EXECUTIVE SUMMARY

The Municipality of Northern Bruce Peninsula retained Gamsby and Mannerow Limited to assist in preparing a Long-Term Waste Management Plan. The purpose of the Waste Management Plan is to provide a “holistic” approach to the Municipality’s waste management program that would provide the support for short-term and long-term waste management planning purposes.

The purpose of this study can be summarized as follows:

1) To assess the performance of the Municipality’s current waste management system, and to develop projections regarding future waste management practices including waste volumes, types, and sources.

2) To assess the Municipality’s current waste diversion strategies and to identify and assess alternative diversion approaches for future consideration, including, but not limited to:
   - Solid waste collection systems,
   - Public promotion, education and incentives,
   - Expansion of recyclable materials,
   - User pay systems,
   - Municipal by-laws, and
   - Organics diversion.

3) To review the technical and financial merits of each of the proposed alternative waste collection and diversion strategies and to compare the positives and negatives of each alternative.

4) To evaluate residual waste disposal options with respect to the long-term waste management plan that is most suitable to the Municipality.

The waste generated within a municipality may be broken down into residential and Industrial/Commercial/Institutional (IC&I) waste streams. Under current provincial regulatory and policy requirements, it is the responsibility of the Municipality to manage the residential solid waste generated within the Municipality and the IC&I sector is responsible for managing their own waste disposal. Therefore, the main focus of this report is in regards to the residential waste stream. However, consideration is also given to solid waste generated from the IC&I sector within the Municipality, as it is recognized that the majority of the solid waste generated by this sector is disposed of at the municipal landfills.

This plan was developed in consultation with municipal staff, council and the Waste Diversion Group.
Background Information

The Municipality encompasses an area of approximately 780 km² and is located on the northern portion of the geographic region known as the Bruce Peninsula located in the County of Bruce. In 2010, the permanent population of the Municipality was reported to be 3,850 with a population density of 4.9 persons/km². The total dwelling count was reported to be 4,870, of which almost two thirds are occupied by seasonal residents. Generally, the Municipality is largely rural with the majority of the development being seasonal residences that are primarily situated along shorelines.

The Municipality currently provides a combination of weekly curbside collection and dumpster disposal service to the residents of the Municipality. At present, approximately two thirds of households are serviced by curbside collection and the remainder by dumpsters. Curbside collection and dumpster service is contracted out by the Municipality. The Municipality currently owns and operates three municipal landfills where the residual residential non-hazardous solid waste generated within the Municipality is disposed. Blue box recycling services are currently provided through five drop-off depots. The blue box recyclables from the depots are collected by a contractor and are taken to a transfer station located in Owen Sound for processing.

The municipal landfills also accept solid non-hazardous waste generated by the IC&I sector, which primarily consists of small businesses, campgrounds and parks, the transportation ferry and schools within the Municipality. Collection and disposal of the waste generated within the IC&I sector is funded by the businesses and institutions themselves and not by the Municipality.

In addition to blue box recycling, the Municipality provides a number of additional diversion programs, which are as follows:

- The Municipality is a registered collector with the OTS and OES for the collection of used tires and electronics. Drop-off locations for these materials are available at all three landfills.

- Scrap metal is collected by the Municipality for salvage (including appliances and propane tanks). Drop-off locations for scrap metal are available at all three landfills.

- The Municipality has an agreement with the County of Bruce that organizes a number of collection events for MHSW throughout the Municipality each year.

- Bale wrap is collected by the Municipality for recycling through Think Plastics Inc. A drop-off location for bale wrap is available at the Eastnor landfill site.

- The Municipality provides two reuse buildings for exchange of reusable household items. A number of reusable items and clothing drop-off and/or pick-up programs are also available to residents within the Grey-Bruce area.

- The Municipality promotes the use of home composting and provides subsidized home composters.

- Leaf and yard waste can be taken to any of the landfills where it is segregated for use as final covering material.

- The Municipality promotes the benefits of diversion and educates residents of the available diversion options through annual waste collection calendars, bulletins, and the municipal website.
Collectively these programs have achieved a diversion rate of 24% that is around average for their municipal grouping (i.e., municipalities with similar characteristics). In comparison, the current diversion rate for the province is 44% and the provincial target is 60%. However, it should be noted that higher diversion rate recorded for the province is primarily attributed to household organics and yard waste diversion programs that are more typical of larger centres or more centrally municipalities.

In terms of residual waste disposed, the Municipality disposed of an average of 380 kg of residential waste per person per year. This disposal rate for residential waste is noted to be relative high when compared to the average residential disposal rates of 271 kg/cap and 208 kg/cap for the Municipality’s grouping and the province, respectively.

In total, the municipality disposes an average of approximately 3,000 tonnes of residual waste per year. This figure includes waste disposed by the residential and the IC&I sector, who estimated to account for approximately 34% of the residual waste disposed. In Ontario, the IC&I sector currently contributes approximately two thirds of the residual waste disposed. As to be expected, the Municipality’s IC&I residual waste contribution is much lower relative to the province, due to the absence of major industrial facilities producing large volumes of waste.

Over the next 25 years the residual waste disposed is estimated to increase from approximately 3,000 to 4,000 tonnes per year, with a total residual waste generation of 86,000 tonnes for the period. Assuming the use of a landfill for residual waste disposal, the 25-year residual waste capacity requirement is estimated to be 206,000 m$^3$ (not including final cover material). At the current rate of waste disposal, the remaining landfill capacity under the current approvals is estimated to be exhausted in 10 years.

**Options for Improved Diversion**

The unique geography, low population density, and population distribution (i.e., along shorelines) of the Municipality offers many logistical and economic challenges relative to other municipalities. Despite these challenges, the Municipality has managed to provide a relatively cost-efficient waste management program. As previously noted, the current system offers a mixture of curbside and dumpster garbage collection and depot blue box collection. Under this program, the Municipality has a five year average diversion rate of 24%, which is only slightly below their municipal grouping (i.e., 26% in 2010), but is well below the provincial average (44% in 2010) and the provincial goal of 60%.

While achieving the provincial goal of 60% is possible, it is recognized that the Municipality would likely be required to invest in full curbside collection of garbage, organics and recyclables. At this time, it is also recognized that the applicability of these types of collection systems are typically limited to jurisdictions with a larger population base and/or are more geographically central (where service sharing or third party facilities are available). Consequently, as part of the waste management planning, it is important for the Municipality to determine their diversion targets, budget, and implementation timeframes.

Based on the findings of this study and several already implemented successful programs, a feasible approach towards an increase in reduction and diversion would be to remove dumpsters and expand curbside collection to those areas, as areas serviced by dumpsters were found to produce more residential waste. It is important to point out that factors contributing to the addition waste produced in areas serviced by dumpsters could include illegal dumping by non-residents, contractors, tourists, etc. The removal of the dumpsters and the expansion of curbside garbage collection would allow for
better oversight of waste disposal habits and easier enforcement of bag limits, garbage bag tags, and recycling By-laws if the Municipality choose to impose such initiatives.

The implementation of the user pay system (garbage bag tags) has been proven by many municipalities to reduce the amount of residual waste generation by encouraging residents to become more conscious of their residual waste generation and disposal habits. The revenue gained through the user pay system would off-set the extra costs associated with expanding curbside service to those currently serviced by dumpsters. It is estimated that a user pay system in a full curbside garbage collection scenario could increase the residential diversion rate from 24% to between 30% and 40%.

For the above mentioned reasons, coupled with the understanding that changing the way the Municipality provides waste collection has several factors to consider other than just diversion rates such as service levels and costs implications. As a result, the Municipality should continue to review waste collection options/programs on a yearly basis.

Other diversion initiatives the Municipality could consider in the short-term include:

- Enhancement of recycling depots
- Provision of free blue boxes
- IC&I outreach and collaboration
- Creation of additional waste diversion streams
- Promote reuse buildings
- Provide drop-off bins for clothing donations
- Further encourage the use of backyard composters
- Inform residents of leaf and yard waste diversion options
- Distribution of information materials that include collection schedules and detailed information on new and existing waste diversion programs
- Educational initiatives that provide information to residents regarding waste diversion initiatives and details, such as acceptable and unacceptable materials for recycling
- Partner with local campgrounds, tourist offices and businesses to promote recycling and waste diversion and inform seasonal residents and tourists of the diversion programs available in the Municipality

For a detailed review of the potential diversion options, please refer to Section 4.0 of the report.

**Residual Waste Disposal**

The Municipality is considered to be in a relatively good position, in terms of disposal options, due primarily to the historically approved capacity at the Eastnor and Lindsay landfill sites. At this time, future development of that capacity is considered to be the Municipality’s most viable waste disposal option.

Incineration and thermal technologies are not considered to be economically feasible for the Municipality based on the limited scale of waste production, geographic location, and lack of access to a third party system.
In the short-term, it is recommended that the Municipality continue the use of their existing capacity while focusing on diversion and operational improvements such as maximizing compaction of landfilled waste to increase site life. In the long-term, it is recommended that within the next five years the Municipality begin the application process for the development of additional capacity at the Eastnor and/or Lindsay landfill sites. This will help secure additional waste disposal capacity for the Municipality before the existing available capacity is exhausted (estimated to be about 10 years). It is recommended that the development of additional landfill capacity plan for 25 years of site life.

A list of potential residual waste disposal options and the pros, cons and costs estimated associated with each option are presented in Table 5-1.

**Summary of Recommendations**

Based on the review of the information collected as part of this study and feedback gained through the consultation process, the recommendations that are considered to be most applicable to the Municipality at this time have been summarized in the Table below. Specific information regarding each recommendation and other options available are provided within the body of this report.

<table>
<thead>
<tr>
<th>Category</th>
<th>Implementation Timeframe</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Collection / Reduction / Diversion and WRS</td>
<td>Annually</td>
<td>Review and Evaluate Residual Waste Collection Options and Incentive Programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promotion and Public Education Program</td>
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<td></td>
<td></td>
<td>Training of Key Program Staff</td>
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<td></td>
<td></td>
<td>Explore Additional Waste Diversion Streams</td>
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<tr>
<td></td>
<td>Short-term</td>
<td>Enhancement of Recycling Depots</td>
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<tr>
<td></td>
<td></td>
<td>Provision of Free Blue Boxes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IC&amp;I outreach and collaboration</td>
</tr>
<tr>
<td></td>
<td>Long-term</td>
<td>Evaluate SSO Collection System</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evaluate Curbside Recycling Collection</td>
</tr>
<tr>
<td>Residual Waste</td>
<td>Short-term</td>
<td>Evaluate Preferred Future Landfill Options for Lindsay and/or Eastnor</td>
</tr>
<tr>
<td></td>
<td>Within 5 Years</td>
<td>Initiate Application Process for Future Landfilling at Eastnor and/or Lindsay</td>
</tr>
<tr>
<td></td>
<td>Long-term</td>
<td>Close St. Edmunds and Consolidate Waste Operations to Lindsay and/or Eastnor</td>
</tr>
<tr>
<td>Monitoring and Continual Improvement</td>
<td>On-going</td>
<td>Monitor Programs to Compare Benchmarks to Targets/Goals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Review Program Initiatives and Update Based on Results of Monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stay Abreast of Diversion and Waste Disposal Options</td>
</tr>
</tbody>
</table>
Implementation, Monitoring, and Continual Improvement
The options presented herein are provided to the Municipality to assist in developing a plan for implementation of the long-term waste management program in consideration of existing policy, legislation, status of waste management practice in Ontario, and the municipal-specific waste production characteristics. Ultimate selection of the options presented herein is to be made by the Municipality with consideration of public comment and the social, environmental, and economic applicability of the options.

