



GANANOQUE

Town of Gananoque

Long Term Solid Waste Management Strategy

waste diversion

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1 Introduction

The Town of Gananoque (the Town) is developing a long term sustainable solid waste management strategy (SWMS) to increase the effectiveness of its current diversion programs and maximize its overall waste diversion rate. To achieve these goals, this strategy will identify opportunities for updating the Town's existing waste management system and plan a sustainable path forward to manage the Town's waste into the future.

The Town's residential waste diversion rate for 2010 was 41%. This is slightly above the average of 35% for its municipal grouping as defined by Waste Diversion Ontario (WDO), but is less than the provincial target of 60%. This SWMS provides a series of recommendations that will help the town meet the targets in a way that is environmentally, socially and economically sustainable.

2 Stated Problem

Management of municipal solid waste is a key responsibility for all municipal governments in Ontario. The factors that encourage or hinder municipal waste diversion can vary greatly and depends on a municipality's size, geographic location and population.

The issues facing the Town are common among many small urban Ontario communities and have led to the development of this SWMS. These issues include:

- Lack of a formal SWMS;
- A low economy of scale for handling recyclables, due to small population and therefore small tonnages of material collected;
- A smaller staff compared to larger municipalities, whereby those in charge of solid waste are also responsible for other public works activities;
- Absence of its own waste disposal capacity (i.e., no municipal waste disposal site of its own); and
- Low diversion rates compared to other medium to large Ontario municipalities.

In addition, levels of funding received for blue box recycling and other diversion programs in Ontario is based in part on the adoption of a waste recycling strategy, the incorporation of other WDO-approved recycling best practices, and the amount of recyclable material marketed. This WMS will help to improve efficiencies through the adoption of recycling and diversion best practices and maximize the amount of eligible funding available.

3 Vision, Goals and Objectives

3.1 Vision

A vision statement for waste management in Gananoque was prepared for this WMS:

The Town of Gananoque's waste management system maximizes waste diversion in a manner that is environmentally, socially and economically responsible and helps to preserve the Town's unique historical and environmental heritage for future generations.

3.2 Goals and Objectives

The Town's waste diversion rate of 41% is slightly higher than the average of 35% for Ontario municipalities of similar size and population, but it does not meet the provincial goal of 60% diversion. Therefore, the Town has initiated a process to develop a WMS to identify gaps in existing programs and develop financially sustainable diversion options to help reach the provincial goal.

The goals of the WMS are to:

- Align the Town with Provincial policy, including waste diversion targets, strategy development and alignment with the WDO Blue Box Program Enhancement and Best Practices Assessment report;
- Provide a sustainable framework to manage the Town's waste into the future, including one that is environmentally, socially and economically sustainable for the Town; and
- Identify future system components that will be included in a new collection, processing and disposal contract.

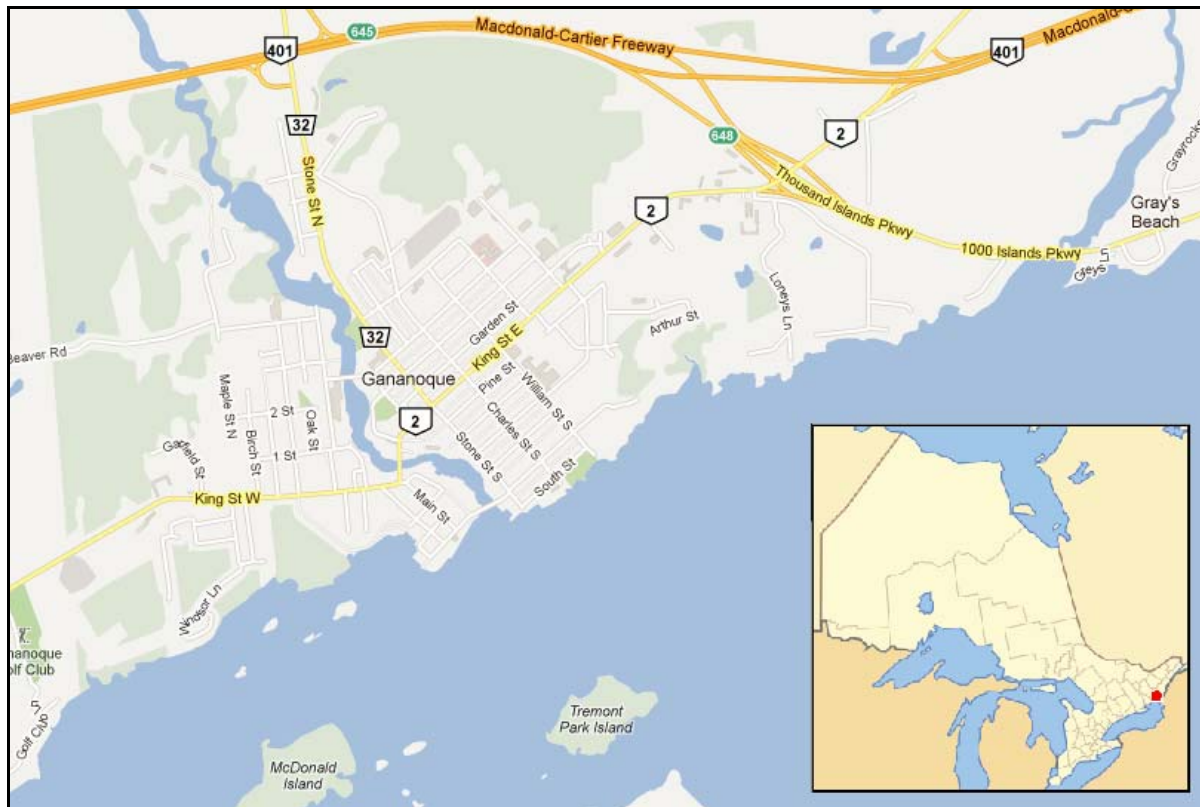
The Town's waste management objectives include:

- Achieve 50% waste diversion by 2015; and
- Achieve 60% waste diversion by 2020.

4 Study Area

The Town of Gananoque is located in Leeds and Grenville County, in southeast Ontario as illustrated in Figure 1. In 2010, the Town's population was 4,369, with 2,237 single family households and 239 multifamily households. The WMS will focus on the town's residential waste stream.

Figure 1: Map of Gananoque.



5 Current Solid Waste Trends and Practices

Based on its population and geographical location, the Town is considered a “Small Urban” jurisdiction by Waste Diversion Ontario’s (WDO) municipal groupings. WDO recommends target goals for diversion rates and program costs. The Continuous Improvement Fund’s *Guidebook for Creating a Municipal Waste Recycling Strategy* recommends target recycling rates for the municipal groups. For example, small urban communities such as Gananoque have a recommended recycling rate of 80% for blue box materials¹. This suggested recycling rate will be used as a capture rate (e.g., how much material is captured for diversion) when analyzing waste diversion opportunities for Gananoque’s various waste streams.

The Town provides the following waste management services to its residents and IC&I (Industrial, Commercial and Institutional) establishments:

- Weekly curbside solid waste collection of non-recyclable, non-hazardous household waste;
- Household Hazardous Waste (HHW) drop off events;
- Waste Electrical and Electronic Equipment (WEEE) drop off collection;
- Scrap metal collection;

¹ Recycling or capture rates indicate how much of a specific material is being recycled compared to how much is available in the waste stream. For example, a recycling rate of 80% for pop cans indicates that, for every 10 pop cans in the waste stream, 8 are being captured for recycling.

- Seasonal curbside collection of leaf and yard waste; and
- Spring Clean-up Dump Days.

In addition to these programs, which are described in greater detail below, the Town also encourages residents and IC&I establishments to further increase diversion through backyard composting, grasscycling, deposit-return programs and through a promotion and educational program.

These services and facilities are described in greater detail below.

