS

The County completed public consultation surveys at all local depots and landfill sites in the County during the summer of 2011. Approximately 1,150 residents were surveyed at 15 different sites. The intent of the surveys was similar to those completed online; to assess current waste management and diversion programs and to identify potential improvements for future waste management and diversion in the County. Overall, results were consistent with those obtained from the online survey.

Additional results indicated:

- Travel times to a landfill or depot were the highest in the Townships of North Kawartha and Smith-Ennismore-Lakefield (estimated travel time of 10-20 minutes).

- With the exception of Smith-Ennismore-Lakefield, the majority of residents of all other Townships visit their local waste disposal site every week. In Smith-Ennismore-Lakefield, site use is roughly evenly divided between weekly, monthly, and for special occasions.
- Most Township residents produce 1 bag of garbage per week on average. In Cavan-Monaghan, the majority of residents produce 2 bags per week. On average, across all Townships, 2 recycling bins are brought to depots by residents.

Currently there are reuse centres in Douro-Dummer, Cavan-Monaghan and Otonabee-South Monaghan, as well as a paint reuse depot at the MRF. According to the survey, 85% of residents surveyed use the reuse centres in their Townships. The next most utilized program is MHSW, followed by large articles and appliances. Residents indicated that the diversion programs that they would use the most often, from the most to least popular, include: reuse centres, MHSW, WEEE, large appliances, organics, leaf and yard waste and used tires.

TOWNSHIP INVOLVEMENT

All Townships in the County had the opportunity to provide comment on the existing waste management system, to note areas of potential improvement, and to voice opinions on the perceived success of potential waste diversion programs. Sections 1-3 of the WMMP were released to Townships for comment, and were presented to Township Councils.

Five (5) of the Townships in the County provided comments on the first sections of the WMMP: Galway-Cavendish-Harvey, Otonabee South-Monaghan, Smith-Ennismore-Lakefield, North Kawartha and Douro-Dummer. Comments received were primarily confirmations and justifications of waste and diversion data for each Township. In addition, some comments were directed toward specific issues noted in each Township that may have an effect on waste diversion. For example, the large rural area, including the Kawartha Highlands Signature Site Park, presents an operational challenge for waste management in the Township of North Kawartha. Similarly, for Townships in the County that have a significant seasonal population, encouraging and enforcing waste diversion programs can be problematic. Several Townships noted concern with their ability to accurately collect measurements associated with waste disposal and diversion, due to a lack of infrastructure (i.e. weigh scales) required to collect detailed data on a township basis.

NEWS RELEASE

The Corporation of the County of Peterborough

For Immediate Release

Date: August 16, 2011

To: Representatives of the Media

From: Laurie Westaway – Manager, Environmental Services.

Subject: Public Service Announcement Regarding
(Waste Management Master Plan Public Meetings)

County of Peterborough Waste Management Public Input Needed!

Peterborough, ON (August 16, 2011) With only 12 years remaining in the Peterborough County/City Waste Management Facility (Bensfort Road Landfill), all residents of the County of Peterborough are invited to attend one of the information sessions.

Wednesday, August 24
Cavan Monaghan Township Office 4-7pm

Saturday, August 27
Lakefield Arena 9-11:30am
Buckhorn Community Centre 1:30-4pm

Saturday, September 3
Havelock Township Office 9-11:30am
North Kawartha Community Centre 1:30-4pm

For more information please call County of Peterborough Environmental Services 705-775-2737.

The future is ours…don't waste it!

- 30 -

County Court House, 470 Water Street, Peterborough, Ontario K9H 3M3
Phone: (705) 743-0380/1-800-710-9586 Fax: (705) 876-1730

County of Peterborough

Waste Management Master Plan (WMMP)

Public Consultation Survey No. 1

The County of Peterborough is currently undergoing a Waste Management Master Plan (WMMP) to review existing waste services and systems, and to develop plans for the next 20 years. The County appreciates any and all input residents will have into this process. Please complete and return this questionnaire using the contact information provided at the end of the survey.

1. In which Township do you currently reside?

- ☐ Smith-Ennismore-Lakefield
- ☐ Galway-Cavendish-Harvey
- ☐ Cavan-Monaghan
- ☐ North Kawartha
- ☐ Douro-Dummer
- ☐ Havelock-Belmont-Methuen
- ☐ Asphodel-Norwood
- ☐ Otonabee-South Monaghan

2. Do you reside in the County of Peterborough:

- ☐ Permanently
- ☐ Seasonally (spring, summer, and fall)

3. On average, how many full garbage bags per week does your household generate?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4+

4. On average, how many full blue boxes of recycling per week does your household generate?

- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5+

5. How satisfied are you with the current level of waste management services offered (garbage and recycling) on a scale of 1 to 5 (1 unsatisfied, 3 okay, and 5 very satisfied)?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5

6. Currently the County's waste reduction rate is 39%. Should we meet or exceed the Provincial target of 60%?

- ☐ Meet
- ☐ Exceed
- ☐ Stay the Same
- ☐ No Opinion

7. How should the County's reduction rate compare to that of other similar municipalities?

- ☐ Same
- ☐ Exceed
- ☐ No Opinion

8. Please rate the following options to increase waste reduction from 1 (lowest need) to 5 (highest need).

Options to increase waste reduction	1	2	3	4	5
Increase blue box items allowed	☐	☐	☐	☐	☐
Collect food waste	☐	☐	☐	☐	☐
Collect leaf and yard waste	☐	☐	☐	☐	☐
Restrict garbage bags (2 bag per week max)	☐	☐	☐	☐	☐
Use clear bags for garbage and monitor	☐	☐	☐	☐	☐
Have more hazardous waste events	☐	☐	☐	☐	☐
Have more electronic waste events	☐	☐	☐	☐	☐
Annual large article / appliance pick-up (furniture etc.)	☐	☐	☐	☐	☐
Municipal re-use centres	☐	☐	☐	☐	☐
Used tire collection	☐	☐	☐	☐	☐

9. Do you backyard compost?

☐ Yes ☐ Seasonally ☐ No

If Yes, do you compost?

☐ Food scraps ☐ Leaf and Yard materials ☐ Both

10. Would you participate if compost facilities existed (for example: collection at road and/or Depot)?

☐ Yes ☐ No

11. What would your household be prepared to do to reduce garbage?

☐ No change

☐ Buy products with little or no packaging

☐ Buy products in recyclable packaging

Other:_____

12. Please indicate any specific goals and/or objectives that you feel the County should consider for the WMMP (check all that apply):

☐ Increase recycling rate
☐ Decrease cost of waste management
☐ Implement cost per bag of garbage
☐ Maintain local responsibility of waste (within County boundaries)

Other:_____

13. Please check how often you use these facilities
(0 never, 1 annually, 2 seasonally, 3 monthly, 4 weekly, 5 daily):

	0	1	2	3	4	5
Local township waste site	☐	☐	☐	☐	☐	☐
Recycling depot at waste site	☐	☐	☐	☐	☐	☐
County seasonal hazardous waste depot	☐	☐	☐	☐	☐	☐
County / City landfill (Bensfort Road)	☐	☐	☐	☐	☐	☐
City / County waste electronics and hazardous waste depot (Pido Road)	☐	☐	☐	☐	☐	☐
City / County recycling depot (Pido Road)	☐	☐	☐	☐	☐	☐

For Curbside Recyclers:

14. When your Blue Box is full, do you:

☐ Throw recyclables in garbage
☐ Put out in a separate container
☐ Store recyclables and put out another time
☐ Box is never full

Would you like a larger “Containers” blue box?

☐ Yes ☐ No

Would you like a larger “Fibres” blue box?

☐ Yes ☐ No

For Depot Recyclers:

15. How far do you travel to the landfill/transfer site/recycling depot?

☐ 0-5 km ☐ 5-10 km ☐ 10-20 km ☐ +20 km

Would you recycle more if curbside collection was offered?

☐ Yes ☐ No

16. The County / City Landfill has 12 years of capacity remaining. To ensure we have a place to take our waste, please rank your choice (1st, 2nd, 3rd, 4th) choose one of each ranking:

Increase waste reduction (extend life of existing landfill)	1st	2nd	3rd	4th
Expand existing landfill (if approved)	1st	2nd	3rd	4th
Export waste outside County boundaries (landfill or incinerate)	1st	2nd	3rd	4th
Incineration with the potential for energy generation	1st	2nd	3rd	4th

Would you like any further information about the Waste Management Master Plan

☐ Yes ☐ No

Name: _____

Email: _____

Please provide any other comments in the space provided below.

_____

_____

_____

_____

If you have any questions regarding the Waste Management Master Plan please contact:

County of Peterborough
Laurie Westaway, Manager of Environmental Services
470 Water Street, Peterborough, Ontario, K9H 3M3
Phone (705) 775-2737 ext. 317
Fax: (705) 749-2551
lwestaway@county.peterborough.on.ca

Thank you
The future is ours … Don't waste it!

Waste Management Master Plan Survey 1

Political Edit

Response Summary

Active Filter: Township Identified

Total: 237

Filtered: 222

PAGE: 1

1. In which Township do you currently reside? Create Chart Download

	Response Percent	Response Count
Asphodel-Norwood	3.6%	8
Cavan Monaghan	5.9%	13
Douro-Dummer	16.7%	37
Galway-Cavendish-Harvey	18.9%	42
Havelock-Belmont-Methuen	13.5%	30
North Kawartha	16.7%	37
Otonabee-South Monaghan	2.3%	5
Smith-Ennismore-Lakefield	**22.5%**	**50**
First Nations	0.0%	0
	answered question	**222**
	skipped question	**0**

PAGE: 2

2. Do you reside in the County of Peterborough: Create Chart Download

	Response Percent	Response Count
Permanently	**76.9%**	**166**
Seasonally (spring, summer, fall)	23.1%	50
	answered question	**216**
	skipped question	**6**

3. On average, how many full garbage bags per week does your household generate? Create Chart Download

	Response Percent	Response Count
Less than 1	31.8%	68
1	**46.7%**	**100**
2	18.2%	39
3	3.3%	7
4+	0.0%	0
	answered question	**214**
	skipped question	**8**

4. On average, how many full blue boxes of recycling per week does your household generate? Create Chart Download

	Response Percent	Response Count
Less than 2	36.7%	79
2	**50.2%**	**108**
3	10.2%	22
4	2.8%	6
5+	0.0%	0
	answered question	**215**
	skipped question	**7**

5. How satisfied are you with the current level of waste management services offered (garbage and recycling) on a scale of 1 to 5 (1 unsatisfied, 3 okay, and 5 very satisfied)? Create Chart Download

	Response Percent	Response Count
1	6.5%	14
2	5.1%	11
3	20.6%	44
4	**35.0%**	**75**
5	32.7%	70
	answered question	**214**
	skipped question	**8**

6. What can be done to improve the level of service? Create Chart Download

	Response Percent	Response Count
Recycling pick-up at driveway	14.8%	4
	answered question	**27**
	skipped question	**195**

6. What can be done to improve the level of service?	Create Chart	Download
Garbage pick-up at driveway	22.2%	6
Organics program (food and yard)	**70.4%**	**19**
Lower Costs	29.6%	8
	Other (please specify) Show Responses	24
	answered question	**27**
	skipped question	**195**

7. Currently the County's waste reduction rate is 39%. Should we meet or exceed the Provincial target of 60%?	Create Chart	Download
	Response Percent	**Response Count**
Meet 60%	42.1%	90
Exceed 60%	**45.3%**	**97**
Stay the Same 39%	6.5%	14
No Opinion	6.1%	13
	answered question	**214**
	skipped question	**8**

8. How should the County's reduction rate compare to that of similar municipalities?	Create Chart	Download
	Response Percent	**Response Count**
Same	42.2%	89
Exceed	**47.4%**	**100**
No Opinion	10.4%	22
	answered question	**211**
	skipped question	**11**

9. Please rate the following options to increase waste reduction from 1 (lowest need) to 5 (highest need).	Create Chart	Download				
	1	**2**	**3**	**4**	**5**	**Response Count**
Increase blue box items allowed	10.1% (20)	5.1% (10)	18.2% (36)	23.7% (47)	**42.9% (85)**	198
Collect food waste	**32.5% (65)**	10.5% (21)	11.5% (23)	14.0% (28)	31.5% (63)	200
Collect leaf and yard waste	**33.0% (66)**	13.0% (26)	15.0% (30)	15.5% (31)	23.5% (47)	200
Restrict garbage bags (2 bags per week max)	25.1% (50)	8.0% (16)	21.6% (43)	14.1% (28)	**31.2% (62)**	199
				answered question		**213**
				skipped question		**9**