It should be noted, that where the potential applicability of specific options are considered uncertain, further study may be warranted. Additionally, where waste management options rely on third parties, further agreements and commitments may be sought to establish applicability. Consequently, it is expected that a targeted list of favourable options would be developed by the Municipality for further study and/or implementation.

Once program initiatives have been implemented and established, it is important to monitor the performance of the initiatives against the baseline performance of the current system. It is recognized that the Municipality currently monitors residential waste generation and disposal rates for annual submission to the WDO. This information is gathered through recycling tonnages reported by the recycling contractors, weigh scale data recorded by landfill site attendants, and other program information such as composters sold by the Municipality, etc.

These monitoring practices have aided in determining the Municipality’s current performance relative to other municipalities and has also aided in establishing a baseline for future program evaluations. It is noted that the Municipality’s current monitoring system for waste received at the landfill sites is considered to be very comprehensive since the various waste material types (e.g., asphalt shingles, furniture, wood, etc.) and source of the material (i.e., residential or IC&I) are recorded. For operational purposes the remaining capacity and capacity used in the landfills is also monitored on an annual basis through topographic surveys.

To further enhance diversion records, it is recommended that the Municipality estimate the materials diverted through the reuse buildings.

Based on the changing regulatory framework and evolving technological developments in the waste management field, it is important for the Municipality to stay abreast of diversion and waste disposal options. In particular, availability of third party systems may influence recommendations provided herein. Therefore, it is recommended that a review of the findings of this Waste Management Plan be completed at least every 5-years.
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Appendix "A" Waste Recycling Strategy
GLOSSARY OF TERMS & ACRONYMS

3R's – Reduce, Reuse, Recycle
AMO – Association of Municipalities of Ontario
BBPP – Blue Box Program Plan
CofA – Certificate of Approval (issued by MOE)
C&D Waste – Construction and Demolition Waste
EAA – Environmental Assessment Act
EAB – Environmental Approvals Branch
EFW – Energy from Waste
EPA – Environmental Protection Act
EPR – Extended Producer Responsibility
GAP – Generally Accepted Principles (for estimation of diversion rates)
IC&I – Industrial/Commercial/Institutional
IFO – Industry Funding Organization
MHSW – Municipal Hazardous or Special Waste
MSW – Municipal Solid Waste
MOE – Ministry of the Environment
MRF – Material Recovery Facility
OES – Ontario Electronic Stewardship
OTS – Ontario Tire Stewardship
OUOMA – Ontario Used Oil Management Association
PTE – Passenger Tire Equivalent
SO – Stewardship Ontario
UOMPP – Used Oil Material Program Plan
UTPP – Used Tire Program Plan
WDA – Waste Diversion Act
WDO – Waste Diversion Ontario
WEEE – Waste Electrical & Electronic Equipment
1.0 INTRODUCTION

The Municipality of Northern Bruce Peninsula (Municipality) retained Gamsby and Mannerow Limited (G&M) to assist in preparing a Long-Term Waste Management Plan. The Municipality occupies the north portion of the geographical region known as the Bruce Peninsula, located in the County of Bruce. The Municipality was formed in 1999 as the result of the amalgamation of the former Townships of Eastnor, Lindsay and St. Edmunds. Each respective former township was serviced by a landfill, of which the Municipality assumed ownership of upon amalgamation. As a result, the Municipality is currently serviced by three landfills. The municipal boundaries and the locations of the landfill sites are presented in Figure 1-1.

The purpose of the Waste Management Plan is to provide a “holistic” approach to the Municipality’s waste management program that would provide the support for short-term and long-term waste management planning purposes. In order to develop this holistic waste management plan, the “Waste Value Chain”, which describes the decreasing value of resources through a series of waste prevention (Reduction), waste diversion (Reuse, Recycling, Composting), and disposal (Incineration, Landfill), as illustrated in Figure 2-1, has been considered.

The waste generated within a municipality may be broken down into Residential and Industrial/Commercial/Institutional (ICI) waste streams. Under current Provincial regulatory and policy requirements, it is the responsibility of the Municipality to manage the residential solid waste generated within the Municipality and the ICI sector is responsible for managing their own waste disposal. Therefore, the main focus of this report will be in regards to the residential waste stream. However, consideration is also given to solid waste generated from the ICI sector within the Municipality as it is recognized that the majority of the solid waste generated by this sector is disposed of at the municipal landfills.
The purpose of this study can be summarized as follows:

1) To assess the performance of the Municipality’s current waste management system, and to develop projections regarding future waste management practices including waste volumes, types, and sources.

2) To assess the Municipality’s current waste diversion strategies and to identify and assess alternative diversion approaches for future consideration, such as:
   - Solid waste collection systems;
   - Public promotion, education and incentives;
   - Expansion of recyclable materials;
   - User pay systems;
   - Municipal by-laws;
   - Organics diversion; etc.

3) To review the technical and financial merits of each of the proposed alternative waste collection and diversion strategies and to compare the positives and negatives of each alternative.

4) To evaluate residual waste disposal options with respect to the long-term waste management plan that is most suitable to the Municipality.

Waste management planning covers a series of complex issues that are inter-related. Consequently, the layout of this study is presented in a step-wise fashion that provides a review in the following sequence:

1. Policy framework,
2. Background information, including a review of the current status of waste management within the Municipality,
3. An evaluation of alternative prevention and diversion methods,
4. An evaluation of alternative residual waste disposal methods, and
5. An evaluation of alternative collection systems.

Finally, the conclusions of the study are presented along with key recommendations.
Figure 1-1: Map of the Municipality of Northern Bruce Peninsula
2.0 POLICY FRAMEWORK

The federal, provincial/territorial, and municipal governments each share responsibility for waste management in Canada. The following provides a brief overview of each government’s policies and strategic initiatives related to waste management, and the Municipality’s role in relation to those policies and strategic initiatives. Information was compiled from various sources, including:

- Government of Canada
  o Environment Canada
- Province of Ontario
  o Ministry of the Environment (MOE)
  o Environmental Protection Act (EPA)
  o Waste Diversion Act (WDA)
  o Waste Diversion Ontario (WDO)
  o Blue Box Program Plan (BBPP)
  o Waste Electrical & Electronic Equipment (WEEE) Program Plan
  o Municipal Hazardous or Special Waste (MHSW) Program Plan
  o Used Tire Program Plan (UTPP)
- Bruce County
  o Official Plan (2010)
- Municipality of Northern Bruce Peninsula
  o Strategic Plan (MNBP, 2008)
  o Municipal Website
  o Staff input

2.1 FEDERAL GOVERNMENT POLICY AND STRATEGIC INITIATIVES

The Government of Canada is engaged in municipal solid waste management issues related to sustainable development, toxic substances, international movement, federal lands and operations, air emissions (including greenhouse gas emissions), and through federal funding. The federal government places the responsibility of municipal solid waste collection, diversion (recycling and composting) and disposal operations on local municipal governments, while the provinces and territories are responsible for approvals, licensing and monitoring of operations.

Municipal Role

The Municipality is responsible for managing and providing solid waste disposal services and diversion programs with respect to blue box recyclables and composting.
2.2 Provincial Government Policy and Strategic Initiatives

The Ontario MOE and its Waste Management Policy Branch, part of the Integrated Environmental Planning Division, is responsible for the development of policies, regulations and legislation to ensure effective management of waste in Ontario. The Branch works with municipalities, the private sector and associations to develop policies and programs for the management of both hazardous and non-hazardous waste, and promotes waste minimization, diversion and recycling activities.

The Waste Diversion Act (WDA) was passed on June 27, 2002 to promote the reduction, reuse and recycling (3R’s) of waste and to provide for the development, implementation and operation of waste diversion programs.

In June, 2007, the MOE released its “Policy Statement on Waste Management Planning: Best Practices for Waste Managers”. The Policy Statement discusses the Provincial direction for waste management planning primarily through reducing, reusing and recycling waste (3R’s) and achieving an overall 60% waste diversion rate from final residual disposal. The Policy does not address residual waste management.

The MOE Policy Statement outlines a “Waste Value Chain” that describes the decreasing value of resources, and the increasing need for final residual disposal capacity. The schematic of the “Waste Value Chain” as presented in MOE Policy Statement is provided below:
Figure 2-1: Waste Value Chain

- **Waste Reduction** (e.g. behavioural or technological changes)
- **Waste Reuse and Recycling**
- **Source Separated Composting and Anaerobic Digestion**
- **Thermal Treatment** with energy recovery
- **Landfill with Energy Recovery**
- **Thermal Treatment** or landfill without energy recovery

**DECREASED DEMAND FOR RAW MATERIALS AND ENERGY USE: DESIGN FOR ENVIRONMENT**

**RECOVERY AND REUSE OF RECYCLABLE MATERIALS**

**RECOVERY OF ORGANIC MATTER, RECOVERY OF ENERGY**

**RECOVERY OF ENERGY FROM METHANE**

**NO RECOVERY**

* With potential use of ash or recovery of metals.

** Waste managers should consider waste reduction as a first priority, followed by diversion. All disposal options have unique environmental concerns and should only be considered as a last option. Where disposal is necessary, waste managers should carefully reflect on these environmental concerns in light of their local circumstances. Recovering energy from landfill or thermal treatment should be considered prior to thermal treatment or landfill without energy recovery.

The strategic initiatives currently undertaken by the Provincial Government to address the intention of the “Waste Value Chain” are summarized in the following sections:
2.2.1 Waste Prevention

The MOE prepared a Discussion Paper for public consultation entitled “Toward a Zero Waste Future: Review of Ontario’s Waste Diversion Act, 2002” (MOE, October 2008). The Discussion Paper recognizes that “zero waste” will not be achieved in the short-term, but that it is time to begin moving in that direction. The paper outlines four key building blocks as first steps in striving toward zero waste future:

1. A clear framework built upon the foundation of Extended Producer Responsibility (EPR).
2. A greater focus on the first and second of the 3R’s – waste reduction, and reuse.
3. Increasing reduction and diversion of waste from the IC&I sectors.
4. Greater clarity around roles and responsibilities, to ensure that all parties are contributing to a common goal.

The first building block is an initiative where producers (manufacturers, brand owners or first importers) of products and packaging are responsible for the costs associated with the environmental impact of their products. This responsibility extends throughout the product’s life-cycle, including its design, manufacturing, packaging, transportation, product use, and diversion or disposal. The idea is that producers will ensure production practices are more efficient and products are designed to produce less (or no) waste by-products.

The second building block outlines a greater focus on waste reduction (waste reuse is covered in the following sub-section). The Discussion Paper gives a possible approach to a 3R’s hierarchy in the WDA, where producers would be encouraged to focus on waste reduction first, reuse second, and recycling third, rather than current programs where a focus is on the least costly means of collecting and recycling materials.

The third building block includes the reduction and diversion of waste from the IC&I sectors. It is recognized that the diversion rate for the IC&I sector is low, despite being responsible for two-thirds of Ontario’s total waste generated each year. It is also recognized that the IC&I sector is difficult to target due to the wide variety of establishments within the sector and the variability wastes generated from those facilities. The Discussion Paper proposes to enhance the regulations made under the EPA to promote increased diversion rates through more definitive requirements including data reporting and strengthened enforcement measures.

The fourth building block includes streamlining governance and administration to provide a clear framework that sets out the roles and responsibilities of the parties involved in waste diversion programs. This will help ensure that the players involved are contributing to a common goal for a successful waste diversion program. The Discussion Paper proposes to introduce a number of approaches including introducing more effective compliance tools such as penalties for non-compliance.