5.1 Recycling Program

Residents receive curbside collection of recyclable materials in two separate streams. Container items and plastics are collected in the “blue box” stream, while paper products are collected in the “green box” stream. Each recycling stream is collected on alternating weeks (e.g., blue box on one week, and green box on the other). There is no limit on the amount of recyclables placed out for collection. While this service is not formally offered to Gananoque’s IC&I community, some IC&I waste is collected by the Town if the material is set out.

Acceptable items in the “green box” paper stream include:

- Newspapers and flyers (glossy and plain);
- Paper packing, such as popsicle wrappers, paper potato bags, flour bags, sugar bags, paper cups;
- Fine paper (i.e. writing, computer, mail);
- Boxboard;
- Magazines, catalogues, telephone directories and greeting cards; and
- Corrugate and other cardboard.

Acceptable items in the “blue box” container and plastics stream include:

- Glass food and beverage bottles and jars;
- Metal food and beverage cans;
- Plastic bag packaging such as milk and frozen food bags, bread bags, mattress bags, etc;
- Clean empty paint cans, with lids removed;
- Empty aerosol cans;
- Styrofoam packaging;
- Plastic bottles (#’s 1 – 6);
- Aluminum foil and containers; and
- Margarine and yogurt tubs.

All recyclable materials are collected and processed by BFI Canada Inc.

5.2 Leaf and Yard Waste Collection and Composting

The Town provides two separate curbside leaf and yard waste collection services for residents: leaf and yard waste collection and brush & clean lumber pickup. Each service is provided twice a year in the spring and fall. Materials such as loose wood, clean lumber and brush must be

bundled and not exceed six feet in length. Leaf and yard waste is collected in biodegradable bags only. Once collected, these materials are deposited at the public works yard located at 665 Charles Street. Alternatively, resident can take these materials to the public works yard on Saturdays and Wednesdays from spring to fall. This drop off service is for residents only and requires identification upon arrival at the yard.

5.3 Electronics Recycling

The Town introduced a WEEE recycling program in January 2011. Materials are stored in a large walk-in container before being sent for recycling. Residents are encouraged to drop-off WEEE materials Mondays through Fridays from 8:00am until 3:00pm (except on holidays) at the public works yard. This service is free of charge. The following items are accepted:

- Computer Drives
- Computer Peripherals
- Photocopiers
- Monitors
- A/V receivers
- Radios
- Televisions
- All PC's
- Printers
- Scanners
- Typewriters
- Amplifiers
- VCR/DVD players
- Servers
- Calculators
- Fax machines
- Modems
- CD and Tape players
- Turntables
- Pagers
- Telephones
- Routers and hubs
- Cable TV receivers
- Cameras
- Speakers

5.4 Household Hazardous Waste (HHW) Collection

The United Counties of Leeds & Grenville (UCLG) hold HHW drop-off collection events twice a year, and they allow residents of Gananoque to drop off HHW free of charge. After each event, the Town is billed by UCLG for each vehicle that attended from Gananoque. In 2009, the rate per vehicle charged to Gananoque was \$71.43 per vehicle. Residents can drop-off HSW at the following locations:

- Frankville/Toledo Patrol Garage, 331 County Road 29
- South Leeds Patrol Garage, County Road 3, North of Lansdowne
- South Grenville Patrol Garage, 2320 County Road # 21, East of Spencerville
- North Grenville Patrol Garage, 720 County Road # 44, South of Kemptville

The following items are accepted:

- Batteries
- Rat poisons
- Ammonia
- Paints
- Drain cleaners
- Pharmaceuticals
- Bleach
- BBQ starter
- Oven cleaners
- Cleaning fluids
- Aerosols
- Oils and solvents
- Pesticides
- Pool chemicals
- Gasoline
- Propane cylinders

5.5 Provincial Deposit-Return Program for Alcohol Containers

In partnership with the Beer Store and LCBO, the Ontario Deposit Return Program helps divert eligible wine, beer and spirit containers from disposal in landfills. The program uses deposits and refunds on purchased alcohol containers to encourage participation in the program and increase diversion. Table 1 below summarizes the current program.

Table 1: Summary of the Ontario Deposit-Return Program

Eligible Containers*	Deposit/Return Amount
Containers less than or equal to 630mL Aluminum and steel containers less than or equal to 1L	10¢
Containers over 630mL Aluminum and steel containers over 1L	20¢
Exempt Containers	
Containers with a volume of 100mL or less (e.g., 50mL minis) Containers purchased at duty-free stores, U-Vint and U-Brew	No deposit collected or refund offered for these items

* glass bottles, plastic bottles (PET), Tetra Pak containers, bag-in-box, aluminum and steel containers.

5.6 Curbside Garbage Collection

The is currently in the process of implementing a waste collection contract with BFI Canada to provide weekly curbside garbage collection to all residents and IC&I establishments in Gananoque². BFI will also be contracted for disposal of the waste. IC&I establishments will receive this service provided the nature of the waste is similar in content, nature and volume to that generated from a residential dwelling and conforms to the provisions of the Town's Waste Management By-laws. Currently, there is a limit of four bags/containers per collection and all garbage items and bags must be tagged with Town-approved bag tags. Each tag can be purchased for \$1.50 at local retail stores and the Town Hall.

The Town is also considering the curbside collection of large items such as mattresses and couches. This service would be provided three times a year. Items set out for collection would have to be tagged with a separate Town-approved tag labelled "large item tag". As of the writing of this report, the proposed program was still in development.

The Town does not operate a landfill site, but residents can transport and dispose of residential waste at the following locations, subject to tipping fees:

- Waste Services Inc.
1266 McAdoo's Lane
Kingston, Ontario

Minimum charge of \$17.50/150 KG + fuel/environmental charge will apply. No Household Special Waste permitted.

- Waste Management
62 St. Remy Place
Kingston, Ontario

Minimum charge of \$28.25/150KG + fuel/environmental charge will apply.

² The Town signed a three-year contract with BFI in 2011 (approved by Council in September 2011), with an option to extend the contract up to two years. Collection and processing of recyclables and the collection and disposal of garbage are included in the same contract.

5.7 Spring Clean-up (Dump Days)

Dump Days are held up to twice a year in which unwanted items can be dropped off in disposal bins at the public works yard³. Residents must provide proper identification and are subject to tipping fees. Examples of materials historically accepted and their recent tip fees include:

- White Goods
 - Large (i.e. refrigerators, freezers) \$25.00 each
 - Small (stoves, washers, dryers, etc.) \$15.00 each
 - Air conditioners & dehumidifiers \$15.00 each
- Televisions
 - Large floor models \$15.00 each
 - Small models \$10.00 each
- Microwave ovens \$10.00 each
- Hot water heaters
 - Up to 50 gallons \$10.00 each
 - Over 50 gallons \$15.00 each
- Tires
 - Small (up to 16 inch) \$5.00 each
 - Large (over 16 inch) \$10.00 each
- Box spring or mattress \$5.00 each
- Sofa, love seat, occasional chairs \$5.00 each
- Other materials not specified \$5.00 each
- Leaves, brush, clean lumber and yard waste free of charge

The following items are not accepted:

- Household garbage;
- Demolition and construction materials;
- Materials from businesses and contractors; and
- Tires larger than 24 inches in diameter.

The Town also hosts annual “Treasure Hunt” days, which the Town views as a community-wide garage sale, also there is no cost for items. At designated times of the year, residents are able to leave their unwanted yet useable items at the curb in front of their properties. Members of the public are encouraged to tour the neighbourhoods and pick up any items they wish. The Treasure Hunt days are typically held the weekend before the Dump Days. In 2012, Treasure Hunt days were held on May 26 and 27.

³ If the Town proceeds with its large item curbside collection program, dump days will likely be replaced or augmented.