9. Please rate the following options to increase waste reduction from 1 (lowest need) to 5 (highest need). Create Chart Download

Use clear bags and monitor	**38.1% (77)**	16.3% (33)	18.3% (37)	10.4% (21)	16.8% (34)	202
Have more Hazardous Waste Events	7.8% (16)	8.7% (18)	22.3% (46)	22.8% (47)	**38.3% (79)**	206
Have more Electronic Waste Events	9.8% (20)	9.3% (19)	20.6% (42)	23.0% (47)	**37.3% (76)**	204
Annual Large Article/Appliance Pick-Up	8.0% (16)	10.0% (20)	18.4% (37)	22.9% (46)	**40.8% (82)**	201
Municipal Re-use Centers	7.4% (15)	4.9% (10)	20.1% (41)	28.9% (59)	**38.7% (79)**	204
Used Tire Collection	17.2% (34)	13.1% (26)	20.7% (41)	14.6% (29)	**34.3% (68)**	198

answered question **213**

skipped question **9**

10. Do you backyard compost? Create Chart Download

	Response Percent	Response Count
Yes	**59.2%**	**125**
Seasonally	11.8%	25
No	28.9%	61
	answered question	**211**
	skipped question	**11**

11. If Yes or Seasonally, do you compost: Create Chart Download

	Response Percent	Response Count
Food Scraps	13.5%	21
Leaf/Yard Materials	21.2%	33
Both	**65.4%**	**102**
	answered question	**156**
	skipped question	**66**

12. Would you participate if compost facilities existed (for example collection at road and/or depot)? Create Chart Download

	Response Percent	Response Count
Yes	**53.6%**	**98**
No	46.4%	85
	Other (please specify) Show Responses	27
	answered question	**183**
	skipped question	**39**

13. What would your household be prepared to do to reduce garbage? Create Chart Download

	Response Percent	Response Count
No change	17.0%	36
Buy products with little or no packaging	60.8%	129
Buy products in recyclable packaging	**66.5%**	**141**
	Other (please specify) Show Responses	39
	answered question	**212**
	skipped question	**10**

14. Please indicate any specific goals and/or objectives that you feel the County should consider for the WMMP (check one or all that apply): Create Chart Download

	Response Percent	Response Count
Increase recycling rate	43.6%	79
Implement cost per bag of garbage	15.5%	28
Decrease cost of waste management	19.3%	35
Maintain local responsibility of waste (within County boundaries)	**67.4%**	**122**
	Other (please specify) Show Responses	40
	answered question	**181**
	skipped question	**41**

15. Please check how often you use these facilities: Create Chart Download

	Never	Annually	Seasonally	Monthly	Weekly	Daily	Response Count
Garbage at local Township waste/transfer site	10.4% (21)	16.9% (34)	**27.9% (56)**	16.9% (34)	27.4% (55)	0.5% (1)	201
Recycling at local waste/transfer site	21.3% (43)	15.3% (31)	23.3% (47)	13.4% (27)	**25.7% (52)**	1.0% (2)	202
County Seasonal hazardous waste depot	27.2% (53)	**36.4% (71)**	26.7% (52)	7.2% (14)	2.1% (4)	0.5% (1)	195
County/City Landfill (Bensfort Road)	**79.8% (146)**	12.0% (22)	6.0% (11)	1.6% (3)	0.5% (1)	0.0% (0)	183
City/County waste electronics and hazardous waste depot (Pido Road)	**51.1% (96)**	35.1% (66)	11.2% (21)	0.5% (1)	1.6% (3)	0.5% (1)	188
City/County recycling depot (Pido Road)	**66.7% (124)**	21.5% (40)	8.6% (16)	2.2% (4)	1.1% (2)	0.0% (0)	186
					answered question		**211**
					skipped question		**11**

16. When your Blue Box is full, do you:	Create Chart	Download
	Response Percent	Response Count
Throw recyclables in garbage	1.3%	2
Store recyclables and put out another time	35.3%	54
Put out in a separate container	**56.2%**	**86**
Never full	13.7%	21
	answered question	**153**
	skipped question	**69**

17. Would you like a larger "Containers" blue box?	Create Chart	Download
	Response Percent	Response Count
Yes	34.4%	53
No	**65.6%**	**101**
	answered question	**154**
	skipped question	**68**

18. Would you like a larger "Fibres" blue box?	Create Chart	Download
	Response Percent	Response Count
Yes	36.4%	51
No	**63.6%**	**89**
	answered question	**140**
	skipped question	**82**

19. How far do you travel to the landfill/transfer site/recycling depot?	Create Chart	Download
	Response Percent	Response Count
0-5 km	**37.3%**	**59**
5-10 km	36.7%	58
10-20 km	20.9%	33
20+ km	5.1%	8
	answered question	**158**
	skipped question	**64**

20. Would you recycle more if curbside recycling existed?	Create Chart	Download
	Response Percent	Response Count
	answered question	**24**
	skipped question	**198**

20. Would you recycle more if curbside recycling existed? Create Chart Download

Yes	50.0%	12
No	50.0%	12
	answered question	24
	skipped question	198

21. The County/City Landfill has 12 years of capacity remaining. To ensure we have a place to take our waste, what options would you suggest? Create Chart Download

	1st	2nd	3rd	4th	Rating Average	Response Count
Increase waste reduction (extend life of existing landfill)	**58.3% (84)**	27.8% (40)	11.8% (17)	2.1% (3)	1.58	144
Expand exisiting landfill (if approved)	12.3% (17)	29.0% (40)	**45.7% (63)**	13.0% (18)	2.59	138
Export waste outside County boundaries (landfill or incinerate)	0.0% (0)	9.7% (13)	13.4% (18)	**76.9% (103)**	3.67	134
Incineration with the potential for energy generation	**35.3% (53)**	31.3% (47)	24.7% (37)	8.7% (13)	2.07	150
				answered question		153
				skipped question		69

22. Are you a member of a social media site? Create Chart Download

	Response Percent	Response Count
Facebook	88.2%	15
Twitter	5.9%	1
Other	5.9%	1
answered question		17
skipped question		205

23. Would you like any further information about the WMMP Create Chart Download

	Response Percent	Response Count
Yes	34.7%	58
No	65.3%	109
answered question		167
skipped question		55

24. Further Comments: Download

	Response Count
answered question	202
skipped question	20

24. Further Comments: Download

Show Responses	202
answered question	**202**
skipped question	**20**

25. Thank you for filling out the survey. Please fill out your name and email address* to receive further information about the WMMP. Download

	Response Percent	Response Count
Name Show Responses	**97.5%**	**117**
Email Show Responses	80.8%	97
answered question		**120**
skipped question		**102**

County of Peterborough Environmental Services Summary Report

Transfer Station/Landfill Site Surveys 2011

The County of Peterborough Environmental Services performed public consultation surveys at all local transfer station/landfill sites in the County of Peterborough over the summer of 2011. Approximately 1150 residents (1.96% of the County population) were surveyed at 15 different sites. The surveys assessed current waste management/ diversion programs and the potential for future waste management/diversion programs and increased communication between residents and municipal staff.

Results Summary (See Report for Detailed Data)

Resident Question	**Township Data (%)**	**Average for County- all 15 sites (%)**
Seasonal vs. Permanent Residents (%)	**Asphodel-Norwood** Seasonal= 8%, Permanent= 92% **Douro-Dummer** Seasonal= 59%, Permanent= 41% **Cavan-Monaghan** Seasonal= 1%, Permanent= 99% **Galway-Cavendish-Harvey** Seasonal= 43%, Permanent= 57% **Havelock-Belmont-Methune** Seasonal= 66%, Permanent= 34% **North Kawartha** Seasonal= 72%, Permanent= 28% **Otonabee-South Monaghan** Seasonal= 6%, Permanent= 94% **Smith-Ennismore-Lakefield** Seasonal= 19%, Permanent= 81%	Seasonal= 34% Permanent= 66%
Average Time Residents Travel to the Site (min.) (in %)	**Asphodel-Norwood** 0-5= 68% 5-10= 19% 10-20=11% 20-30=3% 30-40=0% **Douro-Dummer** 0-5= 47% 5-10= 18% 10-20=24% 20-30=12% 30-40=0% **Cavan-Monaghan** 0-5= 41% 5-10= 46% 10-20=13% 20-30=1% 30-40=0% **Galway-Cavendish-Harvey** 0-5= 25% 5-10= 37% 10-20=30% 20-30=4% 30-40=2% **Havelock-Belmont-Methune** 0-5= 27% 5-10= 22% 10-20=36% 20-30=8% 30-40=8%	0-5 min.= 36% 5-10 min.= 27% 10-20 min.= 27% 20-30 min.=8% 30-40 min.=3%

	North Kawartha 0-5= 12% 5-10= 18% 10-20=34% 20-30=28% 30-40=%9 **Otonabee-South Monaghan** 0-5= 47% 5-10= 24% 10-20=29% 20-30=0% 30-40=0% **Smith-Ennismore-Lakefield** 0-5= 23% 5-10= 33% 10-20=35% 20-30=8% 30-40=1%	
Average Use of Site by Residents (%)	**Asphodel-Norwood** Every Week= 44% Every other Week= 15% Once a Month= 19% Special Occasions= 23% **Douro-Dummer** Every Week= 65% Every other Week= 18% Once a Month= 12% Special Occasions= 6% **Cavan-Monaghan** Every Week= 69% Every other Week= 17% Once a Month= 10% Special Occasions= 4% **Galway-Cavendish-Harvey** Every Week= 81% Every other Week= 11% Once a Month= 5% Special Occasions= 4% **Havelock-Belmont-Methune** Every Week= 67% Every other Week= 15% Once a Month=4 % Special Occasions= 14% **North Kawartha** Every Week= 61% Every other Week= 25% Once a Month= 4% Special Occasions= 11% **Otonabee-South Monaghan** Every Week= 32% Every other Week= 18% Once a Month= 24% Special Occasions= 26% **Smith-Ennismore-Lakefield** Every Week= 24% Every other Week= 14% Once a Month= 30% Special Occasions= 31%	Every Week= 55% Every Other Week=17% Once a Month= 14% Special Occasions=15%
Average amount of Garbage bags brought by residents (%)	**Asphodel-Norwood** 0= 32% 1= 37% 2= 17% 3= 8% +4=5% **Douro-Dummer** 0= 24% 1= 41% 2= 12% 3= 6% +4=18% **Cavan-Monaghan** 0= 8% 1= 28% 2= 39% 3= 13% +4=12% **Galway-Cavendish-Harvey** 0= 0% 1= 51% 2= 33% 3= 5% +4=6% **Havelock-Belmont-Methune** 0= 4% 1= 54% 2= 24% 3= 9% +4=10% **North Kawartha** 0= 4% 1= 60% 2= 31% 3= 5% +4=2%	0= 18% 1= 42% 2= 24% 3= 7% +4=9%

	Otonabee-South Monaghan 0= 32% 1= 44% 2= 18% 3= 3% +4=3% **Smith-Ennismore-Lakefield** 0= 39% 1= 20% 2= 20% 3= 8% +4=13%	
Average amount of Recycling Bins brought by residents (%)	**Asphodel-Norwood** 0= 28% 1= 20% 2=25 % 3= 17% +4=9% **Douro-Dummer** 0= 18% 1= 18% 2= 35% 3= 12% +4=18% **Cavan-Monaghan** 0= 40% 1= 25% 2= 25% 3= 7% +4=2% **Galway-Cavendish-Harvey** 0= 3% 1= 32% 2= 46% 3= 9% +4=5% **Havelock-Belmont-Methune** 0= 2% 1= 31% 2= 35% 3= 20% +4=12% **North Kawartha** 0= 10% 1= 32% 2= 44% 3= 11% +4=4% **Otonabee-South Monaghan** 0= 38% 1= 6% 2= 41% 3= 6% +4=9% **Smith-Ennismore-Lakefield** 0= 54% 1= 9% 2= 27% 3= 3% +4=5%	0=24% 1=22% 2=35% 3=11% +4=8%
Diversion Programs Residents Currently use on site (% that use the program)	**Asphodel-Norwood** Leaf/Yard= 67%, Large Articles= 40%, Used Tires= 35% **Douro-Dummer** Organics=24%, Leaf/Yard=24%, HHW=77%, Large Articles=53%, Reuse Centre=71% Appliances=76%, Used Tires=18% **Cavan-Monaghan** Large Articles=70%, Reuse Centre=96%, Used Tires=49% **Galway-Cavendish-Harvey** Organics=27%, Leaf/Yard=37%, HHW=68% Large Articles=65%, Appliances=54%, Used Tires=36% **Havelock-Belmont-Methune** Organics=26%, Leaf/Yard=37%, HHW=85% Large Articles=44%, Appliances=74%, Used Tires=7% **North Kawartha** Leaf/Yard=11%, HHW=65%, WEEE=41% Appliances=29%, Used Tires=13% **Otonabee-South Monaghan** Leaf/Yard=44%, HHW=82%, WEEE=68% Appliances=53%, Large Articles=74%, Reuse Centre=88%, Used Tires=44% **Smith-Ennismore-Lakefield** Leaf/Yard=61%, Large Articles=44%	Organics= 26% Leaf/Yard=40% HHW=75% Large Articles =56% Appliances = 54% Used Tire= 30% Reuse Centre=85%