<table>
<thead>
<tr>
<th>Municipal Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is recommended that the Municipality continue to stay informed of new developments and provide comment where necessary.</td>
</tr>
<tr>
<td>It is recommended that the Municipality take a pro-active approach regarding public education for the reduction of waste through behavioural changes.</td>
</tr>
</tbody>
</table>
2.2.2 Waste Diversion

2.2.2.1 Waste Reuse
In recent years, Ontario has introduced a number of programs that incorporate the reuse of waste such as the Waste Electrical and Electronic Equipment (WEEE) program, the Ontario Deposit Return Program (ODRP), and the reusable bag program.

The WEEE program is intended to increase the amount of electronics reused, collected, refurbished, and recycled through the provision of convenient and accessible locations for the drop off of waste computers televisions, and other electronic products. This program was implemented in the spring of 2009. The recycling component of the WEEE program plan is further discussed in the following Section.

The ODRP encourages consumers to return their used wine and spirit bottles for a refundable deposit while the reusable bag program encourages consumers to use a reusable bag rather than purchasing disposable plastic bags. Both these programs were implemented in 2007.

At the Municipal level, reuse can be promoted through education and facilitation of goods exchange programs. Additionally, reuse is also promoted in the region through private and non-profit organizations such as local thrift stores, Habitat for Humanity and Salvation Army.

Municipal Role

As new program plans are proposed and implemented, the Municipality should continue to stay informed of those plans and make comments were necessary.

It is recommended that the Municipality provide education and encourage the reuse of goods as practical.

2.2.2.2 Waste Recycling
Waste Diversion Ontario (WDO) is a non-crown corporation created by the WDA that is responsible for developing, implementing and operating waste diversion programs and waste management policy for various materials. The Minister of the Environment can designate a material through the WDA for which a waste diversion program is to be established by WDO. WDO is required under the WDA to work co-operatively with an Industry Funded Organization, the public and the MOE.

Designated materials under the WDA include the following:

- Blue Box Waste
- Used Tires
- Waste Electrical and Electronic Equipment
- Municipal Hazardous or Special Waste
The following is a summary of WDO’s current diversion programs.

2.2.2.2.1 Blue Box Waste

On September 23, 2002, Blue Box Wastes were designated under the WDA by regulation O. Reg. 273/02. The Act defines Blue Box Wastes as:

Waste that consists of any of the following materials, or any combination of them:

- Glass
- Metal
- Paper
- Plastic
- Textile

Textiles are defined as “Natural and synthetic based textile packaging”.

The 3R’s were introduced in Ontario on a large scale basis in the 1980s, and regulatory requirements were developed under the EPA in the 1990s. In 2002, the Minister requested that WDO develop a diversion program for Blue Box Wastes. Under the Act, the WDO created and identified Stewardship Ontario (SO) as the IFO for the waste diversion program. WDO, in cooperation with SO, developed the Blue Box Program Plan (BBPP) to divert the items defined under the term ‘blue box waste’.

A BBPP review was requested by the Minister of the Environment in 2009 aimed at increasing the recycling rate. After extensive consultation with stakeholders, a revised draft was presented to the board of directors of SO and subsequently the board of directors at WDO. The final revised program plan was submitted to the environment minister for review in April 2010. At the time of this report, the Minister had not yet commented on the revised BBPP.

The Revised BBPP sets a recycling rate of 70% to be achieved by the end of 2011. This target differs from the overall diversion rate of 60% of waste generated set out in the MOE’s “Policy Statement on Waste Management Planning: Best Practices for Waste Managers” (June, 2007) by applying only to the capture rate of blue box recyclable waste. The objectives as outlined in the revised BBPP are as follows:

- Divert 70% of Printed Paper and Packaging from disposal by 2011.
- Ensure that stewards of printed paper and packaging that is supplied into the Ontario marketplace contribute 50% of the cost of operating the municipal recycling system, in keeping with best practices.
- Ensure consumers adopt appropriate recycling behaviours consistent with their expectations for convenience and evolving perceptions of environmental stewardship and responsibility.
- Provide province-wide access to curbside recycling in line with current regulations.
- Implement best practices to optimize the province-wide recycling system, including the provision of recycling containers to all single-family households with curbside collection and to all multi-residential buildings receiving recycling collection.
• Make direct investments to create collection infrastructure and markets that will transform materials collected from the Ontario municipal recycling system into manufacturing feed stocks or similar uses.
• Calculate and report diversion in an accurate and transparent methodology covering both materials supplied for use and material recycled that is subject to third party verification.
• Allocate costs to stewards in a transparent and equitable methodology that provides financial incentives designed to support increased recycling, subject to third-party audit.
• Expand the definition of Printed Paper and Packaging to include packaging-like products, e.g., aluminum pie plates, compatible with current collection and management systems.
• Modify the calculation of diversion to include materials that are supplied into the residential market but not managed by municipalities.

Municipal Role

The Municipality should remain informed of the Minister of the Environment’s response to the Revised BBPP, and additional BBPP reviews and provincial policies and initiatives as they are made available.

2.2.2.2 Used Tires

Used tires were designated by a regulation made under the WDA in 2003. In 2008, the Minister of the Environment requested that WDO develop a waste diversion program for used tires. WDO and Ontario Tire Stewardship (OTS) developed the Used Tire Program Plan (UTPP) and submitted it to the Minister of the Environment in 2009.

The Minister of the Environment approved the UTPP later that year. The aim of the UTPP is directed toward retailers/dealers who account for the majority of used tire collection (typically on a one-for-one basis when consumers purchase new tires). The plan also recognizes municipal landfills and encourages municipalities to register with OTS as a registered collector. It is recognized that the Municipality has already taken advantage of this program and is currently registered as a collector with the OTS. The municipality currently offers three collection locations, which include the three municipal landfills.

Municipal Role

As a registered collector the Municipality is responsible for meeting the following requirements:
• Reporting on the types and quantity of tires they collect;
• Accept tires free of charge for the types of used tires that they agree to collect (and that are part of the UTPP);
• Storing tires in accordance with Ministry of Environment and Fire Marshall Regulations, and in a manner that ensures they are free of foreign material and excessive moisture, and are secure and accessible for easy pick up;
• Using OTS registered Haulers for free pick up of tires;
• Keeping records of the number of used tires accumulated and the Hauler(s) who pick up their used tires in accordance with OTS requirements;
• Agree to wait until a minimum number of tires have been accumulated before calling for a pick-up. The minimum number of tires is 50 tires. However, this number is negotiable between the registered Collector and registered Hauler.

As a registered collector that meets the above requirements the Municipality is eligible for the following benefits and incentives:

• No-charge used tire hauling service for volumes of used tires greater than 50 passenger tire equivalents (PTE);
• The applicable collector handling allowance;
• Service within an agreed-upon timeframe enumerated in the UTPP;
• OTS promotion and education materials.

A standard tire weight of 10 kg is considered to be 1 PTE. For example, a medium truck tire weight of 50 kg is considered to equal 5 PTE.

Registered collectors would be issued a Used Tire Collection Allowance of $0.88 per passenger and light truck (PL/T) tire and $3.05 per medium truck and off-the-road tire.

OTS recognizes that there may be locations where used tires are collected that choose to not register with OTS as collectors, or which do not meet the definition of a collector. In these instances OTS will provide no-charge pick up, but will not pay a Used Tire Collection Allowance on the tires picked up.

2.2.2.2.3 Waste Electrical & Electronic Equipment (WEEE)
WEEE was designated under the WDA in 2004. Later that year the Minister of the Environment requested WDO to prepare a WEEE study. The study was submitted to the Minister for review in 2005. In 2007, the Minister requested that WDO prepare a WEEE Program Plan. Ontario Electronic Stewardship (OES) was formed as the IFO. The WEEE Program Plan was approved by the Minister of the Environment in 2008. In 2009 a Revised WEEE Program Plan was submitted for review, which was subsequently approved later that year. The Revised Program Plan officially replaced the preceding Program Plan (2008) in 2010.

Some key changes to the original WEEE Program Plan include the addition of new materials to be collected, new collection options and increased flexibility for WEEE generation and collection sites. Municipal participation in the WEEE program is voluntary; however, it is strongly encouraged.

The Municipality is currently taking part in the program as a registered collector with the OES. As a registered collector the Municipality receives collection incentive payment based on the tonnage collected. The collection sites include all three municipal landfills.
Municipal Role

As a registered municipal collector the Municipality is responsible for the following:

- Ensure only acceptable WEEE program materials are accepted at the site;
- Ensure that WEEE is sheltered in inclement weather;
- Provide sufficient space and accessibility for shipping and receiving WEEE;
- Ensure sites are equipped with a hazardous material clean-up kit for use in the event of a broken cathode ray tube (CRT) monitor or television;
- Ensure staff members understand WEEE handling procedures and are familiar with acceptable program materials;
- Provide adequate measures to protect material from being tampered with;
- Equip site with visible disclaimer (signage to advise users to wipe/remove information from their computers before drop off)

The Municipality should continue to be familiar with the WEEE Program Plan and any future program revisions and incentives, and provide feedback to OES where necessary.

2.2.2.2.4 Municipal Hazardous or Special Waste (MHSW)

MHSW was designated under the WDA in 2006. The same year, the Minister of the Environment requested WDO to prepare a diversion program for MHSW. The program was subsequently developed by Stewardship Ontario (SO) in conjunction with WDO. In 2008, the MOE approved phase one of the Program Plan the final consolidated Program Plan consisting was approved in 2009.

In 2010, the MOE revoked the consolidated program and subsequently requested a revised MHSW Program Plan. During this transition period the government has requested that SO continue to operate the Orange Drop Program in its entirety. The following materials are included in the Orange Drop Program:

- Paints and coatings, plus their containers
- Solvents, such as thinners for paint, lacquer and contact cement, paint strippers and degreasers, and their containers
- Oil filters
- Oil containers of 30 litres or less
- Single-use batteries
- Antifreeze and its containers
- Pressurized containers, such as propane tanks and cylinders, oxygen and helium tanks
- Lawn fertilizers that contain pesticides
- Pesticides, and their containers
Municipal Role

There is no provincial regulation requiring a municipality to offer MHSW services; however, it is strongly encouraged to increase diversion rates and to protect the environment by giving homeowners a place to properly dispose of MHSW.

Municipalities entering into an agreement with SO receive either reimbursement or services from SO in the form of transportation of waste from collection facilities, processing, recycling and disposal of waste, promotional and public education activities, and other related waste management activities.

Currently the County of Bruce organizes collection events throughout the County for the collection of MHSW, which is free of charge for residents. Collection and disposal of the MHSW through the Orange Drop Program is fully funded by the MHSW stewards.

The Municipality should continue to stay informed of further developments to the consolidated MHSW Program Plan. It is unclear if the role of municipalities will change under the revised MHSW Program Plan.

2.2.2.3 Compostable Material
Under the EPA, the Province passed O. Reg. 101/94 which requires municipalities with 5,000 or more full time residents to implement programs for home composters and municipalities with 50,000 or more people to operate a program that collects or accepts leaf and yard waste and diverts this material.

Municipal Role

Based on the Municipality’s current population, implementation of a home composter program or operation of a program that collects or accepts leaf and yard waste by the Municipality is not required. However, it is recognized that the Municipality already promotes home composting. Although composting programs are not required for the Municipality, it is recommended that the Municipality consider improving upon their current program and implementing new programs as they become feasible to do so.

2.2.3 Residual Waste Management
The EPA sets the foundation and standards for waste diversion and waste management in Ontario. The province has recently been relatively silent on residual waste management but has been adamantly promoting increased diversion and “zero waste” initiatives to reduce the amount of residual waste.