5.8 System Costs

In 2009, the gross cost of Gananoque’s waste management system was \$277,017. These costs included:

- Garbage collection: \$199,921⁴
- Recycling: \$75,831⁵
- Household hazardous waste collection and disposal: \$1,264

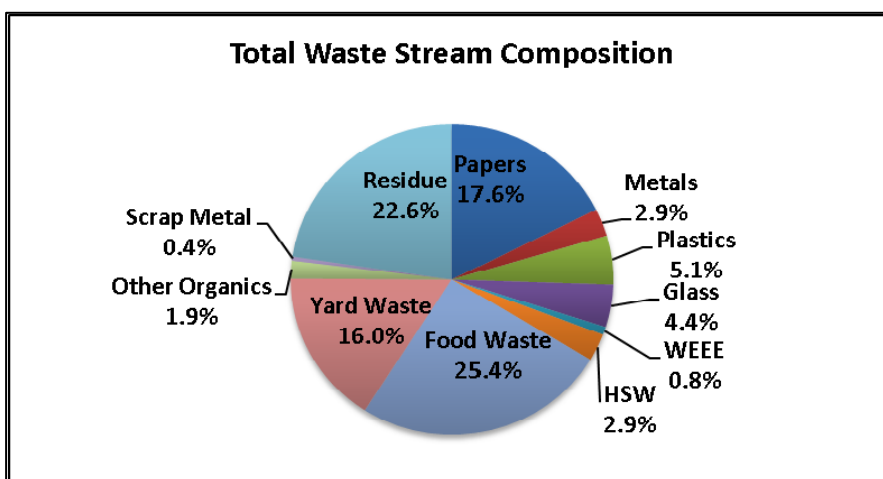
The Town also receives revenue through its garbage bag tag program. For example in 2011 approximately 96,351 tags were sold at \$1.50 each which equals a total revenue of \$144,526.50.

6 Current Waste Composition

In order to determine gaps in the Town’s diversion programs and opportunities for increased diversion, the Town’s waste composition was prepared. Since waste audit data for the Town was not available, Stewardship Ontario waste audit data from West Nipissing was used to approximate the Town’s waste composition. West Nipissing was used as a representative sample, as West Nipissing has similar characteristics to Gananoque in terms of demographics, recycling programs, and population.

In 2010, the Town generated approximately 1,653 tonnes of solid waste. The waste composition estimates that the Town’s waste stream is comprised mainly of organic materials (43%⁶), other refuse (23%) and recyclable paper (18%). Figure 2 illustrates a detailed breakdown of the Town’s estimated waste composition.

Figure 2: Current Waste Stream Composition.



⁴ Includes \$138,166 for the waste collection contract and \$61,755 in staff/administrative costs and special collections.

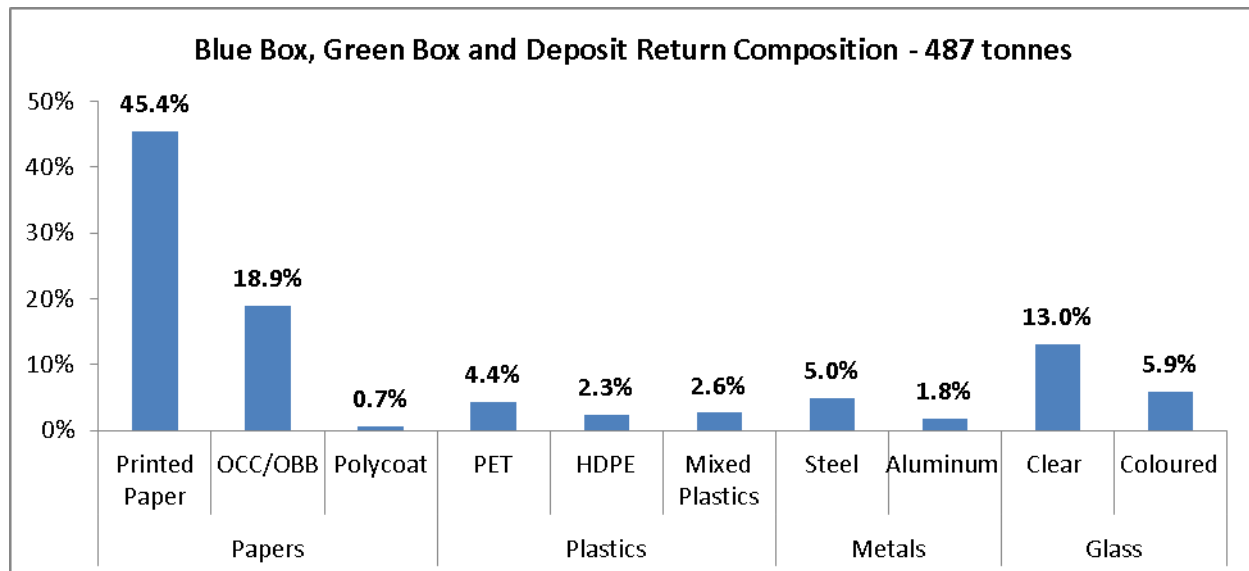
⁵ Including \$74,646 in contract costs

⁶ “Organic materials” is comprised of food waste (25% of the total waste stream, yard waste (16%) and other organic waste (2%). Other organic materials include compostable paper and towelling.

6.1 Blue Box Recyclable Materials

Based on 2010 WDO data, the Town diverted 455 tonnes of Blue Box recyclable material from disposal through its curbside recycling program (i.e., the blue/green boxes) and Ontario's deposit-return recycling program. Recyclable paper was the largest group of blue box materials recycled (65%), with recyclable metals forming the smallest portion (7%). A detailed breakdown of the types of blue box materials recycled is illustrated in Figure 3.

Figure 3: Blue Box Recycling Stream Composition.



Based on the Town's waste composition, approximated using sample waste audit data from West Nipissing, 495 tonnes of recyclable materials are available for diversion. The actual total amount of diverted recyclables is slightly smaller than this (455 tonnes) and suggests that capture rates in the Town are high and exceed the recommended WDO capture rate of 80% for a community of this size.

6.2 Household Hazardous Waste

In 2010, no tonnage data was available, but 17 vehicles from the Town were reported as participating in UCLG drop-off events. This amounts to a negligible amount of hazardous waste diverted from landfill.

6.3 WEEE

As stated previously, the Town initiated an E-waste diversion program in January 2011. The amount of E-waste collected and diverted in 2011 was approximately 29.5 tonnes.

6.4 Leaf and Yard Waste

Leaf and Yard waste organics are being diverted at the public works yard and through on-property programs such as backyard composting. In 2010, about 219 tonnes of leaf and yard waste were diverted.

6.5 Garbage Stream

In 2010, the Town collected 972 tonnes of waste for disposal. Another 46 tonnes of waste was collected during the Town's Dump Days at the public works yard. A portion of this material is diverted through leaf and yard waste composting, while the remainder is disposed of in landfill.

6.6 Waste Diversion Analysis

Using the information described above, a waste diversion analysis was conducted to identify opportunities for additional diversion. Table 2 presents the results of the gap analysis. The analysis considered the amount of additional material available for diversion based on achieving a capture rate of 80% for the divertible waste streams.

The analysis shows that the greatest opportunities for increasing overall waste diversion is through diverting more food waste and organics. If the capture rate of all organics was elevated to 80%, an additional 358 tonnes of organics could be diverted from landfill and increase the Town's overall diversion rate by 22 percentage points.

In addition, the analysis indicates that small gains can be made through additional diversion of recyclable plastics, recyclable metals, WEEE and HSW. Combined, raising the capture rate of these materials to 80% could add an additional of 5 percentage points to the Town's current diversion rate. With the other increases noted above, this could raise the Town's overall diversion rate to 68%.

In the case of recyclable paper, recyclable glass, yard waste and scrap metal, the gap analysis estimates that the Town is capturing more than 80% of these materials. Therefore, a very limited amount would be available for additional diversion.