	Appliances=40%, Used Tires=34%	
Diversion Programs Residents Would Use if on site (% that would use the program)	**Asphodel-Norwood** Organics=45%, HHW=83%, WEEE= 81% Reuse Centre= 81%, Appliances=44% **Douro-Dummer** WEEE=65% **Cavan-Monaghan** Organics=40%, Leaf/Yard=40%, HHW=87%, WEEE=85%, Appliances=61% **Galway-Cavendish-Harvey** Organics=51%, HHW=86%, WEEE=73%, Reuse Centre=84% **Havelock-Belmont-Methune** Organics=36%, Leaf/Yard=22%, HHW=68%, WEEE=41%, Large Articles=51% , Appliances=55%, Used Tires=18%, Reuse Centre=85% **North Kawartha** Organics=53%, HHW=69%, WEEE=60%, Large Articles=34%, Reuse Centre=70% **Otonabee-South Monaghan** Organics=26% **Smith-Ennismore-Lakefield** Organics=40%, HHW=79%, WEEE=75%, Reuse Centre=51%	Organics= 48.5% Leaf/Yard=31% HHW=79% WEEE=69% Large Articles=43% Appliances = 53% Used Tires= 18% Reuse Centre= 74%
Residents who Backyard Compost (%)	**Asphodel-Norwood** Backyard Compost= 60% **Douro-Dummer** Backyard Compost= 53% **Cavan-Monaghan** Backyard Compost= 69% **Galway-Cavendish-Harvey** Backyard Compost= 49% **Havelock-Belmont-Methune** Backyard Compost= 43% **North Kawartha** Backyard Compost= 40% **Otonabee-South Monaghan** Backyard Compost= 68% **Smith-Ennismore-Lakefield** Backyard Compost= 51%	Backyard Compost=54%

*Note: Some Townships have several sites; residents were still asked if they wanted programs at a particular site, even if the township had the program at another site.
*Note: Surveys were done prior to the WEEE pilot programs in Buckhorn/Halls Glen and during the WEEE pilot program in North Kawartha
*Note: Not all data from Halls Glen is collected-still in the process of collection (0.25% of population)
*Note: Percentages have been rounded
*Note: Appliance Drop off is considered appliances with Freon (some sites may have appliance drop off of items that do not contain Freon, but were not considered as having appliances diversion in this report)

Appendix A-2: Secondary Consultation

SECONDARY PUBLIC CONSULTATION

Presentations were made to each Township Council and promotional materials encouraging public input into the Waste Management Plan (WMMP) process were distributed at such events and meetings. Several additional methods of consultation were used by the County in an effort to inform and engage various groups, individuals, and interested parties in the development of the WMMP. The WMMP document was provided to the Technical Advisory Committee for review and comment. Aboriginal communities in the County as well as First Nations associated with the William's Treaty were contacted to solicit input.

The secondary public consultation included presentations to each Township Council in November 2012, and a County wide information centre held on November 29, 2012, at the Lakefield Marshland Centre in the Township of Smith-Ennismore-Lakefield, in order to:

- Present the Key Recommendations for the future waste management system; and,
- Obtain input from the public on the Key Recommendations.

Notice of the date, time and location for the PIC event was published in local newspapers, including: Peterborough Examiner; Cambellford/Northwest EMC; Lakefield Herald; and, Millbrook Times. Notification was also posted on the County website "Events Calendar" and "News" webpages, and notices were handed out at all landfills and depots in the County leading up to the event. A Public Service Announcement was issued by the County on a weekly basis from October 30 through November 27, 2012, providing the details of the PIC. Copies of the notices and Public Service Announcements have been included within this Appendix.

Turnout to the PIC included a total of 15 people, seven (7) of which were Councillors from the member Townships. An open house format was used the PIC, with a poster board display containing pertinent information related to the Key Recommendations of the WMMP. Representatives of the County and Cambium were on hand to answer questions throughout the course of the PIC.

Surveys were distributed to each Township and made available at the PIC that attendees could complete during the event. The survey was also available for completion online. The results of this survey are discussed in the following section entitled Survey No. 2. The County developed the "County of Peterborough Waste Management Pledge (the Pledge)" to encourage residents to commit to increasing waste diversion, and participation in the Pledge was promoted at the PIC.

SURVEY NO. 2

Concurrent with the final PIC event, an online survey was designed by the County, and was available for residents to complete. Two (2) Public Service Announcements were issued by the County regarding the survey and all advertisements encouraged residents to take the Pledge and complete the survey. Direct emails were sent to permanent and seasonal residents that have had previous involvement in any County led waste

survey was also posted to some of the member Township websites, and the link to the survey was distributed through common social media.

Survey participants were asked to:

- voice preferences on ways to reduce garbage and increase recycling
- offer input on the level of tax increase that is acceptable to increase diversion
- take the Pledge

In total 448 participants in the survey were documented. Most respondents (69%) were seasonal residents of the County. The highest participation rate in the survey was documented for the Township of Galway-Cavendish and Harvey and Havelock-Belmont-Methuen, which is consistent with greater number of responses received from seasonal residents. Responses were low in Asphodel-Norwood, Cavan-Monaghan, Douro-Dummer and Otonabee-South Monaghan. A summary of the online survey has been included in the following pages.

Notable results of the survey included:

- 38% of respondents indicated that they would not support an increase in taxes to reach the 60% diversion target
    - 37.5% of respondent would support a tax increase of $1
- 73.2% of respondents are happy with the current system of collection
- Of respondents that indicated that they were not satisfied with the current system of collection:
    - 83% would not be willing to pay an additional fee (i.e. tax increase) for a change to the collection service offered (i.e. curbside collection)
    - 15% would be willing to pay $80 or less
- To reduce garbage, 63% of people surveyed would prefer a Pay as You Throw (i.e. bag tags) system
- The majority of respondents indicated that a better understanding of what is recyclable and more recycling options at events would increase their recycling activities
    - Incentives and larger blue boxes were favoured to increase recycling activities
- 60% of respondents indicated that they never visit the County website for waste reduction information
    - An additional 26.6% visit the website once per year
- 226 respondents took the Pledge

  - The vast majority of respondents indicated that they already do, or will start to do immediately, most of the initiatives encouraged by the Pledge

- Many respondents indicated that they would like to receive more information on hazardous waste and electronics recycling, blue box recycling materials and events (i.e. Environment Days)

Comments were requested at the close of the survey, and 80 respondents provided individual comments to address at least one question of the survey. Common topical areas for comment included:

- Seasonal residents indicated that they already pay high taxes for little/no service and therefore are unwilling to increase taxes for additional diversion
- Hours of transfer stations are currently restrictive
- Curbside collection is not applicable to cottage areas
- Backyard compost is not a suitable option for many cottage areas where bears and other vermin are a problem

Based on the above comments and survey results, most residents of the County confirm agreement with the objective to reduce waste; however, seasonal residents are not willing to support an increase in taxes for additional services that may be offered.

TOWNSHIP INVOLVEMENT

In November 2012, the WMMP document was presented to all Township Councils for review and approval. Over the course of the Council meetings, several topics related to the WMMP were raised for discussion. Townships were interested in monitoring the potential for use of “incineration” facilities, should such opportunity become available. Introducing targeted promotion and education to seasonal residents and seniors may increase the understanding of the waste system, options available for diversion and positively influence the diversion rate. The Townships stated the need to focus on co-operative services with the County and among Townships, while maintaining local flexibility.

NEWS RELEASE

The Corporation of the County of Peterborough

For Immediate Release

Date: November 1, 2012

To: Representatives of the Media

From: Laurie Westaway – Manager, Environmental Services.

Subject: Public Service Announcement Regarding
(Waste Management Master Plan)

County Plans to Reduce Garbage by 20% in 20 Years

Peterborough, ON (November 1, 2012) The County of Peterborough has completed a new Waste Management Master Plan (WMMP) with the goal of reducing waste going to landfill by an additional 20% over the next 20 years.

A Public Information Session will be held on Thursday, November 29 from 4-7pm at the Marshland Centre in Lakefield (64 Hague Blvd.). Residents may also see the WMMP presented to their local Township Council on the following dates:

Monday, November 5
Havelock-Belmont-Methuen: 11am
Cavan Monaghan: 1pm

Tuesday, November 6
North Kawartha: 9:30am
Galway-Cavendish & Harvey: 1pm
Douro-Dummer: 5pm

Tuesday, November 13
Asphodel-Norwood: 9am
Smith-Ennismore-Lakefield: 5:20pm

Monday, November 19
Otonabee-South Monaghan: 1pm

Read the plan and make the pledge to reduce your waste at www.county.peterborough.on.ca. For more information call 705-775-2737 or email esinfo@county.peterborough.on.ca.

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County Court House, 470 Water Street, Peterborough, Ontario K9H 3M3
Phone: (705) 743-0380/1-800-710-9586 Fax: (705) 876-1730

NEWS RELEASE

The Corporation of the County of Peterborough

For Immediate Release

Date: November 8, 2012

To: Representatives of the Media

From: Laurie Westaway – Manager, Environmental Services.

Subject: Public Service Announcement Regarding
(Waste Management Master Plan)

County Plans to Reduce Garbage by 20% in 20 Years

Peterborough, ON (November 8, 2012) The County of Peterborough has completed a new Waste Management Master Plan (WMMP) with the goal of reducing waste going to landfill by an additional 20% over the next 20 years.

A Public Information Session will be held on Thursday, November 29 from 4-7pm at the Marshland Centre in Lakefield (64 Hague Blvd.). Residents may also see the WMMP presented to their local Township Council on the following dates:

Tuesday, November 13
Asphodel-Norwood: 9am
Smith-Ennismore-Lakefield: 5:20pm

Monday, November 19
Otonabee-South Monaghan: 6pm

Please note the Otonabee-South Monaghan meeting has been moved to 6pm.

Read the plan and make the pledge to reduce your waste at www.county.peterborough.on.ca. For more information call 705-775-2737 or email esinfo@county.peterborough.on.ca.

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NEWS RELEASE

The Corporation of the County of Peterborough

For Immediate Release

Date: November 16, 2012

To: Representatives of the Media

From: Laurie Westaway – Manager, Environmental Services.

Subject: Public Service Announcement Regarding
(Waste Management Master Plan)

County Residents: Have your say on future waste options

Peterborough, ON (November 16, 2012) The County has developed the Waste Management Master Plan with the goal of reducing garbage by 20% over the next 20 year. Please go to the County's website, www.county.peterborough.on.ca, to fill out the survey of this process to let us know what programs are most important to you and what costs you are willing to have included in your taxes.

Previous public consultation has indicated that residents were interested in receiving several additional waste services (ie: enhanced recycling options, leaf and yard programs and organics options). The planning process has taken these into consideration and calculated the associated costs.

The survey includes a waste reduction pledge. A 20% waste reduction is achievable but it cannot be done without resident participation. Let the County know what are willing to do to help us reach the goal now, next year and in five years.

An executive summary as well as the whole plan are also available for your information on the website.

For more information or to receive a paper copy of the survey please contact Environmental Services at 705-775-2737 or esinfo@county.peterborough.on.ca.

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County Court House, 470 Water Street, Peterborough, Ontario K9H 3M3
Phone: (705) 743-0380/1-800-710-9586 Fax: (705) 876-1730

NEWS RELEASE

The Corporation of the County of Peterborough

For Immediate Release

Date: November 27, 2012

To: Representatives of the Media

From: Laurie Westaway – Manager, Environmental Services.