The disposal and handling of waste is regulated through Ontario Regulation 347. For transfer, processing and disposal of wastes in Ontario, a Certificate of Approval (C of A) is required from the MOE. Approximately 99% of residual waste is disposed of in landfills in Ontario with only about 1% being disposed of through incineration. Provincial Policy promotes disposal of waste within the areas it is generated. However, approximately 35% of Ontario’s waste is shipped to landfills in the United States as no jurisdictional restrictions are currently in place by the MOE to prevent exporting wastes.
Municipal Role

Although there is limited direction on residual waste management for municipalities, the Municipality is ultimately responsible for proper residual waste disposal by approved means.

2.2.4 Public Education

The provincial government is committed to the proper management of waste and ensures public education through various print material and its partnerships with various industries and environmental organizations, including WDO and IFOs.

Municipal Role

The Municipality should ensure proper education and notification regarding collection and recycling options (including acceptable materials), and program plans for used tires, WEEE, MHSW, bale wrap, leaf and yard waste, home composting programs, and other program plans as they are implemented by the Municipality.

2.2.5 Summary of Provincial Policy and Strategic Initiatives

The Provincial Policy framework, which can be used as a guide for preparing long-term waste management plan, emphasises the 3R’s program for waste management to minimize the amount of residual waste needing final disposal through waste prevention and waste diversion programs. Provincial Policy for 3R’s programs continue to change and evolve with the introduction of additional diversion programs.

Currently, the Provincial Policy and Framework provides for direction and/or assistance with respect to:

- Blue Box
- Used Tires
- WEEE
- MHSW
- Composting

The Provincial direction for final disposal of residual waste remains highly unclear.

In the case of waste management and handling of recyclable materials, the responsibility generally lies with the Municipality.
2.3 **Municipal Government Policy and Strategic Initiatives: County of Bruce**

The County of Bruce Official Plan (2010) recognizes the need for long-term waste management and solid waste disposal. According to the County of Bruce Official Plan, the County and the municipalities within the County share diversion responsibilities with the intent of taking advantage of economies of scale and expertise offered by County involvement as well as utilizing local municipal services. The Official Plan also notes that a successful diversion program is dependent on recognizing the common goal of maximizing diversion of waste from landfills and on communication and cooperation between the County and the municipalities. The Official Plan does set a diversion goal for the County of 50%; however, the target year referenced is 2000.

While the County of Bruce is involved in some aspects of waste management, the waste management planning, operations and waste diversion programs are primarily the responsibility of the municipalities.

2.4 **Municipal Government Policy and Strategic Initiatives: Municipality of Northern Bruce Peninsula**

The Municipality does not have their own Official Plan, but for general planning purposes are covered under the County of Bruce Official Plan. The Municipality has, however, developed a Strategic Plan. The Strategic Plan, which was approved by council in 2008, outlines the municipality’s strategic policies regarding fiscal responsibility; economy; environment; community health, safety and education; and culture and recreation. Strategic initiatives noted under the above policies in regards to waste management include the following:

- Preserve solid waste disposal space
- Maximize diversion efforts community wide
- Develop and implement waste management solutions
- Support community and government approaches to maintaining and improving the quality of surface and ground water
- Development of an equipment replacement plan
- Support and promote regular environmental monitoring programmes
- Prevent water and soil contamination

Current Municipal policy and strategic initiatives to address the intention of the Waste Value Chain are summarized in the following Sections.

2.4.1 **Waste Prevention (Reduction)**

The Municipality has implemented the following initiatives to aid in waste reduction:

- Encourage backyard composting
- Increased tipping fees at landfill site to deter the disposal of divertible material
- Encourage the use of reusable cloth or fibre shopping bags to reduce the volume of plastic film bags that are disposed of yearly
- Public education programs
2.4.2 Waste Diversion

2.4.2.1 Waste Reuse
The Municipality provides two reuse buildings for exchange of reusable household items. A number of reusable items and clothing drop-off and/or pick-up programs are also available to residents within the Grey-Bruce area. These programs are in place through the local thrift stores, Salvation Army, Habitat for Humanity, FreeCycle, iWasteNot, kijiji, local shelters and churches, and other local agencies.

2.4.2.2 Waste Recycling
The Municipality has the following initiatives currently in place:

- Blue Box Program
- Waste Electrical and Electronic Equipment (WEEE)
- Municipal Hazardous or Special Waste (MHSW)
- Bale Wrap
- Used Tires
- White Goods and Scrap Metals
- Subsidized Home Composting Units
- Public Education Programs

2.4.3 Summary
The Municipality is committed to improving its policies and strategic initiatives in its attempt at increasing diversion rates. The Municipality currently provides various recycling programs and opportunities to residents and are actively investigating and open to reduction and reuse opportunities, various diversion programs and alternative residual waste disposal methods.

2.5 Policy Framework – Summary of Findings
Since this Waste Management Plan must consider the policy framework, a review of the Provincial, County and municipal policy framework and the consequent role of the Municipality has been conducted.

In general, the Municipality is largely responsible for the waste management system of its residents. The Province provides little direction with respect the management of residual waste. The Provincial Policy framework requires emphasis on a 3R's program for waste management to minimize the amount of residual waste needing final disposal. Currently, the Provincial Policy and Framework provides for direction and/or assistance with respect to:

- Blue Box Materials
- Used Tires
- WEEE
- MHSW
- Composting
3.0 BACKGROUND INFORMATION

The intention of this section is to provide adequate Municipal background information to properly evaluate waste management alternatives and to provide informed recommendations. The following data has been compiled from various sources, including:

- Statistics Canada
  - Community Profile 2001: Municipality of Northern Bruce Peninsula
  - Community Profile 2006: Municipality of Northern Bruce Peninsula
- Municipality of Northern Bruce Peninsula
  - Strategic Plan (MNBP, 2008)
  - Waste Recycling Survey of Residents and Businesses (G&M, 2010)
  - Municipal Website
  - Waste Diversion Group
  - Staff Input
  - Municipal Landfill Material Reports (2010)
- Waste Diversion Ontario (WDO)
  - Residential ‘Generally Accepted Principles’ (GAP) Diversion Rate (2006 – 2010)

3.1 COMMUNITY PROFILE

The Municipality of Northern Bruce Peninsula was formed on January 1, 1999 as the result of the amalgamation of the former Townships of Eastnor, Lindsay, and St. Edmunds. The largely rural Municipality covers an area of approximately 780 km² and has an average population density of 4.9 persons/km². Generally, the Municipality consists of low density rural development with higher density development along shorelines.

The total dwelling count, as reported in the WDO Municipal Datacall for 2010, is 4,870. Of this total only 1,738 are occupied by usual residents while the remaining 3,132 dwellings are occupied by seasonal residents. The 2010 population is reported to be 3,850 permanent residents plus a calculated seasonal to permanent population equivalent of 1,305 persons. The seasonal to permanent population is estimated on the basis that 6 seasonal households would generate the equivalent annual volume of refuse expected from 1 permanent household (i.e. 6 seasonal households represents 1 permanent household \[3132 \div 6 = 522 \text{ permanent}\]) and using an average of 2.5 people per permanent household. Therefore, for the purpose of this report the population generating waste within the Municipality is estimated to be 5,155.

The Municipality offers a unique scenario for waste management for multiple reasons, including:

- Geography that consists of a peninsula that is approximately 80 km long and 10 to 20 km wide.
- Lack of neighbouring municipalities that would allow for service sharing.
- Low population density and limited accessibility to populations (typically along shore areas) and routing options.
- A combination of garbage collection and dumpster disposal bins.
• The overlapping use of waste systems by residential and IC&I sectors, and a high proportion of seasonal and transient populations.

The Municipality of Northern Bruce Peninsula is surrounded by a body of water on three sides, which is that of Lake Huron. As a result the Municipality only borders one other municipality; the Town of South Bruce Peninsula, which is located to the south of the Municipality. The geographic setting of the Municipality is shown on Figure 1-1.

3.2 EXISTING SERVICES

Residual waste and blue box recyclables collection services are contracted out by the Municipality. The residual waste disposal services currently in place for residents include a combination of weekly curbside collection and dumpster disposal. At present, approximately two thirds of households are serviced by curbside collection and the remainder by dumpsters. Residents serviced by curbside collection are limited to 2 bags/week. All residents can also dispose of 2 free bags at the landfills before tipping fees apply. There are currently no limitations or enforcements in place at the dumpster drop-off locations.

Blue box recycling services are currently provided through depots. There are currently five depot locations available for drop-off, which include the three landfills and two along highway 6. The blue box recyclables from the depots are collected by a contractor and are taken to a transfer station located in Owen Sound for processing.

Used tires, electronics, bale wrap and scrap metal can be dropped-off at all three landfills for recycling. Leaf and yard waste can also be taken to any of the landfills where it is segregated for use as final covering material.

The landfill and depot locations as well as the areas serviced by dumpsters and curbside garbage collection are shown on Figure 1-1.

3.3 RESIDENTIAL WASTE GENERATION AND DIVERSION

3.3.1 Waste Generation

For the purpose of this report, data on waste generation and diverted waste rates from 2006 through 2010 for the Municipality have been included within this report to determine “existing” waste disposal practices, or benchmark values. Only data from the last five years has been included due to recent improvements to the landfill operations and diversion and monitoring programs. It should also be noted that due to variations in monitoring practices and estimating methods over several years of data collection, reported values may have a degree of error associated with them and are used as general indicators and for comparative purposes.

Data sources include the WDO Municipal Datacall from 2006 to 2009, Annual Monitoring Reports for the Municipal landfills from 2006 to 2010 and landfill waste tonnages recorded by the Municipality for 2010. It should be noted that the data from the WDO Municipal Datacall is specific to the residential portion of the waste stream and does not include the IC&I sector. For the purpose of comparing the Municipality of Northern Bruce Peninsula with other municipalities within the province, only the residential sector is considered in this section of the report.
Table 3-1 presents the residential waste generation and diversion rates for the Municipality from 2006 to 2010.

### Table 3-1: Residential Waste Generation and Disposal Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Reported Population + Calculated Seasonal Population (3)</th>
<th>Waste Generated</th>
<th>Waste Diverted</th>
<th>Residual Waste Disposed (2)</th>
<th>Residential Diversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(tonnes) kg/cap</td>
<td>(tonnes) kg/cap</td>
<td>(tonnes) kg/cap</td>
<td>(tonnes) kg/cap</td>
<td>(%)</td>
</tr>
<tr>
<td>2006</td>
<td>5,155</td>
<td>3,982</td>
<td>602</td>
<td>3,380</td>
<td>15%</td>
</tr>
<tr>
<td>2007</td>
<td>5,155</td>
<td>1,732</td>
<td>519</td>
<td>1,213</td>
<td>30%</td>
</tr>
<tr>
<td>2008</td>
<td>5,155</td>
<td>1,788</td>
<td>537</td>
<td>1,251</td>
<td>30%</td>
</tr>
<tr>
<td>2009</td>
<td>5,155</td>
<td>2,317</td>
<td>813</td>
<td>1,504</td>
<td>35%</td>
</tr>
<tr>
<td>2010 (1)</td>
<td>5,155</td>
<td>3,033</td>
<td>572</td>
<td>2,461</td>
<td>19%</td>
</tr>
<tr>
<td>Average</td>
<td>5,155</td>
<td>2,570</td>
<td>609</td>
<td>1,962</td>
<td>24%</td>
</tr>
</tbody>
</table>

**Notes:**
(1) WDO data not available. Waste generation and diversion rates were generated using available tonnage data from MNBP and estimates based on WDO generally accepted principles.
(2) Waste disposed includes processing residues and burnable materials (i.e. brush).
(3) Seasonal Permanent Equivalent Population = (seasonal households x 2.5 people per household) ÷ 6.