Table 2: Waste Diversion Analysis

Waste/Resource Material	Estimated Composition (%)	Total Divertible Material in Waste Stream (tonnes)	80% Capture Rate of Divertible Material (tonnes)	Material Currently Diverted through Existing Programs (tonnes)	Potential Additional Diversion (% of total waste stream)
Recyclable Paper	17.6%	290.1	232.1	295.7	nil
Recyclable Metals	2.9%	47.4	37.9	30.8	0.4%
Recyclable Plastics	5.1%	84.5	67.6	42.5	1.5%
Recyclable Glass	4.4%	73.2	58.5	86	nil
WEEE	0.8%	13.7	11.0	0.0	0.7%
HSW	2.9%	47.2	37.8	0.0	2.3%
Food Waste	25.4%	420.3	336.2	3.2	20.2%
Yard Waste	16.0%	265.3	212.2	215.6	nil
Other Organics	1.9%	30.8	24.6	0.0	1.5%
Scrap Metal	0.4%			6.8	nil
Total Divertible Materials	77.4%	1279.2	1023.4	680.5	26.5%

7 Projected Waste Management Needs

An assessment of the Town's future waste generation rates were made based on the Town's current waste generation, disposal and diversion tonnages per capita. Based on feedback from Town staff, the Town's population is expected to grow by approximately 1.5% over the next 20 years. As the Town is essentially landlocked, this population increase would occur from in-fill.

Based on this growth rate, the Town's population is projected to grow to about 4,435 by 2031. The Town currently generates approximately 1,653 tonnes of waste per year, or about 378 kg/person/year. Based on the projected population and the current per capita waste generation, the Town will generate an estimated 1,678 tonnes of solid waste annually by 2031.

Table 3: Projected Population and Waste Generation

	2010	2021	2031
Population	4,369	4,607	4,815
Total Waste Generated	1,653 tonnes	1,743 tonnes	1,822 tonnes
Waste Disposed (@ current rate of diversion)	975 tonnes	981 tonnes	987 tonnes
Waste Diverted (@ current rate of diversion)	678 tonnes	686 tonnes	691 tonnes
Waste Disposed (@ 60% waste diversion)	661 tonnes	667 tonnes	671 tonnes
Waste Diverted (@ 60% waste diversion)	992 tonnes	1,000 tonnes	1,007 tonnes

8 Overview of Options

Because no two municipalities are exactly alike, approaches to waste management will differ between jurisdictions. Local conditions such as geographic location, density of households, social demographics, fiscal realities, etc. will influence what waste diversion options are feasible for a municipality.

In order to select the most appropriate waste diversion options for Gananoque, it is important to review a broad mix of possible options for further evaluation to find a "best fit" for the municipality. This section presents a list of 10 possible waste management options that Gananoque could consider to improve its waste management system.

8.1 Targeted Promotion and Education

In order for any diversion option to reach its maximum efficiency and participation, a well established and clear communication strategy needs to be in place. A good educational and promotional program will allow residents and businesses to clearly understand the Town's objective and how to properly participate in programs to reach it. An enhanced promotion and education program would go beyond the static use of brochures and online information by establishing a dialogue with residents to assess those barriers to participation and determine opportunities for improvement. Such a program may include:

- Backyard compost (BYC) workshops at community events and encouraging their use through the Gananoque Horticulture Society.

- Using summer students to provide personal, in home waste audits to help residents understand their waste composition and appropriate diversion methods.
- Setting up educational and promotional booths at community events such as Hockey Day in Gananoque, outdoor concert events and fairs.
- Using summer students to provide educational programs to students at the seven local elementary and high schools.
- Promotion of available provincial programs and information resources:
 - Waste electronics: www.recycleyourelectronics.ca
 - Household hazardous waste “Orange Drop” program: www.makethedrop.ca
 - Tires: www.ontariots.ca

The communication activities should have specific strategic targets. Possible targets may include (but are not limited to):

- Promotion of specific programs at key points of the year (e.g., promotion of leaf and yard waste pick-up in the fall and spring, backyard composting in late winter/early spring);
- Reminders about specific recyclable materials or topics of concern to achieve identified problem areas (e.g., to reduce contamination levels, to clarify how to recycle problematic or confusion materials, etc); or
- Encouraging the adoption of waste reduction/prevention behaviours (e.g., encouraging wasteless gifts by purchasing ‘experiences’, such as concert tickets or a spa visit, or consciously avoiding the purchase of products with excessive packaging).

Examples of costs for typical promotion and education items include:

- Design for signage/brochure: \$1,500 - \$2,500
- Printing:
 - Full colour newsletter: \$0.50 to \$1.00 each
 - Reminder fridge magnet: \$1.50 - \$2.00 each
 - Depot sign (4' x 6'): \$800 - \$1,000
- Summer student (April – August): \$10,000 - \$12,000 (could be cost shared with other departments)

The waste diversion communication strategy should include a monitoring and evaluation component, which will allow program managers to adjust programming in response to program performance or other identified needs, such as changes in materials collected, common contamination issues, feedback from residents, or new priority issues. The amount of additional waste diversion would depend on the amount of educational and promotional material used.

The estimated annual cost for the waste system's education program (not including IC&I) is approximately \$2,900 (based on \$1.20 per household, which was identified as a best practice in the KPMG *Blue Box Program Enhancement and Best Practices Assessment Project Final Report*).

Estimated Diversion and Cost

- Estimated diversion: 1% - 3% (17 – 50 tonnes)
- Estimated cost: approximately \$2,900

8.2 Waste Composition Study

A waste composition study (or waste audit) would be helpful to confirm the estimated waste composition of the Town's solid waste streams. A baseline waste audit could be conducted in the short term, while a follow-up audit could be completed approximately two to four years after the implementation of the Town's WMS. The results of the audit would help to assess the effectiveness of the Town's various waste diversion programs and identify other opportunities for waste diversion. When designing the waste audit procedure, the approach used by Stewardship Ontario (www.stewardshipontario.ca/stewards/library/plan-your-own-waste-audit-program) should be used as a guideline. During the audit, participation in waste programs should also be tracked, such as:

- Number of households setting out garbage, blue box recyclables, and yard waste; and
- The number of containers/bags/boxes of materials set out for collection.

Estimated Diversion and Cost

- Estimated diversion: while tracking volumes of waste and conducting waste audits will not directly affect waste diversion, it will provide the Town with information useful in the evaluation and improvement of the Town's waste diversion programs.
 - Estimated cost: \$10,000 - \$15,000 for waste audit

8.3 Household Organics Collection and Composting

In 2010, the Town of Gananoque generated approximately 716 tonnes of organic waste, or about 43% of the Town's entire waste stream. The organic waste includes:

- Leaf and yard waste (e.g., brush, leaves, garden waste, etc) – 265 tonnes, or 16% of the waste stream; and
- Household organics (including food waste and compostable papers such as paper towels and tissues) – 420 tonnes, or about 25% of the waste stream.

Approximately 219 tonnes of the Town's organics is currently diverted from disposal. The majority of this material (216 tonnes) is leaf and yard waste and is diverted mainly through Town's yard waste program. About 3 tonnes is food waste, which would be diverted mainly through backyard composting.

About 497 tonnes of organics are therefore being sent for disposal, which provides the Town with a significant opportunity to increase its overall waste diversion rate. While the Town is diverting most of the leaf and yard waste it receives, there is still a considerable amount of household organics that could be diverted. Capturing 80% of the household organics in the Town's waste stream could raise Gananoque's waste diversion rate by about 22 percentage points.

To capture household organics, many municipalities offer a curbside household organics program (i.e. Green Cart). In these programs, residents are provided with a green cart and a

smaller kitchen-counter bin (also known as a mini-bin). Residents place their food and kitchen wastes into the mini-bin instead of their garbage. The mini-bin would then be emptied into the green cart, and the contents would be collected alongside recycling, garbage and leaf & yard waste.

Such a program could be focused on the more densely populated areas of Gananoque. For example, curbside collection of household organics may not be as necessary in outlying neighbourhoods with large properties if those residents backyard compost. Additionally, collection of household organics is more cost-efficient in high density urban areas compared to outlying areas with large lots because the homes are placed more closely together and haulers can make more stops per unit time and per kilometre. However, once a separate organics collection is well established in high density urban areas of the Town, expansion of the program could be considered for the Town's outlying areas. If there is additional BYC promotion and education and the program is able to increase organic waste diversion to numbers comparable to the urban curbside collection service, then a separate organics curbside collection service for all areas of the Town may be unnecessary.