Subject: Public Service Announcement Regarding
(Waste Management Master Plan Survey)

Permanent County Residents Encouraged to Answer Survey

Peterborough, ON (November 27, 2012) The County of Peterborough would like to encourage permanent residents to have their say on the future of waste in the County. Please go to our website www.county.peterborough.on.ca to link to the survey to have your opinion heard.

Residents are also encouraged to attend a Public Information Centre this Thursday, November 29 at the Marshland Centre (96 Hague Blvd. Lakefield) from 4-7pm.

Over 300 residents (70% of responses from cottagers) have already answered the Waste Management Master Plan (WMMP) survey and have provided valuable feedback.

Previous public consultation has indicated that residents were interested in receiving several additional waste services (ie: enhanced recycling options, leaf and yard programs and organics options). The planning process has taken these into consideration and calculated the associated costs.

The survey includes a waste reduction pledge. The WMMP plans for a 20% waste reduction in 20 years. A 20% waste reduction is achievable but it cannot be done without resident participation. Let the County know what are willing to do to help us reach the goal now, next year and in five years.

An executive summary as well as the whole plan are also available for your information on the website in the Waste Management Master Plan section.

For more information or to receive a paper copy of the survey please contact Environmental Services at 705-775-2737 or esinfo@county.peterborough.on.ca.

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County Court House, 470 Water Street, Peterborough, Ontario K9H 3M3
Phone: (705) 743-0380/1-800-710-9586 Fax: (705) 876-1730

County of Peterborough

Waste Management Master Plan (WMMP)

Public Consultation Survey No. 2

The County of Peterborough has drafted a Waste Management Master Plan (WMMP) to improve diversion and services for the next 20 years. The County appreciates any and all input from residents during this process.

Currently, the County of Peterborough sends 60% of waste to landfill (40% is diverted through recycling, composting etc.). Previous surveys show the majority of residents want the County to reach a 60% diversion rate (i.e. 40% to landfill) to be phased in over 10-20 years.

1. In order to reach 60% diversion, costs per household will increase with additional services. Please choose one of the following increases in annual household cost, note the additional service, and impact on waste diversion. I am willing to pay, through my taxes, an additional:

   - ☐ $1/year for current programs* and enhanced backyard composting = 45% diversion
   - ☐ $7/year for the above and a leaf and yard program (depot and urban curbside) = 54% diversion
   - ☐ $30/year for all of the above and depot drop-off organics program = 58% diversion
   - ☐ $60/year for all of the above and urban curbside organics pick-up = 65% diversion

* Current programs include: blue box recycling, hazardous waste, electronics recycling, pilot organics, and final waste disposal (landfill).

2. Townships work with the County to provide blue box recycling, however Townships are still responsible for garbage collection. Some residents requested curbside garbage and/or recycling.

   - ☐ I am happy with my current system of collection (skip to question 4)
   - ☐ I already have curbside recycling and want curbside garbage (Cavan Ward Only)
   - ☐ I want curbside recycling and garbage (Galway-Cavandish & Harvey, and Belmont & Methuen Wards Only)
   - ☐ I already have curbside recycling and do not want curbside garbage (Cavan Ward Only)

3. I would pay ___ per year for my choice in question 2 (if applicable). (Please note that recycling collection costs approximately $32 per year)

   - ☐ $0 - no change desired
   - ☐ $30-$50
   - ☐ $51-$80
   - ☐ $81-$100

4. Please choose your preferred option to reduce garbage
   - ☐ Pay As You Throw (pay per bag disposed)
   - ☐ One bag limit per week (no extra bags allowed)
   - ☐ Partial Clear Bags (1 black bag, additional bags paid and in clear bags)

5. If costs for garbage were removed from municipal taxes, would you support a full user-pay approach (i.e. similar to a utility such as water?
   - ☐ Fully support
   - ☐ Moderately support
   - ☐ Would not support

6. What would increase your recycling activities?

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
A better understanding of what is recyclable	☐	☐	☐	☐	☐
Incentives (coupons and free stuff)	☐	☐	☐	☐	☐
More recycling options at events (Styrofoam, carpets, mattresses, etc.)	☐	☐	☐	☐	☐
Bigger blue boxes for "Containers"	☐	☐	☐	☐	☐

7. How often do you visit the County's website for waste reduction information (recycling, hazardous waste, electronics, composting)?
   - ☐ Regularly (once/month)
   - ☐ Quarterly (once/4 months)
   - ☐ Once a year
   - ☐ Never

8. Please provide any other comments in the space provided below.

_____

_____

_____

County of Peterborough Waste Management Pledge

In the County of Peterborough, Residents Will:

- Reduce the amount of waste generated
- Purchase re-usable and recyclable goods
- Participate in County Waste Diversion Programs
- Educate others about waste reduction at home, work, and play

The County and Townships will:

- Continue to divert waste from landfill by developing innovative and effective waste management programs and infrastructure
- Manage household waste and recyclables in a responsible manner
- Encourage and reduce barriers to public participation in waste management initiatives
- Set high standards for waste minimization and diversion in our municipal buildings, parks and open spaces
- Partner with local businesses and institutions to reduce waste and increase diversion
- Promote and encourage waste minimization legislation and programs with all levels of government and in partnership with industry

9. The County of Peterborough needs your help to reach 60%! Please make a commitment to reducing waste at home, work, and play.

	Today	In 2013	In 5 Years
I will watch for curbside and/or depot leaf and yard material collections in my area and participate.	☐	☐	☐
When planning renovations in my home/business I will make sure all recycling options for construction materials are followed.	☐	☐	☐
I will use my blue box to its full potential and check the County website or call when unsure if an item can go into the blue box.	☐	☐	☐
I will save my Hazardous and Electronic Wastes and take them to my nearest depot or event.	☐	☐	☐
I will backyard compost.	☐	☐	☐
I will dispose of 2 bags, or less, of garbage each week.	☐	☐	☐
I will download 'My Waste App' or call the County to find out about recycling events in my area.	☐	☐	☐
I will change my personal buying habits to reflect the 5 R's (Rethink, Refuse, Reduce, Reuse, Recycle).	☐	☐	☐

	Today	In 2013	In 5 Years
I will encourage my workplace and places that I shop to reduce waste and recycle.	☐	☐	☐
I will seek information to participate in the curbside and depot organics programs (if/when available).	☐	☐	☐

10. Signed:

☐ I wish to remain anonymous on the pledge

Name:

11. Residency Information

- ☐ I live in the County Permanently (year round)
- ☐ I live in the County Seasonally (part of the year)
- ☐ I live outside the County of Peterborough

12. Which Township do you live in?

- ☐ Asphodel-Norwood
- ☐ Cavan-Monaghan
- ☐ Douro-Dummer
- ☐ Galway-Cavendish and Harvey
- ☐ Other (please specify):
- ☐ North Kawartha
- ☐ Otonabee-South Monaghan
- ☐ Smith-Ennismore-Lakefield
- ☐ Havelock-Belmont-Methuen

13. Please email me more information on:

- ☐ Events (Environment Days)
- ☐ Hazardous Waste and Electronics Recycling
- ☐ Peterborough County/City Waste Management Facility (Bensfort Road Landfill)
- ☐ Backyard Composting (now - bear country options)
- ☐ Organics in the County
- ☐ Blue Box Recycling Materials
- ☐ My Waste App

Please provide email address:

If you have any questions regarding the Waste Management Master Plan please contact:

County of Peterborough
Laurie Westaway, Manager of Environmental Services
470 Water Street, Peterborough, Ontario, K9H 3M3
Phone (705) 775-2737 ext. 317
Fax: (705) 749-2551
lwestaway@county.peterborough.on.ca
http://county.peterborough.on.ca/waste-management-plan

Waste Management Master Plan Public Consultation Survey No. 2

1. Which Township do you have property in:

	Response Percent	Response Count
Asphodel-Norwood	1.0%	3
Cavan-Monaghan	4.7%	14
Douro-Dummer	2.0%	6
Galway-Cavendish and Harvey	**38.6%**	**114**
Havelock-Belmont-Methuen	36.6%	108
North Kawartha	13.6%	40
Otonabee-South Monaghan	0.7%	2
Smith-Ennismore-Lakefield	4.4%	13
Other (please specify)	0.7%	2
	answered question	**295**
	skipped question	**0**

2. Residency Information:

		Response Percent	Response Count
I live in the County Permanently (year round)		28.7%	84
I live or cottage in the County Seasonally (part of the year)		**70.6%**	**207**
I live outside the County of Peterborough		0.7%	2
		answered question	**293**
		skipped question	**2**

3. In order to reach 60% diversion, costs per household may increase. Please choose an option you are willing to pay through your taxes. Please note the additional service and the impact on waste diversion.

		Response Percent	Response Count
$0/year		**57.6%**	**170**
$1/year for current programs* and enhanced backyard composting and events = 45% diversion		20.3%	60
$7/year for the above and a leaf and yard program (depot and urban curbside) = 54% diversion		8.1%	24
$30/year for all of the above and depot drop-off organics program = 58% diversion		6.8%	20
$60/year for all of the above and urban curbside organics pick-up = 65% diversion		7.1%	21
		answered question	**295**
		skipped question	**0**

4. Townships work with the County to provide blue box recycling, however Townships are still responsible for garbage (curbside and/or transfer station/local landfill). In previous surveys, some residents requested curbside garbage and/or recycling.

	Response Percent	Response Count
I am happy with my current system of collection (skip to question 6)	**69.8%**	**206**
I already have curbside recycling and want curbside garbage (Cavan Ward Only)	0.3%	1
I want curbside recycling and garbage (Galway-Cavandish & Harvey, and Belmont & Methuen Wards Only)	8.8%	26
I already have curbside recycling and do not want curbside garbage (Cavan Ward Only)	1.4%	4
I am not happy with my garbage/recycling service. I would prefer:	19.7%	58
	answered question	**295**
	skipped question	**0**

5. I would pay ... per year for my choice in question 4 (if applicable). (Please note that recycling collection costs approximately $32 per year)

	Response Percent	Response Count
$0 - no change desired or I want these services included in current tax levy	**83.1%**	**143**
$30-$50	9.9%	17
$51-$80	5.2%	9
$81-$100	1.7%	3
answered question		**172**
skipped question		**123**

6. Please choose your preferred option to reduce garbage

	Response Percent	Response Count
Pay As You Throw (pay per bag disposed, ie: bag tag or punch card)	**63.8%**	**164**
One bag limit per week (no extra bags allowed)	22.6%	58
Partial Clear Bags (1 black bag, additional bags paid and in clear bags)	13.6%	35
answered question		**257**
skipped question		**38**

7. If all costs for garbage were removed from municipal taxes, would you support a full user-pay approach (for example: the cost of each bag disposed = total cost to transfer and manage the waste from location collected to final disposal)?

	Response Percent	Response Count
Fully support	34.9%	99
Moderately support	27.5%	78
Would not support	**37.7%**	**107**
	answered question	**284**
	skipped question	**11**

8. What would increase your recycling activities?

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree	Response Count
A better understanding of what is recyclable (items are always changing)	6.2% (17)	8.3% (23)	16.7% (46)	**44.9% (124)**	23.9% (66)	276
Incentives (coupons and free stuff)	23.0% (62)	17.5% (47)	20.4% (55)	**24.2% (65)**	14.9% (40)	269
More recycling options at events (styrofoam, carpets, mattresses, etc.)	5.0% (14)	2.1% (6)	13.9% (39)	39.1% (110)	**39.9% (112)**	281
Bigger blue boxes for "Containers"	9.5% (25)	15.2% (40)	**40.5% (107)**	18.6% (49)	16.3% (43)	264
				answered question		**285**
				skipped question		**10**

9. How often do you visit the County's website (www.county.peteroborough.on.ca) for waste reduction information (events, recycling, hazardous waste, electronics, composting)?

	Response Percent	Response Count
Regularly (once/month)	2.0%	6
Quarterly (once/4 months)	10.5%	31
Once a year	26.5%	78
Never	**60.9%**	**179**
	answered question	**294**
	skipped question	**1**

10. Please provide any further comments.

	Response Count
	124
	answered question	**124**
	skipped question	**171**

11. The Pledge: The County of Peterborough needs your help to reach 60%! Please make a commitment to reducing waste at home, work, and play.