Over the past five years (2006 to 2010), the residential sector has generated an average of 2,570 tonnes per year at 499 kg/cap. The average residual waste disposed is 381 kg/cap for an average residential diversion rate of 24%.

#### 3.3.2 Waste Diversion

The waste diversion rate is defined as the total amount of divertible content (including waste reuse, recycling, and organics) over the total amount of waste produced (including divertible waste and residual waste). Waste diversion rates are typically expressed as percentages. Current provincial targets for waste diversion are 60%.

An accurate diversion rate is difficult to determine as some data from the WDO Municipal Datacall is either estimated by the municipality or association, or calculated by the WDO whether it be the initial total waste volumes or the reused/recycled amounts.

To ensure a common reporting framework, “Generally Accepted Principles” (GAP) were adopted by Statistics Canada, Ontario Ministry of Municipal Affairs and Housing, WDO and numerous municipalities. Annual reporting through the WDO’s Municipal Datacall allows for the collection and compilation of residential materials diverted and disposed by Ontario municipalities. WDO uses this information to calculate a residential GAP diversion rate for each municipality and association of municipalities participating in the Municipal Datacall. The residential GAP diversion rate calculations include the following:

- An allowance for provincial deposit systems based on the deposit containers returned from the residential sector;
• An allowance for residential on-property management through backyard composting, grass-cycling and evapotranspiration resulting from use of aerated carts for organics programs;
• Municipally operated (directly or through contracted services) reuse activities;
• Municipally operated (directly or through contracted services) recycling activities including Blue Box materials, Other Recyclables, WEEE and MHSW;
• Municipally operated (directly or through contracted services) centralized composting activities for household organics, leaves and yard waste; and
• Disposal of garbage and recycling and composting processing residues through energy-from-waste (EFW) and landfill.

Various assumptions are made under GAP, specifically where outlying data does not conform to the municipal grouping averages or where certain data was not provided by the reporting municipalities and associations. These assumptions are located in the GAP Background Information provided by WDO.

Waste reduction accomplished through education programs is not accounted for as it is a form of prevention, not diversion.

It should be noted that at the time of this report the 2010 WDO Municipal Datacall data had not been published. Therefore, the 2010 values were estimated using tonnage data reported by the Municipality and by applying the GAP to maintain consistency in calculating diversion rates.

3.3.2.1 Waste Reuse
The most recent WDO Municipal Datacall reports a diversion rate of 0% for residential reusable items for the Municipality. It is noted that the majority of municipalities were reported to have 0% diversion through residential reusable items. It is recognized that some residents may actively reuse materials, or promote reuse through various agencies. However, diversion through such avenues are difficult to assess and are estimated to account for less than 1% diversion.

It is anticipated that the Municipality will have a measureable amount of residual reuse beginning in 2011 due to the Municipality’s recent implementation of a reuse program. The reuse program involves providing residents with a location to drop-off “gently used items” for the purpose of reuse by other residents. The drop-off locations include two newly constructed buildings located at the Eastnor and St. Edmunds landfill sites.

3.3.2.2 Waste Recycling

3.3.2.2.1 Blue Box Materials
The Municipality currently provides five depot locations for drop-off of recyclables. There is currently no curbside collection program in place. The current list of recyclable items accepted at the depots is included in the following table.
Table 3-2: Recyclable Blue Box Materials

<table>
<thead>
<tr>
<th>Metal</th>
<th>Glass</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food tins and pop cans</td>
<td>Bottles and jars</td>
<td>Newspapers and inserts</td>
</tr>
<tr>
<td>Steel paint cans</td>
<td></td>
<td>Magazines</td>
</tr>
<tr>
<td>Aluminum foil and pie pans</td>
<td></td>
<td>Catalogues</td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
<td>Office paper</td>
</tr>
<tr>
<td># 1 PETE plastic containers &amp; trays</td>
<td></td>
<td>Construction paper</td>
</tr>
<tr>
<td># 2 HDPE screw-top plastic bottles (excluding motor oil bottles)</td>
<td></td>
<td>Envelopes (with the plastic windows removed)</td>
</tr>
<tr>
<td># 3 V or PVC plastic bottles</td>
<td></td>
<td>Paperback books</td>
</tr>
<tr>
<td># 4 LDPE plastic bottles</td>
<td></td>
<td>Telephone books</td>
</tr>
<tr>
<td># 5 PP plastic bottles, tubs, lids and bottle caps</td>
<td></td>
<td>Gable top cartons (milk and juice cartons)</td>
</tr>
<tr>
<td># 7 OTHER plastic bottles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tupperware</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3-3 summarizes the WDO’s Municipal Datacall for Blue Box Material diversion from 2006 to 2010. The reported blue box tonnages equals the total blue box tonnes collected less a residual calculation of 6.89% for multi-stream collections and 13.29% for single stream collections. The residual percentages have been determined by WDO based on data provided by municipalities reporting both collected and marketed tonnes.

Table 3-3: Blue Box Waste GAP Diversion Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Waste Generated (Tonnes)</th>
<th>Total Waste Diverted (Tonnes)</th>
<th>Diverted Blue Box Materials (tonnes)</th>
<th>Diversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Proportion of Total Waste</td>
</tr>
<tr>
<td>2006</td>
<td>3,982</td>
<td>602</td>
<td>239</td>
<td>6%</td>
</tr>
<tr>
<td>2007</td>
<td>1,732</td>
<td>519</td>
<td>298</td>
<td>17%</td>
</tr>
<tr>
<td>2008</td>
<td>1,788</td>
<td>537</td>
<td>347</td>
<td>19%</td>
</tr>
<tr>
<td>2009</td>
<td>2,317</td>
<td>813</td>
<td>335</td>
<td>14%</td>
</tr>
<tr>
<td>2010</td>
<td>3,033</td>
<td>574</td>
<td>339</td>
<td>11%</td>
</tr>
<tr>
<td>Average</td>
<td>2,570</td>
<td>609</td>
<td>312</td>
<td>12%</td>
</tr>
</tbody>
</table>
The five year average (2006 – 2010) indicates that blue box materials account for approximately 12% of residential waste generated and 51% of diverted materials.

3.3.2.2.2 Ontario Deposit Return Program

Although the Municipality is not directly involved in the deposit return program for beer and liquor bottles, WDO includes an allowance for the program based on the deposit containers returned from the residential sector. Provided in the table below are the estimated GAP diversion rates for deposit containers in the Municipality.

**Table 3-4: Deposit Containers GAP Diversion Rates**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Waste Generated (Tonnes)</th>
<th>Total Waste Diverted (Tonnes)</th>
<th>Diverted Deposit Containers (tonnes)</th>
<th>Diversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Proportion of Total Waste</td>
</tr>
<tr>
<td>2006</td>
<td>3,982</td>
<td>602</td>
<td>12</td>
<td>0.3%</td>
</tr>
<tr>
<td>2007</td>
<td>1,732</td>
<td>519</td>
<td>20</td>
<td>1.2%</td>
</tr>
<tr>
<td>2008</td>
<td>1,788</td>
<td>537</td>
<td>21</td>
<td>1.2%</td>
</tr>
<tr>
<td>2009</td>
<td>2,317</td>
<td>813</td>
<td>21</td>
<td>0.9%</td>
</tr>
<tr>
<td>2010</td>
<td>3,033</td>
<td>574</td>
<td>21</td>
<td>0.7%</td>
</tr>
<tr>
<td>Average</td>
<td>2,570</td>
<td>609</td>
<td>19</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

Based on the GAP diversion rates estimated by WDO, deposit containers diverted account for approximately 1% of the waste generated and approximately 3% of diverted materials.

3.3.2.2.3 Waste Electrical & Electronic Equipment (WEEE)

The Municipality is currently registered as a collector for WEEE under the OES, with whom an agreement was signed in May of 2010. Electronic waste can be dropped off at all three landfill sites free of charge. This material is recycled through the OES program and the Municipality is paid an incentive by the OES based on the amount of electronic material collected. Provided below is the list of electronic items that are accepted by the Municipality under the WEEE program.

**Table 3-5: Recyclable Electronic Material**

- Computer peripherals including modems
- Printing devices including copiers, scanners and typewriters
- Telephones (physical and accessories)
- Cellular phones
- PDAs and pagers
- Audio and video players
- Cameras
- Equalizers/(pre)amplifiers
- Radios
- Receivers
- Speakers
- Tuners
- Turntables
- Video players/projectors
- Video recorders
- Personal hand held computers
- Desktop computers
- Portable computers
- Monitors
- Televisions
- Printing devices
Municipal records indicate that 6.5 tonnes of e-waste was collected in 2010. Assuming a 20% residual waste component, approximately of 5.2 tonnes of WEEE was diverted from being landfill in 2010. This equates to 0.2% of waste generated and 0.9% of diverted materials. Considering the program was not established until May of 2010, it is anticipated that diversion rates for WEEE material will increase in 2011. Although the proportion of waste diverted through the WEEE is low compared to other diversion streams, diversion of WEEE is critical for environmental security.

3.3.2.2.4 Municipal Hazardous or Special Waste (MHSW)

The MHSW program for the Municipality is operated by the County of Bruce through the Orange Drop Program. Under the Orange Drop program residents can drop-off the following hazardous materials free of charge.

- Paints and coatings, plus their containers
- Solvents, such as thinners for paint, lacquer and contact cement, paint strippers and degreasers, and their containers
- Oil filters
- Oil containers of 30 litres or less
- Single-use batteries
- Antifreeze and its containers
- Pressurized containers, such as propane tanks and cylinders, oxygen and helium tanks
- Lawn fertilizers that contain pesticides
- Pesticides, and their containers

In the Municipality of Northern Bruce Peninsula the County held three collection events in 2011. MHSW tonnage data is reported to the WDO by the County and GAP diversion rates have been estimated by WDO for the Municipality of Northern Bruce Peninsula. Provided in the table below are the GAP diversion rates for the Municipality as estimated by WDO. It should be noted that the values for diverted MHSW represent the amount of MHSW that has been recycled or reused and do not include MHSW that has been collected and treated for proper disposal.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Waste Generated (Tonnes)</th>
<th>Total Waste Diverted (Tonnes)</th>
<th>Diverted MHSW (tonnes)</th>
<th>Diversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Proportion of Total Waste</td>
</tr>
<tr>
<td>2006</td>
<td>3,982</td>
<td>602</td>
<td>0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>2007</td>
<td>1,732</td>
<td>519</td>
<td>0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>2008</td>
<td>1,788</td>
<td>537</td>
<td>0.5</td>
<td>0.0%</td>
</tr>
<tr>
<td>2009</td>
<td>2,317</td>
<td>813</td>
<td>9.0</td>
<td>0.4%</td>
</tr>
<tr>
<td>2010</td>
<td>3,033</td>
<td>574</td>
<td>0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Average</td>
<td>2,570</td>
<td>609</td>
<td>1.9</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
Based on the GAP diversion rates reported by WDO, MHSW accounts for an average of 0.1% of waste generated and 0.3% and materials diverted. Although the proportion of waste diverted through the MHSW is low compared to other diversion streams, diversion and proper disposal of MHSW is critical for environmental security.

### 3.3.2.2.5 Plastic Bale Wrap

Plastic bale wrap is accepted by the Municipality free of charge at the Eastnor Landfill Site. The bale wrap is stockpiled at the landfill and is collected by Think Plastics Inc. on an as needed basis. The bale wrap values for 2006 to 2010 are presented below.