The cost to collect household organics with a curbside collection program is approximately \$100 per tonne, while the cost to process it is ranges between \$80 to \$120 per tonne, depending on the technology or processing facility used. For example, Orgaworld Canada Ltd, which accepts all of the City of Ottawa's organic material, accepts organic materials for processing at a rate of \$100 per tonne. The City of Hamilton accepts household organics from outside municipalities for a processing fee of around \$90 per tonne.

With regards to implementation, the cost to roll out an organic curbside collection program to homes in York Region was approximately \$20 per household for the purchase and delivery of containers and \$5 per household for promotion and education materials, for a total of \$25 per household.

Estimated Diversion and Cost

- Estimated diversion: 22%
- Estimated annual operating cost (assuming Town-wide implementation):
 - Collection: \$100/tonne x 358 tonnes = \$35,800
 - Processing: \$80 - \$120 per tonne x 358 tonnes = \$28,600 to \$43,000 (assumes exporting material for processing, does not include capital costs of building facility)
- Program implementation costs (carts, promotion, education and roll-out): \$25/household x 2,171 single-family homes = \$54,300

8.4 Implementing a Clear Bag Policy for Garbage Collection

A 'clear bag' program refers to the use of a garbage bag that is transparent or see-through. Use of clear bags for garbage encourages waste diversion in a number of ways. Knowing that the waste collectors will be able to observe that there are recyclable, organics or hazardous materials in their garbage acts as a form of peer pressure to recycle. Secondly, clear bags can serve as a reminder if people forget to separate out these materials from their garbage, as the clear bag allows residents to see what has been thrown out. Clear bags also prompt people to reflect on their waste disposal habits and encourage them to consider waste diversion options.

Lastly, clear bags can also assist in enforcement programs by allowing waste collectors to monitor for compliance with municipal waste management regulations.

A Stewardship Ontario study that examined 22 municipalities with clear bag programs concluded that this option could have a considerable increase on diversion rates. For example, 13 Nova Scotia municipalities reportedly experienced, on average, a 41% decrease in residential waste disposed, a 35% increase in residential recycling and a 38% increase in residential organics diverted from disposal. One region from Nova Scotia experienced a 71% increase in tonnes of material collected for recycling. It is important to note that these averages were based on programs with existing recycling programs and organics diversion and therefore most of the gains can be directly attributed to clear bags⁷.

Prince Edward Island has a province wide clear bag program which enabled it to reach a 65% diversion rate in 2003. The recycling tonnage collected doubled and has remained relatively constant after implementing a clear bag program.

Durham Region initiated a clear bag pilot project in 2009 and found that diversion could increase by 3 percentage points if implemented region-wide. The pilot also concluded that participation in recycling was unaffected, but it did increase participation in organics diversion by 14%.

The Municipality of Centre Hastings and Madoc Township conducted a clear bag pilot project in 2008 and concluded that participation in blue box recycling doubled in the first month of enforcement. In total, blue box diversion increased by 9% over the first 6 months of the trial period.

Examples of other clear bag programs are provided in Table 4.

In some programs, residents are allowed to include a 'privacy bag' inside their clear bag. A 'privacy bag' is a small opaque plastic bag into which residents can place materials they wish to keep private.

Unless custom bags issued by the municipality are used for a program like this, the only costs for implementing this program are enforcement and promotion and education. Promotion and education could be managed through the Town's existing promotion and education budget. Enforcement would require training of collections staff in identifying recycling and organics in the waste stream. Additional costs would likely be negligible and could be incorporated with promotion and education.

Clear bags could also be stamped and be used as a replacement of bag tags. Residents would purchase the stamped clear bags rather than purchase plastic bags and bag tags.

⁷ Stewardship Ontario. *The Use of Clear Bags for Garbage as a Waste Diversion Strategy: Background Research on Clear Garbage Bag Programs across North America*. 2008.

Table 4: Examples of Programs with Clear Bag Garbage Programs

Municipality or Region	Population	Year Started	Other Waste Management Program Elements	Program Results
Durham Region	614,960	2009 (pilot)	<ul style="list-style-type: none"> • Recycling • Organics • Bag limit • User pay 	<ul style="list-style-type: none"> • Organics – participation increased 14%
The Municipality of Centre Hastings and Madoc Township		2008 (pilot)	<ul style="list-style-type: none"> • Recycling 	<ul style="list-style-type: none"> • Recycling – participation doubled, tonnage increased by 9%
Township of Amaranth, Ontario	3,500	2005	<ul style="list-style-type: none"> • Mandatory recycling • Organics 	<ul style="list-style-type: none"> • Disposal rate decreased
Township of East Luther Grand Valley, Ontario	2,526	2004	<ul style="list-style-type: none"> • Mandatory recycling • Organics • Partial user pay 	<ul style="list-style-type: none"> • Increased recycling collected • Increased organics and leaf and yard waste collected
Counties of Antigonish and Guysborough, Nova Scotia	29,290	2005 to 2007	<ul style="list-style-type: none"> • Mandatory recycling • Organics • User pay 	<ul style="list-style-type: none"> • Garbage – decreased by 37% • Recycling - increased by 71%
Pictou County, Nova Scotia	49,000	2006	<ul style="list-style-type: none"> • Mandatory recycling • Organics • Bag limits 	<ul style="list-style-type: none"> • Garbage – decreased by 30% • Recycling - increased by 9% • Organics - increased by 27%
Counties of Yarmouth and Digby, Nova Scotia	45,007	2007	<ul style="list-style-type: none"> • Mandatory recycling • Organics • Bag limits 	<ul style="list-style-type: none"> • Garbage – decreased by 25% • Recycling - increased by 12% • Organics - increased by 24%
Province of Prince Edward Island	138,000	2002	<ul style="list-style-type: none"> • Recycling • Organics 	<ul style="list-style-type: none"> • Recycling - doubled (from 7,161 tonnes in 2001 to 14,415 tonnes in 2003)

Estimated Diversion and Cost

- Estimated diversion increase: 1% to 6% (20 to 100 tonnes)
- Estimated costs: depends on level of enforcement

8.5 Reduction in Garbage Collection Frequency

While reducing garbage collection frequency has been shown to increase waste diversion, it should only be implemented in conjunction with other waste diversion programs, particularly a kitchen and food waste collection program (see Section 8.3), to reduce the amount of putrescible waste residents send to landfill. With an expanded blue box program and a weekly kitchen and food waste curbside collection program, garbage collection could be reduced from weekly to bi-weekly to encourage residents to make greater use of available diversion

programs. Implementing this strategy could potentially generate negative feedback from residents and increase contamination of recycling and organics streams, but this can be addressed through strong waste management promotion and education.

While costs for collection of refuse could decrease by approximately 10 to 20 percent, the resulting increase in recycling and organics diversion will drive up their associated collection and processing costs. Reduction in the collection frequency of garbage has resulted in increases in recycling and organics diversion in other municipalities in southern Ontario. For example, York and Halton Regions reported a 4-6% increase in diversion from landfill after implementing bi-weekly garbage collection.

Estimated Diversion and Cost

- Estimated diversion: 2% - 4% (30 – 70 tonnes)
- Estimated cost savings: to be determined through tender process

8.6 Adopting a Zero Waste Policy at Municipal Events and Providing Public Recycling Receptacles

This option would have to be used in conjunction with a dedicated organics diversion program. At community events and locations, the Town could limit the amount of refuse accepted and display recycling and organics containers prominently. This option would set a good example for residents and businesses in the Town and help them adopt a minimal waste attitude, which is essential for reaching any waste diversion goal.

A zero-waste policy could be established and enforced at municipal events and buildings, including:

- Libraries
- City hall
- Fire stations
- Hockey Day
- The Art and Sound Art Show
- Family Halloween Dance
- Rotary Craft Fair
- Outdoor Nativity Pageant

As an example of the potential effect on diversion, the Town of Markham started a “zero waste” policy at all municipal locations and installed 95 public recycling and organics receptacles at high traffic pedestrian area.