	I already do / I will start today	Next year	In 5 years	Response Count
I will watch for leaf and yard material programs in my area and participate (curbside or waste site).	**90.3% (177)**	7.7% (15)	2.0% (4)	196
When planning renovations in my home/business I will make sure all recycling options for construction materials are followed.	**92.3% (203)**	5.5% (12)	2.3% (5)	220
I will recycle as much as I can and ask the County when I am unsure if an item can be recycled.	**97.8% (222)**	1.8% (4)	0.4% (1)	227
I will save my Hazardous and Electronic Wastes and take them to my nearest depot or event.	**97.8% (226)**	1.3% (3)	0.9% (2)	231
I will backyard compost.	**75.4% (150)**	11.1% (22)	13.6% (27)	199
I will dispose of 2 bags, or less, of garbage each week.	**96.9% (219)**	0.9% (2)	2.2% (5)	226
I will find out about recycling events in my area by contacting the County.	**71.6% (139)**	23.7% (46)	4.6% (9)	194
I will change my personal buying habits to reflect the 5 R's (Rethink, Refuse, Reduce, Reuse, Recycle).	**88.2% (186)**	8.1% (17)	3.8% (8)	211
I will encourage my workplace and places that I shop to reduce waste and recycle.	**88.4% (176)**	7.5% (15)	4.0% (8)	199
I will seek information to participate in the curbside and waste site organics programs (if/when available).	**83.1% (148)**	12.9% (23)	3.9% (7)	178
			answered question	**236**
			skipped question	**59**

12. I pledge to do the above, signed:

	Response Percent	Response Count
I wish to remain anonymous on the pledge	**100.0%**	**156**
	Name:	80
	answered question	**156**
	skipped question	**139**

13. Please email me more information on:

	Response Percent	Response Count
Events (Environment Days)	61.2%	52
Hazardous Waste and Electronics Recycling	**69.4%**	**59**
Peterborough County/City Waste Management Facilitly (Bensfort Road Landfill)	16.5%	14
Backyard Composting (now - bear country options)	47.1%	40
Organics in the County	34.1%	29
Blue Box Recycling Materials	52.9%	45
My Waste App	16.5%	14
	Other (please specify)	13
	answered question	**85**
	skipped question	**210**

14. If you have requested further information above, please provide your email or contact information below:

		Response Percent	Response Count
Email		**98.8%**	**81**
Address		62.2%	51
		answered question	**82**
		skipped question	**213**

Appendix B
Relevant Legislation

RELEVANT LEGISLATION

ENVIRONMENTAL PROTECTION ACT

The Environmental Protection Act (EPA) provides the legislative framework for the establishment of waste management facilities. The establishment, management, alteration, and/or expansion of waste management facilities in the Province of Ontario require a Certificate of Approval under Part 5, Section 27 of the EPA.

To obtain approval for any new waste management system, transfer system, transfer facility, or landfill site, or for a significant change to an existing system, the MOE requires that an application for an Environmental Compliance Approval (ECA) be submitted. Application for new systems or significant changes to existing operations typically requires supporting documentation.

In most cases the MOE will require a form of public consultation or notification as part of the application process. For new landfills or expansions of greater than 100,000 cubic metres, public meetings are mandatory.

ONTARIO REGULATION 347

Regulation 347 under the EPA is the primary regulation for controlling the handling, disposal, and management of hazardous and non-hazardous wastes in the Province. Under Regulation 347, wastes are classified into categories that direct handling requirements and specify control measures for disposal facilities.

Standards for the location, maintenance, and operation of landfill sites are detailed in Section 11 of Regulation 347. Section 9 of the Regulation additionally states that the terms and conditions of the Certificate of Approval can, on a site specific basis, over-ride the standards of the Regulation.

WASTE DIVERSION ACT

Ontario Regulation 101/94 outlines municipal responsibilities with respect to blue box recycling systems in Ontario. These requirements pertain to collection methods/frequency, materials being recycled, promotion, and reporting.

The Waste Diversion Act (WDA) was passed into law on June 27, 2002. The purpose of the WDA is to promote the reduction, reuse, and recycling of waste in Ontario and to provide for the development, implementation, and operation of waste diversion programs. Under the WDA, programs have been established for blue box waste (under O. Reg. 273/02), tires, Waste Electrical and Electronic Equipment (WEEE), and Municipal Hazardous or Special Waste (MHSW).

In June 2004, the MOE released “Ontario’s 60% Waste Diversion Goal – A Discussion Paper”. The Discussion Paper outlines achieving a target of 60% waste diversion from disposal by 2008. The MOE identified seventeen

potential action items that would assist the Province in achieving 60% diversion, if implemented. These options were subsequently discussed through a province-wide consultation process and an assessment of the costs and environmental impacts of each option was considered. While the results of the consultation and assessment processes were never released publicly, it was the Province's intention that the discussion paper and its action items form the basis of policy decisions regarding Ontario's future waste management system.

No steps were taken by the Province to formally establish the 60% waste diversion target or any other mandatory diversion target for municipalities. However, many of the larger Ontario municipalities and those with leading waste diversion programs have moved to adopt the 60% diversion target for the residential waste stream that they manage. While no municipalities have identified that they have successfully achieved this diversion target, several are proactively implementing diversion programs in order to meet this goal.

On June 12, 2007, the MOE released a proposed "Policy Statement on Waste Management Planning". The MOE posted the Policy Statement on the Environmental Registry for a 45 day public review and comment period. This Policy Statement outlines the requirement for municipalities with a population of less than 100,000 (i.e., County of Peterborough), to develop a municipal waste plan. A key aspect of the Policy Statement includes the requirement for municipalities to maximize diversion of materials from disposal, including a commitment to meet the provincial target of 60% diversion from waste disposal.

Ontario Regulation 101/94 makes it mandatory for municipalities with over 5,000 people to implement and operate a curbside recycling program (i.e. blue box program). The blue box program must allow for the source separation and collection of a core suite of materials for recycling and includes newsprint, paper, cardboard, steel, glass, aluminum, and polyethylene terephthalate (PET) food and beverage containers. This regulation also requires municipalities to provide a backyard composter program and leaf and yard waste collection and composting. The County and member municipalities currently provide these programs, to varying levels, consistent with the regulation.

The County is currently meeting legislative requirements regarding diversion programming by including services such as blue box materials and recycling; tire, WEEE, and MHSW.

There are several proposed changes to waste management legislation that could potentially impact the County. In October 2008 the MOE began a review of the WDA. The purpose of the review was to investigate issues affecting waste diversion and to contemplate using the principles of Extended Producer Responsibility (EPR) as the basis for Ontario's waste diversion framework. The potential impacts to the County can be described as follows and particularly as they relate to the possibility that producers could become fully responsible for waste diversion in the residential and IC&I sectors:

- potential loss of control of the recycling program;
- impact on infrastructure;

- disposal bans;
- disposal levies; and,
- program costs.

In April 2009, Waste Diversion Ontario (WDO) released a report entitled —Blue Box Program Plan Review Report and Recommendations. This review was requested by the Minister of the Environment on October 16, 2008. The Minister directed WDO to undertake the Blue Box Program Plan review using the principles of extended producer responsibility to form the review framework. The review resulted in 20 recommendations under each of the ten (10) issues that were identified by the Minister of the Environment. Overall the review implications for the Blue Box Program Plan and Regulation 273/02 could affect the County's blue box program by requiring a change in the quantity, number, and type of materials accepted, requiring higher diversion targets, and ensuring environmentally responsible end-market destinations for recyclable materials. There may be the potential for increased funding which may offset any cost associated with implementing these changes. These potential legislative changes have been considered in the development of the County's WMMP.

Leaf & Yard Waste Management

Ontario Regulation 101/94 (Recycling and Composting of Municipal Waste) requires that municipalities that have a population of 5,000 shall establish, operate, and maintain a leaf and yard waste system. This system includes 'the provision of home composters to residents by the municipality at cost or less, the provision of information to residents, publicizing the availability of home composters, explaining the proper installation and use of home composters and the use of compost, and encouraging home composting.'

Municipalities with populations greater than 50,000 are also required to provide a leaf and yard waste collection system that is reasonably convenient to the generators of leaf and yard waste and that the waste must be either applied directly to land, transported to be applied directly to land, composted, or transported to be composted.

Burning of clean wood and brush is allowed at some member municipality landfills under conditions specified in their Certificates of Approval (C of A) in accordance with Ministry of the Environment Guideline C-7 (Burning at Landfill Sites - April 1994).

Industrial, Commercial and Institutional Wastes

There are currently two pieces of legislation which apply specifically to IC&I waste. The first is Regulation 102/94 which requires certain IC&I facilities to conduct Waste Audits and produce Waste Reduction Work Plans. Regulation 103/94, Industrial, Commercial and Institutional Source Separation Programs, requires owners of the IC&I facilities identified in Reg. 102/94 to have source separation programs in place for certain wastes.

Food Waste Composting

Organic waste makes up approximately one-third of Ontario's waste stream and consists of:

- Leaf and yard waste;
- Household “green bin” waste;
- Food from restaurants, hotels, schools and hospitals;
- Residue from food processing operations and supermarkets;
- Spoiled food;
- Sewage biosolids and septage; and
- Pulp and paper mill biosolids.

Currently there is no Provincial legislation banning food waste from landfill, or making composting of food waste mandatory and most organic waste in Ontario is sent for disposal in landfills or is land applied.

If a municipality chooses to implement curbside collection of Source Separated Organics (SSO), the central composting facility and testing of feedstock and resulting compost are currently regulated by the MOE’s Interim Guidelines for the Production and use of Aerobic Compost in Ontario, November 2004.

The MOE is proposing to update the Interim Guidelines for the Production and Use of Aerobic Compost in Ontario (2004) to include the most up-to-date best management practices and standards. The MOE issued a proposed Guideline for Composting Facilities and Compost Use in Ontario dated November 2009 for consultation until January 2010.

The updated document will provide guidance on facility siting, design, equipment use and operating procedures, including feedstock control and odour prevention, which would help minimize environmental impacts, such as odours, as well as improve the quality of finished compost.

It also introduces higher allowable feedstock metal concentrations and three categories of compost (Categories AA, A, and B). As related to biosolids management, this proposed guideline creates an opportunity to co-compost food waste with biosolids if desired.

At the date of completion of this WMMP a final decision or approval on the proposed Guideline had not been finalized by the MOE.

ONTARIO REGULATION 101/07

In March 2007, the MOE announced the enactment of Ontario Regulation 101/07 (Waste Management Projects) under the Environmental Assessment Act (EAA) and amendments to the EPA for waste recycling, mining, alternative fuels, and new/emerging technologies. The regulatory changes were created for the purpose of reducing the time and resources required under select circumstances for the approval of continued operations of small rural landfills through capacity expansions or landfill mining.

The new regulation establishes three classes of waste management projects. Those projects, both public and private, with the highest impact are designated for the full EAA process and include:

- A new Environmental Screening process applies to projects with predictable effects that can be "readily mitigated."
- Projects classified as having minimal impacts, such as landfill expansions to less than 40,000 cubic metres, do not require approval under the EAA and are not designated as subject to the requirements of the EAA.
- Recycling facilities of any size will not have to go through the EA process provided that less 1,000 tonnes per day of residual waste is disposed.
- Proponents can pilot new waste technologies without having to undergo an EA providing they are small and can meet the MOE's air emission standards. It may make it easier to recycle certain wastes that currently do not meet existing exemptions criteria such as waste paint, crumb rubber, batteries, and electronics.
- Converting certain wastes into alternative fuels will no longer require waste management approvals but must still meet the MOE's air emission standards.

ONTARIO REGULATION 267/03 (NUTRIENT MANAGEMENT ACT)

The Nutrient Management Act (NMA) and Ontario Regulation 267/03 (O. Reg. 267/03) made under that Act, may impact waste management activities within the County because this legislation regulates nutrient use on agricultural land within the province. Some wastes (typically sewage sludge) that are routinely landfilled can also be land-applied as a nutrient source or soil amendment, subject to the conditions of the NMA and its Regulations. Similarly, some organic processing by-products from composting may be land-applied subject to regulation under the NMA.

Any nutrient containing materials of non-agricultural origin, including sewage biosolids that are spread on agricultural land, are referred to as non-agricultural source materials (NASM). NASM land application standards and requirements are enforceable under the NMA and if an adverse effect occurs or may occur, the EPA or the Ontario Water Resources Act (OWRA) may also apply.