**Table 3-7: Bale Wrap GAP Diversion Rates**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Waste Generated (Tonnes)</th>
<th>Total Waste Diverted (Tonnes)</th>
<th>Diverted Bale Wrap (tonnes)</th>
<th>Diversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Proportion of Total Waste</td>
</tr>
<tr>
<td>2006</td>
<td>3,982</td>
<td>602</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>2007</td>
<td>1,732</td>
<td>519</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>2008</td>
<td>1,788</td>
<td>537</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>2009</td>
<td>2,317</td>
<td>813</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>2010</td>
<td>3,033</td>
<td>574</td>
<td>24.4</td>
<td>0.80%</td>
</tr>
<tr>
<td>Average</td>
<td>2,570</td>
<td>609</td>
<td>4.9</td>
<td>0.19%</td>
</tr>
</tbody>
</table>

The tonnage data reported for 2010 represents the removal of a stockpile of bale wrap that has accumulated over five years. Based on the amount of bale wrap material diverted in 2010, the Municipality has diverted an average of 4.9 tonnes per year for an average of 0.19% total waste and 0.80% of diverted materials. It should be noted that based on WDO GAP, the reported bale wrap tonnes have accounted for 20% of bale wrap residual waste. The same residual waste percentage was applied to WEEE and has also been applied to used tires and scrap metal.

Although these diversion rates are relatively low when compared to other diversion streams, the diversion of this material is important for conserving landfill capacity as the bale wrap has a relatively low density and does not compact well.

### 3.3.2.2.6 Used Tires

The Municipality currently collects and stockpiles used tires at all three of its landfills and is a registered collector under the OTS. As a registered collector, the Municipality accepts used tires free of charge from residents for which the Municipality receives a used tire collection allowance from the OTS. The tonnages for used tires diverted over the last five years are presented in the table below.
Table 3-8: Used Tire GAP Diversion Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Waste Generated (Tonnes)</th>
<th>Total Waste Diverted (Tonnes)</th>
<th>Diverted Used Tires (tonnes)</th>
<th>Proportion of Total Waste</th>
<th>Proportion of Overall Diversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>3,982</td>
<td>602</td>
<td>28</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>2007</td>
<td>1,732</td>
<td>519</td>
<td>40</td>
<td>2%</td>
<td>8%</td>
</tr>
<tr>
<td>2008</td>
<td>1,788</td>
<td>537</td>
<td>32</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>2009</td>
<td>2,317</td>
<td>813</td>
<td>48</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>2010</td>
<td>3,033</td>
<td>574</td>
<td>20</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>Average</td>
<td>2,570</td>
<td>609</td>
<td>34</td>
<td>1%</td>
<td>6%</td>
</tr>
</tbody>
</table>

As shown in the table above, used tires account for approximately 1% of total waste and approximately 6% of overall diversion.

3.3.2.2.7 White Goods and Scrap Metal

White goods and scrap metal can be dropped off at all three landfill sites for a fee as specified by current landfill disposal fees. The white goods and scrap metal are collected by a hauler on an as needed basis for salvage.

The Municipality also supports the use of “The Great Refrigerator Roundup” sponsored by the Ontario Power Authority (OPA). The program allows residents of Ontario to dispose of refrigerators, freezers and air conditioners free of charge through the OPA.

White goods and scrap metal tonnages diverted through the municipal program are provided in the table below:

Table 3-9: White Goods/Scrap Metal GAP Diversion Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Waste Generated (Tonnes)</th>
<th>Total Waste Diverted (Tonnes)</th>
<th>Diverted White Goods/Scrap Metal (tonnes)</th>
<th>Proportion of Total Waste</th>
<th>Proportion of Overall Diversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>3,982</td>
<td>602</td>
<td>288</td>
<td>7%</td>
<td>48%</td>
</tr>
<tr>
<td>2007</td>
<td>1,732</td>
<td>519</td>
<td>209</td>
<td>12%</td>
<td>40%</td>
</tr>
<tr>
<td>2008</td>
<td>1,788</td>
<td>537</td>
<td>133</td>
<td>7%</td>
<td>25%</td>
</tr>
<tr>
<td>2009</td>
<td>2,317</td>
<td>813</td>
<td>248</td>
<td>11%</td>
<td>31%</td>
</tr>
<tr>
<td>2010</td>
<td>3,033</td>
<td>574</td>
<td>106</td>
<td>3%</td>
<td>19%</td>
</tr>
<tr>
<td>Average</td>
<td>2,570</td>
<td>609</td>
<td>197</td>
<td>8%</td>
<td>32%</td>
</tr>
</tbody>
</table>

White goods and scrap metal account for approximately 8% of waste generated and approximately 32% of overall diversion.
3.3.2.3 Compostable Material
A home composting program for wet organics is currently in place for Municipal residents. The Municipality has promoted the home composting program through newsletters, bulletins, and their website. Since the program has been established, the Municipality has distributed over 100 backyard composting bins. At an estimated average diversion of 100 kg/unit/year, this equates to over 10 tonnes of diverted waste per year. WDO factors in the number of backyard composters supplied by the Municipality when determining on-property diversion, which also includes an allowance for grasscycling, and evapotranspiration resulting from use of aerated carts for organics programs.

The Municipality also accepts leaf and yard waste at each of their landfill sites. The yard waste is stockpiled for use as final covering material for closure of the landfill.

Provided in the table below are the GAP diversion rates for residential organic wastes and on-property wastes.

Table 3-10: Organics and On-Property GAP Diversion Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Waste Generated (Tonnes)</th>
<th>Total Waste Diverted (Tonnes)</th>
<th>Diverted Residential Organics (tonnes)</th>
<th>Diverted On-Property (tonnes)</th>
<th>Total Organics Diverted (Tonnes)</th>
<th>Diversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Proportion of Total Waste</td>
</tr>
<tr>
<td>2006</td>
<td>3,982</td>
<td>602</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>2007</td>
<td>1,732</td>
<td>519</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>2008</td>
<td>1,788</td>
<td>537</td>
<td>0.4</td>
<td>5</td>
<td>5</td>
<td>0.3%</td>
</tr>
<tr>
<td>2009</td>
<td>2,317</td>
<td>813</td>
<td>134</td>
<td>18</td>
<td>152</td>
<td>7%</td>
</tr>
<tr>
<td>2010</td>
<td>3,033</td>
<td>574</td>
<td>43</td>
<td>16</td>
<td>59</td>
<td>2%</td>
</tr>
<tr>
<td>Average</td>
<td>2,570</td>
<td>609</td>
<td>36</td>
<td>8</td>
<td>43</td>
<td>2%</td>
</tr>
</tbody>
</table>

Based on the sum of the GAP residential organics collected and the GAP estimated on-property diversion, organics diverted account for approximately 2% of waste generated and 7% of materials diverted.

3.3.3 Summary of Diversion
As illustrated in the figure below, the blue box program is the most significant in terms of mass diversion at almost half of the materials diverted. Scrap metal is another major contributor to the overall diversion rate at approximately one third of total diversion. Used tires and organics account for approximately 20% of materials diverted; and deposit containers, bale wrap and MHSW account for approximately 4% of the total diversion.
Figure 3-1: Average Composition of Materials Diverted (GAP 2006-2010)

The figure below shows the composition of materials and their respective average diversion rates over the five years from 2006 to 2010.

Figure 3-2: Municipal Diversion (GAP 2006-2010)

Over the last five years, the Municipality has diverted 24% of residential waste generated with 76% being landfilled.
3.3.4 Current Performance

3.3.4.1 Residential Waste Diversion

To complete an evaluation of the Municipality’s performance, the diversion rates of the Municipality will be compared to the Municipality’s grouping (Rural Depot – South), the Rural Collection – South municipal grouping, and the provincial average. Diversion data for the municipal groupings and the province are published by WDO. Provided in the table below is a comparison of the average diversion rates from 2006 to 2010 for the Municipality to the 2010 diversion rates for the municipal groupings and the province.

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Northern Bruce Peninsula</th>
<th>Rural Depot – South</th>
<th>Rural Collection – South</th>
<th>Provincial Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recyclables(1)</td>
<td>21.52%</td>
<td>22.01%</td>
<td>22.36%</td>
<td>21.77%</td>
</tr>
<tr>
<td>Deposit Containers</td>
<td>0.74%</td>
<td>1.34%</td>
<td>1.61%</td>
<td>1.49%</td>
</tr>
<tr>
<td>Organics</td>
<td>1.40%</td>
<td>1.13%</td>
<td>3.25%</td>
<td>16.27%</td>
</tr>
<tr>
<td>On-Property</td>
<td>0.31%</td>
<td>0.79%</td>
<td>1.91%</td>
<td>3.96%</td>
</tr>
<tr>
<td>Reuse</td>
<td>0.00%</td>
<td>0.07%</td>
<td>0.06%</td>
<td>0.09%</td>
</tr>
<tr>
<td>MHSW</td>
<td>0.07%</td>
<td>0.26%</td>
<td>0.33%</td>
<td>0.31%</td>
</tr>
<tr>
<td>Total Residential Diversion Rate</td>
<td>24.04%</td>
<td>25.59%</td>
<td>29.72%</td>
<td>43.89%</td>
</tr>
</tbody>
</table>

Notes:
(1) Recyclables is the sum of blue box, scrap metal, tires, bale wrap and WEEE.

As shown in the table above, the Municipality’s overall diversion rate is around average for their municipal grouping and is below that of the Rural Collection – South municipal grouping and the provincial average. When considering the diversion categories, it is noted that the diversion of recyclables is only slightly below the Rural Collection – South municipal grouping average and the provincial average. Of note are the organics and on-property diversion rates, which are much lower than that of the Rural Collection – South average and the provincial average. These diversion categories are the major contributors to the higher overall diversion rates reported for Rural Collection – South and the province.

Higher provincial organic diversion rates are expected due to the curbside organics collection programs that are in place in densely populated areas where curbside organics collection is more feasible. However, on-property diversion, which accounts for such practices as backyard composting and grasscycling, do appear to be underestimated for the Municipality. When compared to the municipal groupings and the provincial average, the Municipality’s estimated on-property diversion allocation is relatively low. Typically, rural properties would be expected to have higher diversion rates due to their capacity for backyard composting and grasscycling. Therefore, we expect actual diversion of on-property to be higher than estimated through GAP.
3.3.4.2 Residential Waste Generated and Disposed

Determining accurate diversion rates can be difficult, especially in terms of on-property management and reuse. A good general indicator of a Municipality’s performance is the amount of waste that is disposed per capita (i.e., not recycled or reused). Illustrated in the figure below is a comparison of the waste generated and residual waste disposed per capita in the Municipality from 2006 to 2010 compared to that of the Rural – South municipal groupings and the province for 2010.

Figure 3-3: Residential Waste Generated and Disposed Comparison

A key factor in reducing residual waste is by reduction in generation. Reduction is the first step of the 3 R’s. As shown in the above figure, the Municipality generated an average of almost 500 kg/cap of residential waste and disposed of an average of 380 kg of residential waste per person per year from 2006 to 2010. The disposal rate for residential waste is approximately 110 kg/cap higher than the Municipality’s grouping and approximately 130 kg/cap and 170 kg/cap per year more than the Rural Collection – South average and the provincial average, respectively. It should be noted that this doesn’t include IC&I wastes generated at campgrounds, hotels, transportation ferry, etc.