In total, Markham diverted the equivalent of six 14-yard bins of garbage per week at municipal buildings. Cleaning contracts were re-negotiated at municipal buildings to reduce garbage collection and as a result over 500 garbage containers were reduced to 25. The decrease in garbage containers resulted in an increase of recycling and organics receptacles. In addition, all food and catering services at the Town were required to use suppliers that shipped materials in recyclable products, offered biodegradable cups and plates, and supplied silverware. All eating areas were supplied with blue and green carts only.

Renegotiating collection services and cleaning contracts could result in savings for the Town, with less material needing disposal at the landfill. New recycling and organics receptacles for community events, buildings and public areas ranged between \$150 and \$250 per station.

Additional promotion and education would be required to ensure residents and businesses comply with the option.

Estimated Diversion and Cost

- Estimated diversion increase: 1% to 2% (20 to 30 tonnes)
- Estimated costs: ~ \$1,000 - \$2,000 for receptacles and installation

8.7 Training of Key Staff

Training of key staff in waste diversion operations and customer service, has been identified by the WDO as a Best Practice and has been included in the WDO municipal datacall as a practice which affects the municipality's Blue Box funding. A well-trained staff can lead to greater cost and time efficiencies and improved customer service. It can also help with organization of and compliance with permits, contracts, and increase efficiency between management and workers. Knowledgeable staff (including both front line staff and policy makers) have a greater understanding of their municipal programs and can perform their responsibilities more effectively. There are a number of low-cost training options available. The CIF holds periodic Ontario Recycler Workshops that discuss recycling program updates (www.wdo.ca/cif/orw.html). The MWA, Waste Diversion Ontario (WDO), the association of Municipalities of Ontario (AMO), Stewardship Ontario and the Solid Waste Association of Ontario (SWANA) can also be sources of information guides, workshops, or training on recycling or solid waste management. In order to determine which training is best suited for staff, the Town should assess individuals based on their knowledge and experience with:

- Recycling planning and continuous improvement;
- Service procurement and contract administration;
- Waste diversion policy mechanisms; and
- Operations planning and management.

Based on KPMG's Blue Box best practices report, the average training related expenses range from \$1,600 to \$2,150 per staff.

Estimated Diversion and Cost

- Estimated diversion increase: will help support other diversion programs, improve operations efficiency
- Estimated costs: \$2,000

8.8 Mandatory Recycling

Mandatory recycling is a municipal tool to ensure that residents participate in recycling (or other diversion) programs. Mandatory recycling is implemented and enforced through application of a municipal by-law that either:

- Bans recyclable and other materials from disposal in the landfill;
- Prohibits recyclable materials from being placed in the garbage; or

- Both.

The by-law could also specify that all households are provided with recycling containers and are not allowed to opt out. Examples of mandatory recycling in other municipalities include:

- Pictou County, Nova Scotia provides a list of materials in its Solid Waste-Resource Management Bylaw (Clause 3.3) that “no person shall dispose of ... in any landfill or incinerator;”
- The Township of East Luther Grand Valley states in its garbage by-law (Clause 6a) that “it is the responsibility of waste generators to ensure that all recyclables and organic material is removed from the Household waste stream prior to placing at the curb for collection;” and
- Section 1903 of the San Francisco Mandatory Recycling and Composting Ordinance requires that “all persons in San Francisco must source separate their refuse into recyclables, compostables and trash, and place each type of refuse in a separate container designated for disposal of that type of refuse. No person may mix recyclables, compostables or trash, or deposit refuse of one type in a collection container designated for another type of refuse...”

If this option were to be pursued, the way in which it would be used or enforced would need to be explored further by the Town. For example, a moderate approach to mandatory recycling would see the policy used as a promotion and communications tool, to be enforced only when absolutely necessary (e.g., a household that sets out large amounts of garbage at the curb each week for collection with no attempt at diversion). A more aggressive approach could have haulers checking garbage bags they suspect of containing recyclables and rejecting those bags that do.

There is mixed information on the effectiveness of mandatory recycling. While the research indicates that mandatory recycling programs have higher participation rates, it is unclear if they lead to increased amounts of material recycled.

A key concern the public often has regarding mandatory recycling is the perception that bylaw officers or haulers will be routinely going through their garbage for recyclables, which many feel is an invasion of privacy. However, as noted above, municipalities with mandatory recycling bylaws can use the bylaws selectively, whether in conjunction with education or exclusively for households which persist in not recycling. Those who make efforts to recycle (as evidenced by blue/red boxes at the curb) would not be likely targets of bylaw enforcement activity.

In addition to specific set out procedures, this option would require some additional enforcement by by-law officers and could require additional staff and training. Increasing promotion and education to residents is also an essential part of implementing this option. Costs for this option would be dependent on the level of enforcement required.

Table 5: Ontario Municipalities with Mandatory Recycling

City of Guelph	Municipality of Highlands East
Region of Halton	Municipality of Huron East
Township of Amaranth	Township of Algonquin Highlands
Township of East Luther Grand Valley	Township of Minden Hills
Township of Edwardsburgh Cardinal	Township of Rideau Lakes
Township of Galway-Cavendish and Harvey	Township of Wollaston
Municipality of Algonquin Highlands	Village of Lucknow
Municipality of Dysart	

Estimated Diversion and Cost

- Estimated diversion increase: Approximately 2% (33 tonnes), or more if used in conjunction with clear bags and/or rigorous enforcement.
- Estimated costs: dependent on level of enforcement adopted. Minimal promotional and education cost.

8.9 Following Generally Accepted Principles for Effective Procurement and Contract Management

The WDO has identified generally accepted principles for contract procurement and contract management as a municipal Best Practice which can affect a municipality’s Blue Box funding allocation. A considerable number of municipalities in Ontario including the Town, contract the collection and processing of recyclables. To ensure that municipalities obtain good value for money, Municipalities should follow generally accepted principles (GAP) for effective procurement and contract management as outlined in the KPMG *Blue Box Program Enhancement and Best Practices Assessment Project Final Report*, prepared for Stewardship Ontario. The contracting GAP outlined in the report deal specifically with waste collection and processing and includes topics such as planning the procurement well in advance, issuing clear RFPs, obtaining competitive bids, and including performance-based incentives.

While individual municipalities generally have their own internal contracting procedures, incorporating the contracting GAP for waste collection and processing can help to strengthen these procedures and improve the value-for-money received from waste management contracts.

Estimated Diversion and Cost

- Estimated diversion increase: Would depend on nature of contracts.
- Estimated savings: While potential savings are unknown, following the GAP would help to ensure best value for money for the Town.

8.10 Extended Producer Responsibility

The Town could promote the integration of environmental costs into the market price of products. The Town could also consider establishing and promoting retail “Take it Back” initiatives, where manufacturers and suppliers would be responsible for taking back products at the end of the life cycle. The Town should also attempt a communication strategy to inform participants in the product chain, particularly retailers and manufacturers, on how to reduce product packaging and improving recycling where possible.

The effect on diversion rates is variable, as implementing an EPR program requires many agencies and institutions to work together. Given this, several effects have been noticed in Europe where this option is prominent: reduced quantities of packaging, lighter weight of packaging and total per-capita packaging consumption dropping three percent per year after implementation.⁸ The Town might not have appropriate legal grounds to implement by-laws requiring EPR programs, and should seek the help of higher levels of government like WDO and organization like AMO.

Cost for implementing this option could be incorporated into the Town's promotion and education program. In addition, staff time would be required to promote the program alongside educational material.

Estimated Diversion and Cost

- Estimated diversion increase: about 1% to 3% (17 to 50 tonnes), depending on the materials targeted by the stewardship programs.
- Estimated costs: to be included in existing senior staff activities. Likely to result in cost savings for municipalities as industry funds or assumes responsibility for materials (e.g., tires, electronics) or modifies materials (e.g., thin-walling of aluminum cans).

8.11 Waste Disposal

In September 2011, Town Council approved a three-year contract with BFI for the collection and disposal of the Town's garbage, with the option of extending the contract an additional two-years.