O. Reg. 267/03, which regulates NASM application to agricultural land, was updated September 18, 2009. Generators of NASM, such as wastewater treatment plants and food processing facilities, are regulated under the EPA and O. Reg. 347 until the nutrient material arrives at the farmer's gate where it becomes subject to the NMA (2002) and O. Reg. 267/03.

Since land application of sewage biosolids and other NASMs to agricultural land is controlled provincially, it is possible for biosolids from one municipality to be spread on approved land in another municipality.

Requirements for composting are listed in the Ministry of the Environment's Interim Guidelines for the Production and use of Aerobic Compost in Ontario, dated 1991. Under these guidelines, the inclusion of biosolids has been difficult for municipalities to meet due to very restrictive metal levels for the compost feedstock. Any resulting compost including biosolids would be controlled just as strictly as the original biosolids.

As noted in Section 0, the MOE issued a proposed Guideline for Composting Facilities and Compost Use in Ontario dated November 2009 for consultation until January 2010 which includes less stringent allowable feedstock metal levels and three categories of finished compost. If this Guideline is finalized without changes, there is a greater probability of co-composting biosolids if desired. Material characterization would be required to determine the acceptable level of dilution with low-metal feedstocks. Compost produced with biosolids has the potential of meeting the requirements of the middle category of compost, Category A, involving some labeling and usage restrictions. If the compost falls into Category B, its use would be controlled just as strictly as the original biosolids.

PROVINCIAL POLICY STATEMENT, 2005

Section 1.6.8 of the Provincial Policy Statement on land-use planning, issued under the authority of Section 3 of the Planning Act, states that:

"Waste management systems need to be provided that are of an appropriate size and type to accommodate present and future requirements, and facilitate, encourage, and promote reduction, reuse, and recycling objectives. Waste management systems shall be located and designed in accordance with provincial legislation and standards."

CLEAN WATER ACT

The Clean Water Act has been passed by the Ontario legislature to assist communities with protecting their municipal drinking water supplies at the source. Through source protection planning, communities will identify potential risks to local water quality and water supply, and will create a plan to reduce or eliminate these risks. This is achieved through the creation of Source Protection Plans. The task of developing a plan involves watershed residents working with municipalities, conservation authorities, property owners, farmers, industry, health officials, community groups, First Nations, and others.

Implementation of the Source Protection Plan is expected to be achieved largely through changes to policies within municipal official plans. Such policy changes also require public consultation. Just as they are now, policies contained in and administered by municipalities within their Official Plans may be appealed. But changes to Official Plans are only one policy alternative

The range of voluntary and regulatory programs and tools that will be available to incorporate into policies to reduce or eliminate threats to drinking water, include:

- outreach and education;
- incentive programs;
- land use planning (zoning by-laws, and Official Plans);
- new or amended provincial instruments;
- risk management plans;
- prohibition; and
- land use restrictions.

Both assessment and planning must be conducted on a watershed basis.

GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE, 2006

Policy 4.2.4(d) states that Municipalities will develop and implement official plan policies and other strategies in support of integrated waste management, including:

- enhanced waste reduction, composting, and recycling initiatives and the identification of new opportunities for source reduction, reuse, and diversion where appropriate;
- a comprehensive plan with integrated approaches to waste management, including reduction, reuse, recycling, composting, diversion, and the disposal of residual waste;
- promotion of reuse and recycling of construction materials; and,
- consideration of waste management initiatives within the context of long term regional planning, and in collaboration with neighbouring municipalities.

Appendix C

Waste Management By-laws within the County

CORPORATION OF THE COUNTY OF PETERBOROUGH

BY-LAW # 46 - 1989

BEING A BY-LAW TO ASSUME THE POWER TO IMPLEMENT A PROGRAM TO RECOVER AND RECYCLE WASTE IN THE COUNTY OF PETERBOROUGH.

WHEREAS the Legislative Assembly of the Province of Ontario has amended the Municipal Act, Chapter 302, R.S.O. 1980, by enacting Bill 201 on July 13th., 1989, which empowers a County to adopt a waste management master plan and to assume waste management powers;

AND WHEREAS the Corporation of the County of Peterborough is committed to a waste diversion goal of 40%, and has therefore undertaken to initiate a recycling program in the County of Peterborough;

AND WHEREAS the Corporation of the County of Peterborough has decided to assume the waste management powers of providing containers for the recovering of certain types of recyclable materials and transporting the materials to a recycling plant;

AND WHEREAS the Corporation of the County of Peterborough will enter into an agreement with the Corporation of the City of Peterborough for the delivery of recyclable materials to the City's recycling plant;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE COUNTY OF PETERBOROUGH ENACTS AS FOLLOWS:

1. In this by-law

   (a) "The County" means the Corporation of the County of Peterborough;

   (b) "Depot" means a location where recyclable material will be collected within each municipality;

   (c) "Municipality" means local municipalities in the County of Peterborough;

   (d) "Operations" means those services provided by the County for the recycling program;

   (e) "Plant" means the recycling centre owned and operated by the City of Peterborough, located on Pido Road in the Corporation of the City of Peterborough;

(f) "Recyclable materials" means:

(i) Newsprint;

(ii) Glass, meaning clean glass bottles and jars but not sheet glass or ceramics;

(iii) Tin and aluminum cans (beverage and vegetable cans);

(iv) P.E.T. plastics (plastic soft drink containers);

(g) "Standards" means those standards established from time to time by the City and its recycling plant for the acceptance of recyclable waste at the plant.

2. In order to recover the recyclable materials, each municipality shall;

(a) Provide at least one depot for the collection of the materials as set forth in Schedule "A" attached hereto. Additional depots may be required by the County at additional cost to the municipality;

(b) Be responsible for the maintenance, operation and supervision of the containers while at the depots;

(c) Ensure that the recyclable materials are of a type and standard required by the City and its recycling plant.

3. The County shall;

(a) Purchase and provide to each municipality standard containers for the collection of recyclable materials in order to provide a uniform system throughout the County;

(b) Act as purchasing agent for all containers, recycling equipment and materials;

(c) Acquire or engage the necessary equipment to pick up and transfer the materials from the various depots and locations in the municipalities to the recycling plant;

(d) Pick up and deliver all recyclable materials from the various depots and locations in the municipalities and transport and deliver them to the recycling plant;

(e) Enter into an agreement with the Corporation of the City of Peterborough for the delivery of recyclable materials to the City's recycling plant.

4. The County shall retain ownership of all containers, equipment and materials purchased for the collection and transportation of the recyclable materials and shall insure them against third party liability while they are in the care and control of the County. Each municipality shall insure the said containers, equipment and materials while same are in the care and control of the municipality, its servants, agents and contractors or ratepayers, and shall ensure that the County is a named insured on the policy of insurance.

5. (a) The cost of acquiring and replacing the standard containers shall be charged to each municipality on a per unit basis.

   (b) Any municipality requiring special or additional equipment, material or services specific to the municipality will be responsible for the cost of acquiring, operating or maintaining the equipment and providing the services. Such equipment, material or service shall not impede, replace or interfere with the waste management powers assumed by the County in its recycling program.

   (c) The cost of transportation from each municipality, as set out in Schedule "B" attached, are charges that may arise at the recycling plant. Maintenance costs and expenses in administering the recycling program will be recovered through the County's general levy, according to the traditional apportionment process, based on discounted equalized assessments. Capital costs not charged on a per unit basis or which are specific to a municipality will be billed to the municipality directly.

   (d) Costs that are specific to any municipality, as set out in Schedule "B" attached, will be levied to that municipality and may be collected in a manner to be agreed upon with the municipality.

   (e) Recyclable materials which do not meet the standards for acceptance by the recycling plant may be sorted by the plant or may be returned to the municipality of origin and that municipality will be responsible for any cost or charges by the City to the County, in addition to any extra costs incurred by the County in transporting, disposing of or making the material comply with the standards.

6. The types of standards of materials acceptable to the City's recycling plant may be amended from time to time, upon notice to the municipalities.

7. County Council will appoint a committee of council to be responsible for recycling waste materials within the entire County. Any concerns or complaints regarding the operation of the program must be submitted in writing to the County Administrator.

8. This by-law shall be reviewed by the Council of the County at the end of five years from the date of its enactment. At the end of the first six months from the date of enactment, a review of operations shall take place. Terms and conditions may be altered to reflect changes in operations or added services as may be approved by the County.

9. Each municipality within the County shall be responsible for securing any necessary permits and/or approvals from applicable Ministries.

10. This by-law shall not take effect until approval has been granted by the Ontario Municipal Board, if required.

11. Those municipalities with curbside pickup will proceed according to the terms and conditions as set out in Schedule "C" attached.

12. The County hereby adopts and ratifies the agreement with the Corporation of the City of Peterborough which is attached hereto as Schedule "D".

13. Schedules "A", "B", "C", and "D" attached hereto form part of this by-law.

READ a first time this sixty day of September, 1989.

READ a second time this sixty day of September, 1989.

READ a third time and finally passed this sixty day of September, 1989.

Don Bon Warden.

c/s

Clerk.

SCHEDULE "A"

LOCATIONS

Location for pick-up

Describe Location (i.e. Lot, Concession, R.R. #, street, address, for each location to be used as a depot) (MAP ATTACHED)

Define area to have curbside pick-up.

Municipalities are responsible for insuring that a site is prepared and maintained to provide convenient loading and unloading on a year round basis and it shall be sufficiently large enough to accommodate two bins simultaneously to allow for loading and unloading of same. Grading may also be required. Road access to the containers be constructed and maintained to a satisfactory level to allow ingress and egress on a year round basis.

SCHEDULE "B"

COSTS SPECIFIC TO MUNICIPALITIES

Cost for services to any municipality and method of paying to County (ie. rates, direct billing)are listed below.

Extra depots, (Schedule "B.1")

Curbside Pickup
- Trucks
- Trailers

Containers - Size
- Price

Method of billing

Site preparation

SCHEDULE "C"

CURBSIDE PICK-UPS

Terms

Name of Street/Roads (Public Roads Only) to be covered (attach map)

Number of households and locations

Day of week regular pickup occurs

Costing

Routes to be discussed by the municipality and the County Recycling Co-ordinator

The County will retain ownership of all curbside recycling equipment

Allocation of costs for curbside pickup will be based in proportion to the Equalized Assessment of the municipalities using Curbside pickup

SCHEDULE "D"

AGREEMENT WITH THE CORPORATION OF THE CITY OF PETERBOROUGH

THIS AGREEMENT made this day of August, 1989.

B E T W E E N:

THE CORPORATION OF THE COUNTY OF PETERBOROUGH,

(hereinafter called "the County").

AND

THE CORPORATION OF THE CITY OF PETERBOROUGH,

(hereinafter called "the City")

WHEREAS the City is the owner of the Peterborough Recycling Plant (hereinafter called "the Plant"), located on Pido Road in the City of Peterborough.

AND WHEREAS the County of Peterborough has passed a by-law under Bill 201 to assume the power to carry out a program to collect and transfer recyclable material (hereinafter called "the Materials") from the Municipalities within the County of Peterborough.

AND WHEREAS the County is desirous of having access to the use of the said Plant as a means of disposing of materials collected within the County.

NOW THEREFORE, in consideration of the premises and mutual agreements and covenants herein contained, the parties hereby covenant and agree as follows:

A. USE OF FACILITIES

(1) The City covenants and agrees to permit the County access to and use of the Plant on Pido Road in the City of Peterborough for the term herein set out. The City covenants and agrees to accept the materials more particularly described in Schedule "A" attached hereto delivered by the County for recycling at the Plant provided such materials as determined in the sole discretion of the City are of a type and quality suitable for recycling.

(2) The County covenants and agrees that it will not, during the term of this agreement, contract or make any other arrangements of any kind for the disposing of recyclable materials as set out in Schedule "A".

(3) The County agrees that this agreement applies to all Municipalities in Peterborough County, except those as listed on the attached Schedule "D".

(4) The City covenants and agrees that during the term of this agreement it will not enter into any contract, agreement or any other arrangement with any Municipality in the County of Peterborough pertaining to the recycling of their materials.

(5) That the City of Peterborough may enter into agreements with a municipality outside the boundary of the County of Peterborough, or an approved agent of the municipality, or a private contractor for the municipality, or any other person on an ongoing basis, to accept recyclable material as outlined in the schedule attached to this agreement; and,

Further that the said agreement shall be submitted to the County for its review and consent, if within 30 days the County has not indicated any interest in the agreement, the City of Peterborough may enter into the said agreement. In any event the County shall not unreasonably withhold consent.