3.4 Residual Waste Disposal

3.4.1 Residual Waste Generation

Currently, residual waste generated by both the residential and IC&I sectors within the Municipality are disposed of at Municipal landfill sites. Based on the geographic limitations and associated logistics, the acceptance of IC&I waste at the municipal landfills is likely to continue. Therefore, IC&I residual waste generation is also included within the scope of this report.
Residual waste disposed from 2006 through 2010 from the residential and IC&I sectors within the Municipality have been determined using annual landfill monitoring reports for the Municipality’s landfill sites and the WDO Municipal Datacall. It should be noted that in the summer of 2009, weigh scales were installed at all three Municipal landfills. Since that time, waste received at the site is weighed prior to disposal. Before the weigh scales were installed, the waste received at the site was recorded as a volume estimated at the time of receipt. In addition, the volume of landfill capacity used per year was also calculated using the difference between annual volumetric surveys of the landfill area.

Using the volume based method, several factors can decrease the accuracy of estimating waste tonnages including the amount of interim soil cover used, the degree of compaction achieved, one-time disposal events such as building demolition or contaminated soil disposal, the accuracy of measuring the volumetric difference between different topographic surveys, and the accuracy of estimating volumes and density of wastes. Therefore, the reported waste tonnages for 2010 are considered to be more accurate due to the use of weigh scales.

The following table presents the total landfilled waste deposited at the Municipal landfills from 2006 through 2010 based on volumetric surveys and weigh scale data. As noted in Section 3.4.1, only data from the last five years has been included within this report to determine “existing” waste disposal practices, or benchmark values due to improvements to the landfill operations and diversion and monitoring programs.

### Table 3-12: Total Residual Waste Disposed

<table>
<thead>
<tr>
<th>Year</th>
<th>Reported Population + Calculated Seasonal Population</th>
<th>Estimation Method</th>
<th>Capacity Used (m³)</th>
<th>Cover Material (m³)</th>
<th>Waste Disposed (Tonnes)</th>
<th>Waste Disposed (kg/Cap)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>5,155</td>
<td>Volumetric Survey</td>
<td>9,943</td>
<td>1,989</td>
<td>7,954</td>
<td>3,977</td>
</tr>
<tr>
<td>2007</td>
<td>5,155</td>
<td></td>
<td>5,550</td>
<td>1,110</td>
<td>4,440</td>
<td>2,220</td>
</tr>
<tr>
<td>2008</td>
<td>5,155</td>
<td></td>
<td>6,126</td>
<td>1,225</td>
<td>4,901</td>
<td>2,450</td>
</tr>
<tr>
<td>2009</td>
<td>5,155</td>
<td></td>
<td>5,038</td>
<td>1,008</td>
<td>4,030</td>
<td>2,015</td>
</tr>
<tr>
<td>2010</td>
<td>5,155</td>
<td></td>
<td>9,250</td>
<td>1,850</td>
<td>7,400</td>
<td>3,700</td>
</tr>
</tbody>
</table>

Average: 2,891 (4) 561

Notes:
1. Cover material is estimated to account for 20% of landfill capacity used.
2. Waste disposed includes the residential and IC&I sectors.
3. Population as reported in the WDO Municipal Datacall.
4. Average calculated using the 2006 to 2009 WDO data and the 2010 weigh scale data.

The average rate of total waste disposed at the municipal landfill sites from 2006 through 2010 is approximately 3,000 tonnes per year with an average residual waste disposal rate of 561 kg/cap. These disposal values represent residual waste generated from the residential and IC&I sectors. Provided in the table below are the estimated disposal contributions from the residential and IC&I sectors from 2006 through 2010.
### Table 3-13: Residential Waste Disposed vs. IC&I Waste Disposed

<table>
<thead>
<tr>
<th>Year</th>
<th>Reported Population + Calculated Seasonal Population</th>
<th>Total Waste Disposed</th>
<th>Residential Waste Disposed</th>
<th>IC&amp;I Waste Disposed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tonnes</td>
<td>kg/Cap</td>
<td>Tonnes</td>
<td>kg/cap</td>
</tr>
<tr>
<td>2006</td>
<td>5,155</td>
<td>3,977</td>
<td>772</td>
<td>3,380</td>
<td>656</td>
</tr>
<tr>
<td>2007</td>
<td>5,155</td>
<td>2,220</td>
<td>431</td>
<td>1,213</td>
<td>235</td>
</tr>
<tr>
<td>2008</td>
<td>5,155</td>
<td>2,450</td>
<td>475</td>
<td>1,251</td>
<td>243</td>
</tr>
<tr>
<td>2009</td>
<td>5,155</td>
<td>2,015</td>
<td>391</td>
<td>1,504</td>
<td>292</td>
</tr>
<tr>
<td>2010</td>
<td>5,155</td>
<td>3,794</td>
<td>718</td>
<td>2,214</td>
<td>429</td>
</tr>
<tr>
<td>Average</td>
<td>5,155</td>
<td>2,891</td>
<td>561</td>
<td>1,912</td>
<td>371</td>
</tr>
</tbody>
</table>

Over the last five years, the IC&I sector has contributed an average of 190 kg/cap per year to the waste disposed in the Municipality’s landfills. This equates to an average of 34% of the waste disposed in the Municipality. The residential and IC&I contributions are illustrated in the figure below.

#### Figure 3-4: Residential and IC&I Disposal Contributions

![Figure 3-4: Residential and IC&I Disposal Contributions](image)

**3.4.2 Municipal Disposal Sites**

The Municipality currently has three landfill sites approved for the disposal of solid non-hazardous waste. The landfills are named after the former townships for which they historically served, as follows:
Table 3-14: Municipal Landfill Sites

<table>
<thead>
<tr>
<th>Landfill Name</th>
<th>Address and Location</th>
<th>Associated MOE Certificate Approval(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Edmunds</td>
<td>69 McArthur Road, Lots 46 and 47, Concession 3 West of Bury Road (W.B.R.), former Township of St. Edmunds</td>
<td>A273002, A273003 and 5854-7DSSDD</td>
</tr>
<tr>
<td>Lindsay</td>
<td>627 Ira Lake Road, Lots 18, 19, and 20, Concession 3 West of Bury Road (W.B.R.), former Township of Lindsay</td>
<td>A272902</td>
</tr>
<tr>
<td>Eastnor</td>
<td>1252 West Road, Lots 17 and 18, Concession 2 WBR, former Township of Eastnor</td>
<td>A272301</td>
</tr>
</tbody>
</table>

The landfill locations are shown on Figure 1-1.

3.4.3 Approved Capacity under Current CofAs and Site Life

The current average fill rate for waste in the Municipality is estimated to be 5,745 m³/year. Including the use of daily cover, the estimated average annual fill volume is approximately 7,200 m³/year. The corresponding capacity and remaining site life estimates for each landfill is provided in the table below. Using the current average fill rates from 2006 through 2010, the landfills have an estimated site life of between 7 and 12 years. Collectively, the municipal landfills have an estimated remaining site life of 10 years.

Table 3-15: Remaining Landfill Disposal Capacity (2010)

<table>
<thead>
<tr>
<th></th>
<th>St. Edmunds</th>
<th>Lindsay</th>
<th>Eastnor</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Fill Rates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Disposal</td>
<td>2,342</td>
<td>984</td>
<td>2,419</td>
<td>5,745</td>
</tr>
<tr>
<td>Daily Cover</td>
<td>585</td>
<td>246</td>
<td>605</td>
<td>1,436</td>
</tr>
<tr>
<td>Average Fill Rate (2006 - 2010)</td>
<td>2,927</td>
<td>1,230</td>
<td>3,024</td>
<td>7,181</td>
</tr>
<tr>
<td><strong>Remaining Approved Capacity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste and Daily Cover</td>
<td>32,380</td>
<td>14,650</td>
<td>21,250</td>
<td>68,280</td>
</tr>
<tr>
<td>Remaining Site Life</td>
<td>11</td>
<td>12</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td><strong>Available Capacity Requiring Approval</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Landfill Space</td>
<td>0</td>
<td>0</td>
<td>24,500</td>
<td>24,500</td>
</tr>
<tr>
<td>Available upon Review and Update of PDO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Site Life</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td><strong>Requiring Hydrogeological Assessment and PDO:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Theoretical Capacity</td>
<td>---</td>
<td>601,500</td>
<td>643,250</td>
<td>1,244,750</td>
</tr>
<tr>
<td>Additional Site Life</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>173</td>
</tr>
<tr>
<td>Total Theoretical</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>176</td>
</tr>
</tbody>
</table>
It is noted that an additional estimated site capacity for the Municipality of 3 years is available at the Eastnor landfill. Based on site investigations, approximately 24,500 m$^3$ of landfill space, previously thought to have been filled, appears to be unused. However, it is our understanding that prior to filling this space, an update to the existing PDO and amendment to the CofA would be required. This would extend the site life capacity for the Municipality to approximately 13 years.

3.4.4 Theoretical Approved Capacity and Site Life

Beyond the capacity specifically provided for within the existing CofAs and the corresponding Plans of Development of Operation (PDOs), it is noted that both the Eastnor and Lindsay sites have approval for additional landfill areas. This additional area is considered “theoretical” capacity at this time since there is no hydrogeological/environmental or PDO reports to support development within these areas. It should be noted that this theoretical capacity may be significantly reduced through logistical or environmental considerations.

To fill the “theoretical” capacity historically approved by the MOE, it is our understanding that the following would be required:

i) Update the hydrogeological assessment/evaluation to support the proposed landfill capacity,

ii) Estimate the landfill capacity requirements for a 25-year planning horizon,

iii) Prepare a Plan of Development and Operations to describe how the landfill development would progress through the next phase(s), and

iv) Hold a Public Meeting to allow an opportunity for the public to review and comment on the PDO.

Based on the historic approvals, Lindsay and Eastnor have theoretical remaining capacities of 601,500 m$^3$ and 643,250 m$^3$, respectively. Based on current residual waste generation rates, this is equivalent to 173 years of disposal capacity. However, it should be noted that the Lindsay site is located directly on carbonate bedrock, with varying degrees of weathering and fracturing. Consequently, future development at this site would likely require considerable effort to provide a sufficient Hydrogeological Study, which may conclude that a landfill with leachate collection system would be required.

The Eastnor site is located along a former beach ridge and bay that is composed of significant deposits of overburden, including silty and clayey soils. As such, the logistical and geologic conditions at this site are considered to be more favourable for a natural attenuation landfill. Consequently, it is reasonable to expect that the effort to complete the Hydrogeological Study and corresponding Landfill Design and Operation of the site will be significantly less than Lindsay.

Evaluation of the Eastnor and Lindsay landfill site for future landfilling is provided in Section 5.3.1 of this report.
3.5 **CURRENT RESIDUAL SOLID WASTE DISPOSAL COSTS**

Currently residential waste generated within the Municipality is disposed of at one of three Municipal landfills. As previously noted, the municipality provides collection services via curbside and dumpster collection. In 2010, approximately two thirds of the dwellings were serviced by curbside collection and the remaining one third by dumpsters. The landfills are also available to the IC&I sector for drop-off of non-hazardous solid waste. Tipping fees are charged at the landfill according to the weight and type of material being disposed of. No curbside service is currently provided for blue box materials. However, recycling depots are available to residents. Provided in the table below is a summary of the Municipality’s costs associated with recycling and waste collection services and the operation of the landfills in 2010.