The other main options for waste disposal for the Town would include either building a landfill site for the Town or considering energy-from-waste. However, the costs of either option would be prohibitive for the Town. For example, siting a new landfill site would require an Environmental Assessment process, which could cost in the order of \$50,000 to \$100,000. The cost to then develop the site would be in the order of \$5-Million to \$10-Million. With respect to Energy-from-Waste (EFW), a typical EFW facility requires a minimum of 50,000 tonnes annually to operate. Currently, with an annual waste disposal rate of about 1,000 tonnes per year, the Town does not generate sufficient waste to warrant siting of an EFW facility.

Therefore, it is recommended that the Town continue with its current contract.

⁸Solid Waste as a Resource. Guide for Sustainable Communities, 2004.

9 Evaluation of Options

9.1 Evaluation of Diversion Options

The waste diversion options were evaluated using the following criteria:

- Effect on waste diversion (how much additional waste diversion the option will provide);
- Social impact and acceptability (whether the option would be accepted or used by the public);
- Track record of technology/program (if the option has worked in this or other municipalities);
- Cost effectiveness (the added cost or savings of the option); and
- Ease of implementation (how easy or difficult it would be to implement the option).

The options were scored on a scale of 1 to 5. Table 6 describes the rating system for scoring the options. The results of the evaluation are provided in Table 7.

Table 6: Evaluation criteria scoring

Criteria	Score (range: 1 – 5)		
	1	3	5
Effect on waste diversion	Reduces waste diversion	No or little increase on waste diversion rate	Large increase in waste diversion rate
Social impact and acceptability	Disliked by public	Public would have little or no opinion on option	Public in favour of option
Track record of technology/program	No track record, has not been done before	Option has had some success in a few municipalities	Option is commonly used
Cost effectiveness	High cost or low cost-effectiveness	Little to no additional cost to current program	Option will result in cost savings
Ease of implementation	Difficult to implement	Some effort required to implement	Easy to implement

Table 7: Results of Diversion Options Evaluation

<i>Diversion Option</i>	<i>Affect on waste diversion</i>	<i>Social impact and acceptability</i>	<i>Track record of technology/ program</i>	<i>Cost effectiveness</i>	<i>Ease of implementation</i>	<i>Total</i>
Targeted Promotion and Education	4 P&E required to support other programs, increase participation	5 Public generally in favour of increased education	5 Common in many municipalities	2 Will have some increased costs	5 Should be straight-forward to implement	21
Extended Producer Responsibility	3 Material diverted depends on nature of program	5 Public generally in favour of increased producer responsibility	5 Numerous examples of producer stewardship programs across Canada	4 Programs would shift bulk of cost burden from municipalities	4 Will require supporting stewardship efforts of municipal organizations, provincial and federal government	21
Contracting GAPS	3 Minimal impact on waste diversion	5 Public generally in favour of improving purchasing municipal practices	5 Considered a best practice	4 Should increase value for money for municipal contracts	2 Will require assessing current purchasing procedures and updating as necessary	19
Waste Audit	4 information on disposal behaviours could help guide diversion efforts	4 Public generally supportive of efforts to improve diversion. May be small number with privacy concerns.	5 Common in many municipalities.	2 Costs associated with performing waste audit.	4 Waste audits generally straight-forward to implement by service provider.	19
Curbside Organics Collection	5 Large potential for diversion	4 In conjunction with education, program easy to use	5 Common in many municipalities, significant contributor to diversion	2 Will have costs for collection and processing (either locally or export)	2 Will require planning for contracting, cart purchase and roll-out, public education	18
Training of Key Staff	3 Minimal impact on waste diversion	3 Little public interest in municipal operations	5 Considered a best practice	3 Will have some costs, but should help improve system efficiencies	4 Relatively straight-forward to implement	18

<i>Diversion Option</i>	<i>Affect on waste diversion</i>	<i>Social impact and acceptability</i>	<i>Track record of technology/ program</i>	<i>Cost effectiveness</i>	<i>Ease of implementation</i>	<i>Total</i>
Zero waste policy	4 Will encourage diversion at municipal facilities	4 Public generally in favour of when municipalities lead by example	3 Option in place in some municipalities	3 Will have negligible net cost increases	3 Will require policies to be put in place, operational procedures updated, education of staff/facility users	17
Bi-weekly garbage collection	4 Will encourage participation in other diversion programs	2 May be viewed as a service cut or as potentially inconvenient	4 Common in many municipalities, generally leads to increased diversion	4 Reduces garbage collection costs	2 Will require adjustments to collection contract & scheduling, promotion to public	16
Clear garbage bags	4 Will encourage participation in other diversion programs	1 Public can have privacy concerns.	4 Experience in other municipalities shows it encourages participation in diversion programs.	3 Will have negligible net cost increases	3 Will require education of public and collection staff, tie-in with enforcement	15
Mandatory Recycling	4 Will encourage participation in recycling program	2 Can be considered intrusive	3 Common in many municipalities, but effect on diversion depends on how it is used	3 Cost will depend on approach to enforcement	2 Will require education of public and collection staff, cooperation with enforcement staff	14

9.2 Recommended Diversion and Disposal Options

The recommended waste diversion initiatives, based on the results of the evaluation, are described below. The recommended future waste management system will divert approximately 1,000 tonnes and will help the Town reach its waste diversion target of 60%. The options range in cost and complexity to implement, therefore the initiatives that require few resources and whose implementation is relatively less complex have been recommended for the short term, while those initiatives that require more planning and resources for implementation have been recommended over the long term.

9.2.1 Short Term

Based on the results of the evaluation process, the following waste diversion options are recommended for implementation in the short term (1 – 3 years):

1. Develop and implement a multi-year waste management communications strategy. The communication strategy should examine barriers to participation in the Town's waste diversion programs and identify opportunities for overcoming them. Structuring the strategy over 2 to 3 years will help the public works department better coordinate its resources, identify cost-sharing opportunities with other departments, and coordinate promotion and education activities with planned waste management improvements. The strategy should address all waste management streams, including disposal, recycling, organics (e.g., backyard composting), MHSW, and other streams. It should also look to capitalize on provincial programs, such as generic education and promotion materials provided by the Continuous Improvement Fund, provincial stewardship programs, and available retail take-back programs.
2. Participate in efforts to encourage greater producer responsibility and stewardship programs. Promote existing stewardship programs and encourage residents to participate in them.
3. Assess the Town's waste contract purchasing practices against the Generally Accepted Principles (GAP) for effective procurement and contract management. Based on the results of the assessment, develop a plan to ensure the Town's contracting practices are in line with the GAP's.
4. A curbside household organics collection program is needed in order for the Town to achieve its waste diversion target of 60%. In preparation for the program's implementation, the Town should:
 - Confirm whether the program will only include urban areas of Gananoque, or be implemented throughout the Town's jurisdiction;
 - Assess whether the Town should develop its own household organics composting facility or export to an existing facility; and
 - Pilot test the program and its communication materials prior to the program's roll-out. The pilot may include:
 - Coverage of about 250 homes;
 - Duration of at least six months;

- Separate measurement of organics waste, garbage and blue box materials collected, to assess the amount of organics diverted;
 - Periodic measurements of set-out rates to gauge participation in the pilot;
 - A survey shortly after the pilot's rollout and at the end of the pilot to measure the participant's level of satisfaction and to identify opportunities for improvement; and
 - Development of pilot communication materials, including a brochure, fridge magnet/reminder card, and a website.
5. Enrol key staff in sanctioned waste diversion training initiatives. Examples of activities include workshops, conferences and webinars, which are routinely offered by municipal and waste management associations and by the Continuous Improvement Fund.
 6. Conduct an audit of wastes collected at the curb to provide a baseline of the Town's waste streams. The waste audit should be repeated after sufficient time has elapsed to measure the effectiveness of the Town's updated waste management system (e.g., after 2 to 4 years).
 7. Continue with current approach for waste disposal (i.e., contracting collection and disposal of waste).