(6) The parties agree that Materials collected in the County shall be delivered by the County to the Plant during its usual operating hours and in vehicles acceptable to the City.

(7) The parties agree that at any time during the term of this agreement the City may add new Materials to the said Schedule "A" for purposes of recycling and the County has the right to recycle those materials.

(8) In the event that the Plant is unable to dispose of Materials delivered to it from the City and the County or if it is necessary to reduce the amount of deliveries for whatever reason, the parties agree, upon 30 days' written notice to the County, to reduce the amount of the materials delivered to the Plant as provided for in Schedule "B" attached hereto.

(9) The City herein reserves the right to designate such highways or streets within the City which shall be used by trucks used to transfer the Materials to the Plant. The County agrees to transport the Materials in accordance with such City designations, and shall direct the Municipalities to comply with such designations.

B. TERM AND RENEWAL:

(1) This agreement shall commence on the first day of September, 1989, or the date the Plant opens on Pido Road and shall continue thereafter for a period of five years unless terminated as hereinafter provided.

(2) The City covenants and agrees, at the expiration of the said term of this agreement, and upon the County's written request, three months before the expiration of the said term, to grant to the County a renewal of this agreement for a further term of five years subject to the same covenants, conditions and provisos as herein contained save and except a covenant for a further right of renewal.

C. TERMINATION

Notwithstanding anything herein contained, the parties covenant and agree that this agreement may be terminated in the following manner:

(a) By mutual consent of the parties.

(b) At any time prior to expiration by the City giving to the County six months' written notice of its intention to terminate this agreement.

(c) At any time prior to expiration, by the County giving to the City six months' written notice of its intention to terminate this agreement.

(d) By breach of this agreement, in the event that either fails to institute appropriate corrective action within thirty (30) days after written notification by the City of any failure on the part of either party to comply with the terms and specifications of this agreement.

D. FEES AND CHARGES

(1) The County shall pay all costs in connection with the collection and transportation of materials from the County to the Plant.

(2) The County agrees to pay fees and charges to the City for materials accepted by the City for recycling at its Plant. The fees to be paid shall be assessed on a per-tonne basis and shall be based on the net cost of processing after allowing for revenues from sales and deductions for Government grants. The particulars of such fees and charges are calculated and more particularly set out in Schedule "C" attached hereto.

(3) The net cost of processing shall be determined on a monthly basis and shall be applied to all materials delivered within the calendar month. Payment of moneys owing pursuant to said Schedule "C" shall be made by the County quarterly on December 31st, March 31st, June 30th, and September 30th of each year, (or on the next successive business day if such dates are holidays) commencing December 31st, 1989, and shall be due thirty days after submission of invoices by the City.

(4) The parties covenant and agree that in the event the contractual arrangements between the City and Scott's Plains Inc. or its successor should terminate or in the event that any time after the execution of this agreement there is a material change in the availability or in the amounts of grants from the Province of Ontario and/or the Government of Canada, either party may require that the provisions of this agreement pertaining to fees and charges be renegotiated.

E. MISCELLANEOUS PROVISIONS

(1) This agreement, including Schedules "A", "B", "C" and "D", constitute the entire agreement between the parties pertaining to the subject matter hereto and supersede all prior agreements, understandings, negotiations and discussions, whether oral or written, of the parties hereto and there are no warranties, representations or other agreements between the parties in connection with the subject matter hereto except as specifically set forth herein. No modification or waiver of this agreement shall be binding unless executed in writing by the parties hereto.

(2) In the event that the City makes application for any available grants to defray the costs of the operation of the Plant with respect to materials received from the County, then the County covenants and agrees that it will assist in such application. Any capital equipment purchased as a result of such grants shall become and remain the property of the City.

(3) The procedure for handling any contaminated material from a Municipality shall be in the following order of priority:

i) Materials will be resorted at the Plant if possible.

ii) Materials will be returned to the Municipality where originated.

Any charges related to the handling of contaminated materials will be charged to the County.

(4) The attached Schedules "A" and "D" may be amended from time to time without changing the intent or content of this Agreement by letter of understanding between the County and the City. The attached Schedules "B" and "C" may be amended from time to time without changing the intent or content of this agreement by letter of understanding between the County and the City, as ratified by their respective Councils.

(5) The parties agree that each of them shall, upon reasonable request of the other, do or cause to be done further lawful acts, deeds and assurances whatever for the better performance of the terms and conditions of this agreement.

F. CONDITIONAL UPON O.M.B. APPROVAL

This Agreement, or any part of it, is conditional upon the requisite approval of the Ontario Municipal Board, if the same is required by law.

IN WITNESS WHEREOF the City has hereunto affixed its Corporate Seal attested by the signatures of the Mayor and the Clerk, and the County has affixed its Corporate Seal, attested by the signatures of the Warden and the Administrator, Clerk-Treasurer.

THE CORPORATION OF THE CITY OF PETERBOROUGH

_____

_____

THE CORPORATION OF THE COUNTY OF PETERBOROUGH

_____

_____

SCHEDULE "A"

MATERIALS THAT SHALL BE ACCEPTED FOR PROCESSING BY THE PLANT

- Newsprint
- Corrugated Cardboard
- Fine Paper
- Computer Printout Paper
- Container Glass (clear and coloured)
- Cans - Steel
- Cans - Aluminum
- Containers - P.E.T.

Notes:

(a) The degree of purity of the above materials shall be specified by the City, through its Agent at the Plant according to market demands.

(b) The City, through its agent at the Plant shall specify the manner in which the materials shall be separated.

SCHEDULE "B"

(a) All Material received at the Plant and all material shipped from this Plant shall be recorded in metric tonnes (short tons x 0.9072) although they may be measured in imperial units and converted.

(b) Total amounts shipped from the Plant shall be recorded at the point of reception until such time as the Plant shall have its own facilities for weight measurement.

(c) The amounts shipped to the Plant from the County shall be weighed at public or private scales prior to delivery until such time that Plant has its own facilities for weighing and shall be deducted from the amount shipped by the Plant to determine the amount contributed by the City.

(d) In the event of the reduction in the disposal or sale of the materials, the proportions by which reductions shall be allocated between the City and the County shall be the same as the average proportions of the respective receipts from the parties over a period of three (3) calendar months immediately prior to the date on which said reduction shall begin.

SCHEDULE "C"

Costs of operation of the Plant shall be defined under "Collection" and "Processing" headings.

"Collection" shall include all direct operations required to collect materials within the City.

"Processing" shall include all other operations including the processing, packing, shipment and marketing of all materials received by the Plant.

All direct labour, equipment and other costs directly attributable to operations shall be so allocated. Certain costs, such as administration and training costs, shall be distributed between the two areas of operation as defined below:

COLLECTION	PROCESSING
Administration Salaries and benefits	60%
Accounting salaries, benefits, services	80%
Training costs	60%
Maintenance	20%
Telephone & Postage	60%
Office supplies	60%
Bank Charges	60%
Travel	60%
Building rental & utilities	80%
Advertising	0%
Miscellaneous Expenses	60%

Machinery employed in the processing of the materials shall be depreciated by the straight line method over a period of years as set out below and such depreciation charges shall be added to the appropriate costs of operation. The Annual depreciation amount shall be set aside in reserves for the replacement or major maintenance of buildings or equipment.

Building	30 Years
Balers and Other Compactors	10 Years
Conveyors and Bins	5 Years
Motorized Equipment and Trailers	5 Years

Provincial and Federal Grants are allocated in proportion to gross expenses calculated for the two headings.

Sales revenues are calculated as the consolidated total received for all materials sold in a calendar month.

Net processing cost per tonne of material accepted shall be calculated according to the following formula:

$$\frac{\text{Sales revenues} - (\text{Sales expense} + \text{Processing expense} - \text{Allocated grants})}{\text{Tonnes sold}}$$

The total cost to be invoiced to the County shall be:

Tonnes delivered by County x net processing cost/t.

CORPORATION OF THE COUNTY OF PETERBOROUGH

BY-LAW # 11 - 1996

A BY-LAW OF THE CORPORATION OF THE COUNTY OF PETERBOROUGH TO BAN CERTAIN ITEMS FROM LANDFILL SITES AND TRANSFER STATIONS WITHIN THE COUNTY OF PETERBOROUGH.

WHEREAS Section 209 (2) of the Municipal Act, Chapter M.45 provides that the Council of a County may pass a by-law to empower it to adopt a waste management plan or to assume any or all of the waste management powers, or both, for all the local municipalities forming part of the county for municipal purposes; and

WHEREAS the County of Peterborough passed by-law #46-1989, being a by-law to assume the responsibility for the collection and disposal of recyclables within the County of Peterborough;

AND WHEREAS the County of Peterborough passed by-law #21-1991, being a by-law to assume the responsibility for a new facility to handle waste within the County of Peterborough;

AND WHEREAS the County of Peterborough has established its diversion goal at 50% by the year 2000.

AND WHEREAS the County of Peterborough deems it necessary to ban certain items from landfill sites and transfer stations within the County of Peterborough in order to encourage more recycling by its ratepayers and assist in achieving its waste diversion goal;

NOW THEREFORE the Council of the Corporation of the County of Peterborough in Session duly assembled enacts as follows:

1. That as of March 6th, 1996 the following items will be banned from landfill sites and transfer stations within the County of Peterborough:

   a) Old Corrugated Cardboard (OCC) except corrugated cardboard that has been contaminated by oil, grease, or other material that renders OCC un-usable for recycling purposes.

   b) Aluminum and steel cans

   c) Glass bottles and jars

   d) Newsprint, catalogues, books, egg cartons

   e) (include any material that is acceptable in the recycling stream)

2. Each local municipality is responsible for the enforcement of this by-law within its municipal boundary.

3. That any person or corporation found contravening this by-law shall be guilty of an offence. The penalties will be enforced under Part XIX, of the Municipal Act, Chapter M.45 Section 320 - 330 inclusive.

READ and PASSED in OPEN COUNCIL this 7 Day of February, 1996.

Warden.

c/s

Clerk.

Appendix D

Waste Management System Changes (Post 2010)

WASTE MANAGEMENT SYSTEM CHANGES (POST 2010)

Progress toward an increase in diversion has been made in recent years with the addition or enhancement of several programs and services. While the WMMP has been developed based on services provided and waste composition data as of the year 2010, it is recognized that the following changes have been made to the waste management systems from 2011 onward:

Collection Strategies

- BYC Garbage to Garden Campaign has been introduced to promote the use of backyard composters. The program involves a representative from the County conducting a home visit at the request of County residents to install a composter and teach residents about composting practices.
- On-going support to special events
- Planning and development of a seasonal MHSW collection station in the Township of Smith-Ennismore-Lakefield
- C&D collections implementation at two (2) Township transfer stations (Drummond Line, Hall's Glen) and one (1) landfill (Smith)
- Molok© organic collection systems installed at Anstruther Lake Transfer Station
- WEEE collected at all seasonal MHSW collection stations and a permanent WEEE collection station at Anstruther Lake Transfer Station
- Numerous Environment Days

Policy and Enforcement Approaches

- On-going development of a County wide waste management by-law
- Bag limits (in some Townships) / tags instituted
- Improved transfer station attendant communication
- The completion of the Municipal Waste Recycling Strategy (MWRS) (Cambium Environmental Inc., 2011) in 2011 led to a commitment to increase the blue box diversion rate by 6% by 2015; and to increase the capture rate from 69% to 75%

Promotion and Education Strategies

- Presentations to area lake property/cottage associations
- Introduction of the MyWaste application to provide County-wide waste information

IC&I Waste Diversion Strategies

- Re-introduction and formalization of a multi-municipal School waste reduction program

Monitoring and Reporting Diversion Strategies

- Auditing, monitoring and reporting feedback to Townships and the County

Waste Disposal

- On-going observations and review of Durham/York and other EFW facility options

These programs and services do not contribute to the 2010 waste diversion rate of 39.4%. These programs will contribute to the waste diversion rate from 2011 onward. Further information on these programs or services can be found on the County waste management webpage, or by contacting the County directly.