9.2.2 Mid to Long Term

The following waste diversion options are recommended for the mid to long term (greater than 3 years):

1. Implement appropriate waste diversion policies at municipal buildings and facilities. Start with policies encouraging recycling and other waste diversion activities, building up to a zero waste policy once the Town has a household organics program in place.
2. Once new recycling and organics diversion programs are in place and the Town's waste management education strategy has had time to work, the Town should consider implementing bi-weekly collection of garbage.
3. Assess the progress of the above recommendations on increasing waste diversion. If the waste diversion target is not being achieved, consider the use of stronger municipal tools, including:
 - a. The adoption of clear garbage bags; and
 - b. A mandatory recycling by-law.

The adoption of these mechanisms should be supported with a public education and outreach campaign and be integrated into the Town's waste management education program.

Table 8 summarizes the costs and potential diversion of the recommendations.

Table 8: Summary of Recommendations

Recommendation	Estimated Operating and Capital Cost	Estimated Diversion Increase (%)*	Estimated Diversion Increase (tonnes)*
Short Term			
1. Enhanced promotion and education	Operating: \$2,900	1% - 3%	17 – 50 tonnes
2. EPR/Stewardship Programs	Included in staff time, promotion and education activities	1% - 3%	17 – 50 tonnes
3. Assessment of Contracting GAP's	Staff time. Should help ensure better value for money from contracts.	Depends on nature of contracts	
4. Household Organics Collection and Processing	Feasibility assessment/ pilot:\$25,000 Capital: Program implementation (including purchase of carts, not including facility costs): \$54,000 Annual operating: \$72,000 (assumes Town-wide; offset by potential garbage collection and disposal savings)	22%	360 tonnes
5. Waste audit	Cost to complete audit: \$10,000 - \$15,000	Supports overall solid waste management system	
6. Training	\$2,000	Supports overall solid waste management system, improve operational efficiencies	
7. Waste collection/ disposal contracting	No additional costs (part of current operating procedure)	Supports overall solid waste management system	
Mid to Long Term			
8. Zero Waste Policy	Capital: \$1,000 - \$2,000	1% - 2%	20 – 30 tonnes
9. Reduced garbage collection frequency	Savings to be determined through tender process	2% - 4%	30 – 70 tonnes
10. a) Clear garbage bags	Depends on level of enforcement	1% - 6%	20 – 100 tonnes
b) Mandatory recycling	Depends on level of enforcement	2%	30 tonnes

* note: Diversion and tonnage increases are not necessarily cumulative, as some initiatives may help support others. For example, increased promotion and education will help support diversion through household organics collection.

10 Cost of Preferred Waste Management System

The total waste management system costs for the proposed waste management system is \$315,387. This is an increase of about \$38,000 compared to the reported 2009 costs. The primary increase in operating cost is from the household organics curbside collection and composting program, although this would be offset somewhat by reduced garbage collection and disposal costs. An estimated cost for yard waste collection and processing has also been included in this cost estimate, which was not included in the 2009 costs.

Table 9: Cost of Preferred waste Management System

Item	Tonnes	Cost/Tonne	Total Cost
Staff time/administration			\$47,266
Waste collection/disposal	534	\$161	\$86,010
Blue Box recycling	487	\$166	\$80,666
Promotion and education	3		\$2,900
Household Organics Program	358	\$200	\$71,535
Yard waste	216	\$110	\$23,711
Staff training			\$2,000
Other recycling (Stewardship diversion, scrap metal)	56		\$1,300
Total Costs	1653	\$191	\$315,387

Capital and other implementation costs associated with this preferred system include:

- Pilot test for the curbside household organics collection and composting program: \$25,000
- Implementation of curbside household organics collection and composting program: \$54,000
- Completion of waste audit: \$10,000 - \$15,000

11 Steps to Implementation

For the purpose of implementing the WMS as outlined in this report, it is necessary to consider variable start-dates for the initiatives outlined in the recommended waste management system. While many initiatives could essentially be started right away, considerations such as alignment with waste collection contracts, infrastructure requirements, capital investments and other intermediate steps and studies determine the need for staggered implementation.

It is important to plan for a highly flexible implementation schedule in order to respond to changes over time such as adjusted market conditions or innovations in technology. Due to the constant change of circumstances and priorities, the initiatives deferred for future implementation should be reviewed again for suitability prior to their launch. Once the WMS has been approved by Council, Town staff will develop an implementation plan. The implementation plan should be flexible enough to reflect the:

- Outcome of any required assessments;
- Financial priorities and available funding;
- Availability of staff and contractors; and,
- Availability of infrastructure.

The proposed implementation schedule for the preferred waste management options are presented in Table 10.

Table 10: Implementation Timeline

Option	Implementation Timeline
Short Term (2012 – 2014)	
Develop and implement multi-year communications strategy	Design: 2012 Implementation: 2012 – 2014
Promotion of Extended Producer Responsibility	2012
Review contract purchasing practices	2012 - 2013
Curbside organics collection program	Confirm scope of program: 2012 Assess approach to processing: 2012-2013 Design and implement pilot: 2012-2013 Implement program: 2014
Complete waste audit	2012-2013
Staff training	2012
Mid to Long Term (2015 and later)	
Zero waste policy at municipal buildings and facilities	2015
Reconsider bi-weekly garbage collection (if organics program in place)	2016
Assess need clear garbage bags policy and mandatory recycling by-law	2017

12 Contingencies

Even the best planning can be delayed by a variety of foreseen and unforeseen circumstances. Predicting and including contingencies can help to ensure that these risks are managed for minimum impact. Table 11 below identifies contingencies to overcome potential planning issues

Table 11: Waste Management Strategy Contingencies

Risk	Contingency
Insufficient funding	<ul style="list-style-type: none"> • Raise bag tag prices/tipping fees • Explore and apply for other funding sources • Delay lower-priority initiatives • Increase proportion of municipal budget to solid waste management
Public opposition to planned recycling initiatives	<ul style="list-style-type: none"> • Improve public communications • Engage community/stakeholders to discuss initiatives/recycling plan
Lack of available staff	<ul style="list-style-type: none"> • Prioritize department/municipal goals and initiatives • Hire summer student to help with planning (may be available funding) • Provide volunteer opportunities for students and members of the community
Permit requirements	<ul style="list-style-type: none"> • Identify permit requirements early on in process • Establish a “permit requirements” checklist

13 Monitoring and Reporting

The monitoring and reporting of the Town's diversion programs is considered a Blue Box program fundamental best practice and is a key component of this WMS. Once implementation of the strategy begins, the performance of the waste management system will be monitored and measured against the baseline established for the current system. Once the results are measured, they will be reported to Council, public works and the public.

The approach for monitoring the waste recycling program is outlined in table 12.

Table 12: Waste Management System Monitoring

Monitoring Topic	Monitoring Tool	Frequency
Total waste generated (by type and by weight)	Measuring of wastes and recyclables at disposal site	Each load
Diversion rates achieved (by type and by weight)	Formula: (Blue box materials + other diversion) ÷ Total waste generated * 100%	Monthly
Program participation	Customer survey (e.g., telephone); monitoring set-out rates	Every 1 to 3 years
Customer satisfaction	Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office	Every 1 to 3 years
Opportunities for improvement	Tracking calls/complaints received to the municipal office	On-going
Report on implemented activities	Describe what initiatives have been fully or partially implemented, what will be done in the future	Annually
Review of Waste Recycling Strategy	A periodic review of the Waste Management Strategy to monitor and report on progress, to ensure that the selected initiatives are being implemented, and to move forward with continuous improvement	Every 3 years

The implementation and performance of the waste diversion programs must be monitored on a regular basis to:

- Review the effectiveness of the SWMS;
- Recommend changes to the SWMS as required to maximize diversion of waste from disposal; and,
- Report results back to Council and the public.

The WMS should be formally reviewed at a minimum of every five years to evaluate achievements, assess new programs and technologies, and recommend future actions to ensure the SWMS performs to maximum efficiency and effectiveness.