Appendix E

Results of Divertible Waste Opportunity Analysis

Appendix E. Results of Diverted Materials Remaining in Waste Stream

Material	Current Diversion[1]			Potential Diversion (Tonnes)	Tonnes[2] Remaining in Waste Stream	Potential Increase in Diversion (%)
	Tonnes	Capture Rate (%)	% of total diverted			
Blue Box	4,749	20.0%	50.8%	7,651	2,902	12.2%
SSO (food waste)	1,706	7.2%	18.3%	5,210	3,504	14.8%
Leaf & Yard Materials	650	2.7%	7.0%	3,555	2,905	12.3%
Construction and Demolition Debris	860	3.6%	9.2%	2,035	1,175	5.0%
Scrap Metal and White Goods	531	2.2%	5.7%	531	-	0.0%
Tires	305	1.3%	3.3%	510	204	0.9%
Residential Deposit Returns	321	1.4%	3.4%	321	-	0.0%
WEEE	52	0.2%	0.6%	338	286	1.2%
MHSW	119	0.5%	1.3%	291	172	0.7%
Residential Reuse	54	0.2%	0.6%	54	-	0.0%
Totals	9,347	39.4%	100%	20,496	11,149	47.0%

target materials for increased diversion

Total Divertible Tonnes	20,496
Total waste generated	23,697
Remaining Refuse	3,201
Percentage divertible	86.5%

Notes:
1. Source: 2010 Waste Diversion Ontario Datacall for the County of Peterborough.
2. Source for Remaining Blue Box: 7,651 tonnes of Blue Box material in residential waste (Table 7 of *Municipal Waste Recycling Strategy* (Cambium, 2011))
   Source for Remaining Organics: 22% of waste stream is SSO and 15% is yard wastes (Page 1-3 of *Residential Waste Composition Study* (MOE, January 1991))
   Source for Remaining C&D 17 to 20% of waste stream (Agra, 1997; Statistics Canada, 1997)
   Source for Remaining Tires: 106,500 tonnes of Tires available for collection Ontario wide (Table 3 of *Used Tires Program Plan* (OTS, 2009))
   Source for Remaining MHSW: 40, 612 tonnes of MHSW available for collection Ontario wide over 8 months in 2008 and 2009 (Table 4.7 of *Final Consolidated MHSW Program Plan* (Stewardship Ontario, 2009))
   Source for Remaining WEEE: 70,659 tonnes of WEEE available for collection Ontario wide in 2004 (Table 2 of *WEEE Study* (WDO, 2005))

Appendix F

Options Evaluation Results

Appendix F. Options Evaluation Results

Waste Diversion Options

Strategy Category	Option Name and Description	Preferred Option	Timeline	Diversion Potential (%)	Annual Net Cost Per Tonne	Annual Net Cost Per Household	Implementation Costs	Operation Costs	Evaluation of Waste Diversion Options Criteria/Score: Economic Feasibility	Environmental Effects	Social Acceptance	Sound Technology	Ease of Implementation
Collection Services	Scrap Metal Collection and Recycling	Optional		<1%	+$	+$	P&E	$0	●	●	◕	●	●
	Textile Recovery	Optional		<1%	$0	$0	P&E	$0	●	●	◕	●	●
	Electrical & Electronic Equipment	Optional		1-2%	+$	+$	P&E	$0	●	●	◕	●	●
	Special Events Diversion and Recycling	✓	S	<1%	-	$0	P&E	Staff Time	◕	●	●	●	●
	Build Multi-Residential Building Database	✓	M	-	-	-	$7,200	-	●	◕	●	●	●
	Public Space Diversion and Recycling	✓	M	<1%	-	$1	$5,000 - $20,000	Staff Time	◕	●	●	●	◕
	Special Collections	✓	S	<1%	$1,000	$1.50	$1,000	$6,500	◕	●	◕	●	◕
	Leaf & Yard Waste	✓	S	12%	$70 - $100	$6	$130,000	$410,000	◕	●	◕	●	◕
	Expanded Municipal Hazardous Special Waste Depot (Permanent Facility)	✓	S	1-2%	$1,345	$5	$25,000	$20,000	◕	●	◕	●	◕
	Expanded Municipal Hazardous Special Waste Events	Optional		1-2%	$1,000	$1.5	$1,000	$6,500	◑	●	◕	●	◕
	Optimization of Processing Operations	✓	S	-	-	cost savings	$12,600	-	◑	◑	●	●	●
	Capacity Review/Enhancement (Blue Boxes, carts)	✗		< 1%	-	< $1	$4,800	-	◑	◑	●	●	●
	Municipal Partnerships	Optional		-	-	cost savings	variable	variable	◕	◕	◕	●	◑
	C&D Waste Diversion & Collection	✓	S	5%	$0	< $1	$4,800	enforcement	◑	◕	◕	●	◕
	Pick-Up Frequency	✓	L	3-7%	-	7% savings	P&E	-	◕	◑	◕	●	◑
	Re-use Centres	✓	M	<1%	$+0 - $100	$1	$2,000 - $10,000	$0 - $5,000	◑	◕	◕	●	◑
	Standardized Depot Operations Review	✓	M	< 1%	-	< $1	$4,800	-	◕	◕	◕	◕	◑
	Standardized Depot Services	✓	M	1-5%	-	$1-$3	$35,000-$100,000	$35,000-$70,000	◑	◕	◕	◕	◕
	SSO Collection	✓	M-L	15%	$300 - $800	$45-$95	$200.000 - $335,000	$150,000 - $1,000,000	◑	◕	◑	●	◑
Policy Approaches	Reduced Container Limits for Garbage	✓	L	3%	$0	$0.04	$12,600	$0	◕	◕	◕	●	◕
	Harmonize Services, Policies, By-laws	✓	S-M	< 1%	-	-	$7,200	$0	◕	◕	◑	◕	◑
	Pay-as-you-throw and Sustainable Financing Strategies	✓	M	3%	-	$1	$25,000	Staff Time ($20,000-$40,000)	◑	◕	◑	◕	◑
	Diversion Plans	✓	M	5%	$0.00	$0.04	$12,600	$0.00	◑	◕	◑	◕	◑
	Curbside Materials Bans	✓	S-M	3%	-	$1.20	P&E	Staff Time ($20,000-$40,000)	◑	◕	◑	◕	◑
	Landfill/Depot Material Bans	✓	S-M						◑	◕	◑	◕	◑
	Stronger Enforcement	✓	L						◑	◕	◑	◕	◑
	Variable/Differential Tipping Fees	✓	S	< 1%	-	-	$7,200	$0	◑	◕	◑	◕	◑
	Clear Bags for Excess Waste	✗		< 1%	$0	$0	$12,600	$0	◕	◕	◑	◑	◑
	Clear Bags for all Waste	✗		4%	$0	$0	$12,600	$0	◕	◕	◔	◑	◔
Public Engagement and Education	Backyard Composting	✓	S	< 1%	-	$0.04	$12,600	$0	●	●	◕		●
	SSO Programs	✓	S	< 1%	-	$0.04	$12,600	$0	●	●	◕		●
	General P&E	✓	S	2-5%		$3.00	$100,000	$34,000	◕	●	◕		◕
	Goods Exchange Events (Swap Days)	✓	M	< 1%	-	< $1	$4,800	-	●	◕	◕		◕
	Increased or Targeted (ie plastics) Education and Promotion Efforts	✓	S	<1%	-	$0.04	$12,600	$0	◕	◕	◕		◕
	Schools Programming	✓	S	<1%	-	-	-	-	◕	◕	◕		◕
	Township challenges and/or competitions	Optional		-	-	-	P&E	-	◕	◕	◕		◕
	Township Support	✓	S	<1%	-	-	-	-	◕	◕	◕		◕
	Local Involvement	✓	S	<1%	-	-	-	-	◕	◕	◕		◕
	Increase Local Presence of County	✓	S	<1%	-	-	-	-	◕	◕	◕		◕
	Training	✓	S	1%	0	$1	0	$8,000	◕	◕	◕		◕
	Green Procurement	✓	M	-	Included with P&E				◕	◕	◕		◕
	Master Composter/Recycler Programs	✗		-	-	-	P&E	-	◕	◕	◕		◑
	Customer Reward Programs	✓	M	<1%	-	-	-	$0 - $5,000	◑	◕	◕		◑
Monitoring & Reporting	Audit	✓	S	-	-	-	-	$10,000	◕	◕	◕		◕
	Report	✓	S	-	-	-	-	$2,400	◕	◕	◕		◕
	Feedback	✓	S	-	-	-	-	-	◕	◕	◕		◕
IC&I Recycling and Diversion Programs	Build IC&I Database	✓	L	NA	NA	$0.20	$7,200	-	◕	◕	◕		◕
	Feedback to Participants	✓	L	NA	NA	NA	-	$500/site	◕	◕	◕		◕
	Enhancing County's Website	✓	L	NA	NA	NA	Staff Time	-	◕	◕	◕		◕
	Promotion and Support for IC&I Recycling Program Strategies	✓	L	NA	NA	$0.25	$8,500	$1,000	◕	◕	◕		◕
	Designated Goods Diversion (e.g. HHW, Electronics, Textiles)	✓	L	NA	NA	NA	P&E	-	◕	◕	◕		◕
	Multi-Residential Working Group	✓	L	NA	NA	NA	$4,800	$1,000	◕	◕	◕		◑
	Penalties Targeting IC&I	✓	L	NA	NA	NA	-	-	◕	◕	◑		◑
	Termination of Service for Failure to Recycle	✓	L	NA	NA	NA	-	-	◕	◕	◑		◑
	Two-tiered Waste Rates with Preference to Recycling IC&I's	✓	L	NA	NA	NA	-	-	◕	◕	◑		◑
	Waste Diversion Plans	✓	L	NA	NA	NA	$10,000	$500	◕	◕	◑		◑
	SSO Implementation	✓	L	NA	NA	NA	$4,800	$0	◕	◕	◑		◑

Waste Disposal Options

Disposal	**Expand or build new municipally operated landfill Site**		M	-	$125-$350	$50-$150	$6 million to $12 million	$500,000 to $1 million	◑	◑	◑	◕	◑
	Export Waste Garbage is shipped/transfered to a private waste disposal facility (landfill or thermal) for disposal.		M	-	$85-$120	$35-$60	$20,000	$1.2 million to $1.7 million	◑	◑	◑	◕	◑
	Disposal using Energy from Waste Establishing a thermal treatment facility within County to operate as EFW		M	-	$150-$400+	$600-$175+	$50 million to $200 million	$50 to $120 per tonne	◔	◑	◕	◕	◑

Legend	
Least Suitable	○
Less Suitable	◔
Somewhat Suitable	◑
Suitable	◕
Most Suitable	●

Appendix G
Implementation Schedule

Appendix G. Implementation Schedule

Implementation of Key Recommendations

Plan Development Year				0					5					10					15					20
Waste Management Programs	2010	2011	2012	**2013**	2014	2015	2016	2017	**2018**	2019	2020	2021	2022	**2023**	2024	2025	2026	2027	**2028**	2029	2030	2031	2032	**2033**
Waste Diversion																								
Short Term (1-5 years)																								
Enhance Collection of Leaf and Yard Materials									3.7%					5.5%										
Increase Diversion of C&D Debris									1.5%					2.2%										
Promote Backyard Composting									0.6%					0.4%										
Align By-laws									1.8%					1.2%										
Increase Enforcement																								
Mandatory Recycling																								
Coordinate P&E Campaigns																								
Investigation of IC&I Waste																								
Measuring Success																								
Medium Term (5-10 years)																								
Expand SSO Collection – Curbside Green Bin Service														8.0%					2.0%					
Expand SSO Collection – Additional Molok© Systems														0.9%					0.2%					
Building Permit Waste Reduction Plans														1.0%					4.0%					
Long Term (10-20 years)																								
Materials Ban - Organics																								3.0%
Waste Disposal																								
Investigate Suitable Options for Future Landfill Capacity																								
Undertake a Formal Review of Waste Management Technologies																								
Undertake a Feasibility Study for Future Waste Disposal																								
Commence Environmental Assessment Process for Waste Disposal Options																								
Important Milestones																								
Completion of WMMP																								
WMMP Updates																								
PCCWMF North Cell Reaches Capacity																								
Expected Diversion Potential	39.4%	39.4%	39.4%	39.4%	41.9%	43.2%	44.4%	45.7%	47.0%	50.8%	54.6%	58.5%	62.3%	66.2%	67.4%	68.7%	69.9%	71.2%	72.4%	73.0%	73.6%	74.2%	74.8%	75.4%
Anticipated Implemenation Costs (assuming some shared costs with the City)				$29,890	$272,725	$51,225	$59,800	$65,000	$1,800,000	$1,765,000	$50,000	$50,000	$50,000	$85,000	$50,000				$21,225					$20,000

Preparation
Implementation
Ongoing Operation
Important Milestones