**Table 3-16: Summary of Solid Non-Hazardous Waste Management Costs (2010)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Expenditures</th>
<th>Revenue</th>
<th>Cost Per Tonne</th>
<th>Cost Per Dwelling Served</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Landfill Operations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landfill Operations</td>
<td>$286,878</td>
<td>---</td>
<td>$76</td>
<td>$59</td>
</tr>
<tr>
<td>Tipping Fees</td>
<td>---</td>
<td>$218,399</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Scrap metal</td>
<td>---</td>
<td>$28,159</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Grants</td>
<td>---</td>
<td>$1,034</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other Fees</td>
<td>---</td>
<td>$4,657</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Net</strong></td>
<td>$34,629</td>
<td>---</td>
<td>$9</td>
<td>$7</td>
</tr>
<tr>
<td><strong>Residual Waste Collection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curbside Collection Cost</td>
<td>$134,883</td>
<td>---</td>
<td>$191</td>
<td>$42</td>
</tr>
<tr>
<td>Dumpster Collection Cost</td>
<td>$42,796</td>
<td>---</td>
<td>$79</td>
<td>$26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$177,679</td>
<td>---</td>
<td>$142</td>
<td>$36</td>
</tr>
<tr>
<td><strong>Blue Box Program</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling Depot Collection</td>
<td>$63,053</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Depot Maintenance</td>
<td>$1,219</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Total Expenditures</strong></td>
<td>$64,272</td>
<td>---</td>
<td>$178</td>
<td>$13</td>
</tr>
<tr>
<td>WDO Funding</td>
<td>---</td>
<td>$38,785</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Net</strong></td>
<td>$25,487</td>
<td>---</td>
<td>$70</td>
<td>$5</td>
</tr>
</tbody>
</table>

As shown in the table above, the net cost of operating the municipal landfills in 2010 was approximately $35,000. This equates to $9 per tonne of residual waste disposed or $7 per household. This cost does not account for environmental monitoring or capital expenses such as equipment, approvals, engineering and construction. The total cost for curbside and dumpster collection of residential residual waste was approximately $177,000 in 2010. Collection costs per tonne of residential residual waste collected and per household are $142 and $36, respectively. The total net cost for landfill operations and residential residual waste collection was approximately $212,000 in 2010, which equates to $43 per household.
Total recycling costs in 2010 were approximately $64,000 at $178 per tonne of recyclables collected and $13 per household. After funding, per tonne and per household costs were $70 and $5, respectively. It should be noted that the municipality does not directly receive funds for sales of blue box materials. Blue box material sales are factored into the expense of the recycling service provided by the contractor.

### 3.6 Projected Waste Generation

Future generation of waste is difficult to predict with precision due to the uncertainty of many variables that can alter waste generation within a Municipality such as the introduction of new provincial or federal regulations, consumer habits, population, IC&I contributions, market fluctuations, etc. Based on available population and residential residual waste disposal data collected by the WDO for the province from 2006 through 2010, the population has increased over 4% during that time period, while the amount of residential waste disposed has decreased 13% over the same time frame. It should be noted that this disposal data does not account for IC&I waste. Presented in the figure below are the population and the residential waste disposal trends for the province.

**Figure 3-5: Provincial Residential Waste Disposed vs. Population**

As shown in the above figure, residential waste disposal rates have been decreasing despite an increase in population. Given the trend illustrated above, it is reasonable to believe that future waste generation rates for the residential sector within the Municipality would remain the same or decrease over the next 25 year planning period.
Conversely, IC&I residual waste generation is difficult to predict and considering the lack of regulatory enforcement at present, IC&I residual waste generation has the potential to increase over time. The IC&I sector currently contributes approximately two thirds of Ontario’s total residual waste requiring disposal and based on available data from Statistics Canada, IC&I residual waste generation increased approximately 2% from 2006 to 2008.

Therefore, to be conservative and insure sufficient capacity for future residual waste disposal purposes, the Municipality’s current waste generation per capita will be used in consideration with the Municipality’s population growth.

3.6.1 Projected Population
The most recent census data reports a Municipal population of 3,850 permanent residents in 2006. The population reported for the Municipality in 1996 and 2001 was 3,500 and 3,599 permanent residents, respectively. This represents an increase in permanent residents of approximately 1% per year on average.

As noted in Section 3.1, the Municipality has a relatively high proportion of seasonal residents. When considering the contributing population, it is also important to include the seasonal component. Based on the number of seasonal households in the Municipality, the total population generating waste within the Municipality in 2006 is more accurately estimated to be 5,155. This is based on an average of 2.5 people per household and the estimation that 6 seasonal households would generate the equivalent annual volume of refuse as 1 permanent household. For more detail regarding the seasonal to permanent population equivalent refer to Section 3.1.

Based on the rate of population growth within the Municipality between 1996 and 2006, the projected population for 2011 and to the year 2036 is estimated using the linear regression model. The projected contributing population is summarized in the table below.

**Table 3-17: Population Projection**

<table>
<thead>
<tr>
<th>Year</th>
<th>Permanent Population</th>
<th>Seasonal Permanent Equivalent Population</th>
<th>Total Equivalent Contributing Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>3,850</td>
<td>1,305</td>
<td>5,155</td>
</tr>
<tr>
<td>2011</td>
<td>4,046</td>
<td>1,372</td>
<td>5,418</td>
</tr>
<tr>
<td>2016</td>
<td>4,253</td>
<td>1,442</td>
<td>5,694</td>
</tr>
<tr>
<td>2021</td>
<td>4,470</td>
<td>1,515</td>
<td>5,985</td>
</tr>
<tr>
<td>2026</td>
<td>4,698</td>
<td>1,592</td>
<td>6,290</td>
</tr>
<tr>
<td>2031</td>
<td>4,937</td>
<td>1,674</td>
<td>6,611</td>
</tr>
<tr>
<td>2036</td>
<td>5,189</td>
<td>1,759</td>
<td>6,948</td>
</tr>
</tbody>
</table>

(1) Seasonal Permanent Equivalent Population = (seasonal households x 2.5 people per household) ÷ 6
(2) Future population is extrapolated using a 1% increase per year
3.6.2 Projected Disposal Capacity Required

Based on the population growth model and the maintenance of the current per capita waste disposal rate (i.e., 561 kg per capita), the total mass of residual waste requiring disposal is estimated to be 86,000 tonnes over the next 25 years. Assuming the use of a landfill for residual waste disposal, estimation of the air space capacity requirement for the next 25 years can be estimated based on a waste density of 500 kg/m³ using a landfill compactor and an additional 20% by volume for daily cover. The table below summarizes the landfill capacity required in 5 year increments over the next 25 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Equivalent Contributing Population</th>
<th>Residual Waste Generation</th>
<th>Cumulative Waste Disposal</th>
<th>Remaining Capacity Under Current Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tonnes</td>
<td>Tonnes</td>
<td>m³</td>
<td>m³</td>
</tr>
<tr>
<td>2011</td>
<td>5,418</td>
<td>3,039</td>
<td>6,078</td>
<td>7,294</td>
</tr>
<tr>
<td>2016</td>
<td>5,694</td>
<td>3,195</td>
<td>15,504</td>
<td>31,008</td>
</tr>
<tr>
<td>2021</td>
<td>5,985</td>
<td>3,357</td>
<td>31,800</td>
<td>63,600</td>
</tr>
<tr>
<td>2026</td>
<td>6,290</td>
<td>3,529</td>
<td>48,926</td>
<td>97,852</td>
</tr>
<tr>
<td>2031</td>
<td>6,611</td>
<td>3,709</td>
<td>66,926</td>
<td>133,852</td>
</tr>
<tr>
<td>2036</td>
<td>6,948</td>
<td>3,898</td>
<td>85,844</td>
<td>171,688</td>
</tr>
</tbody>
</table>

At the current per capita residual waste generation rate (including IC&I) and a population increase of 1% per year, the Municipality would require an estimated 210,000 m³ of landfill capacity for waste and daily cover. Given the remaining capacity under the current approval, the Municipality would require an additional 140,000 m³ of landfill capacity for the 25 year planning period.

4.0 EVALUATION OF ALTERNATIVE PREVENTION AND DIVERSION METHODS

Through the Policy and Strategic Initiatives and background information presented above, it was concluded that, although the Municipality’s waste diversion programs are performing at an average level for their municipal grouping, the Municipality should investigate methods to increase its diversion rate, not only to meet the provincial target of 60%, but also to ensure environmental security and to ensure that waste is managed efficiently and effectively. To facilitate this goal, alternative prevention (reduction) and diversion (reuse and recycling) methods and improvements to the existing waste diversion methods are evaluated by considering what is feasible and economically viable for the Municipality.
4.1 RECYCLING INITIATIVES

As discussed in Section 3.3, the Municipality currently provides a fairly extensive recycling program considering its smaller population base. The following summarizes the recycling programs that have been implemented by the Municipality:

- Recycling of blue box materials is currently encouraged through the availability of five recycling depots for drop-off of aluminum cans and foil, plastics, glass, paper, boxboard and corrugated cardboard.

- The Municipality is a registered collector with the OTS and OES for the collection of used tires and electronics. Drop-off locations for these materials are available at all three landfills.

- Scrap metal is collected by the Municipality for salvage (including appliances and propane tanks). Drop-off locations for scrap metal are available at all three landfills.

- The Municipality has an agreement with the County of Bruce that organizes a number of collection events for MHSW throughout the Municipality each year.

- Bale wrap is collected by the Municipality for recycling through Think Plastics Inc. A drop-off location for bale wrap is available at the Eastnor landfill site.

It is recognized that the majority of the Municipality’s diversion is through recycling. Blue box materials are of particular importance in terms of recyclable materials and mass of diversion. Currently, the Municipality offers a wide range of recyclables under the blue box program. Ultimately, the types of materials available for recycling are dependent on a market for the materials.

The Municipality recognizes the importance of a successful blue box program and has invested in improving the program through developing a Waste Recycling Strategy. The Waste Recycling Strategy (provided in Appendix A) discusses in detail the current blue box program and future initiatives. A summary of the blue box recycling initiatives is provided below. For more details regarding the blue box recycling initiatives, please refer to the Waste Recycling Strategy.

- **Bag Limits/User Pay** – Implementing bag limits and/or user pay fees encourages residents to divert more recyclable materials to avoid exceeding bag limits and fees.

- **Enhancements of Recycling Depots** – Improving site aesthetics and convenience can encourage more usage.

- **Provision of Free Blue Boxes** – Providing free blue boxes helps to ensure that residents have sufficient storage capacity for recyclables.

- **Expansion of Recyclable Blue Box Materials** – For maximum diversion a wide variety of recyclable materials is required. Deciding on which recyclable materials to include in
the blue box program typically depend on the availability, collection costs, and market viability for the respective material. Markets are constantly changing; therefore, it is important for municipalities to stay abreast of material markets. In the short-term, a recyclable material that the Municipality could consider adding to the blue box program is polystyrene packing material. The recycling of polystyrene may be particularly advantageous to the Municipality due to the low density and bulkiness of the material. These physical properties of the material result in poor landfill compaction; therefore, consuming landfill capacity.

- **Curbside Collection of Recyclables** – Curbside collection of recyclables is considered a long-term initiative. It is recognized that curbside collection may not be considered economically viable at this time. However, as the Municipality’s waste management system evolves, it may be considered viable in the future.

- **IC&I Outreach and Collaboration**
  Although the Municipality is not responsible for the management of IC&I waste, the majority of IC&I waste generated within the Municipality is disposed of in municipal landfills. A collaboration between the Municipality and local businesses, including but not limited to local campgrounds, the transportation ferry and hotels, creates the opportunity to divert more waste from the landfill through recycling while still meeting the needs of the businesses. For example, the Municipality could consider providing local businesses with more accessible recycling opportunities. It is recognized that certain businesses can generate a relatively high volume of recyclables, and by providing the added convenience, there is the potential to increase capture rates and diversion.

Recycling opportunities other than those related to the blue box program that the Municipality could consider, include creating a separate diversion stream for such materials as mattresses and C&D waste.

Where municipalities operate their own landfills, such as the Municipality of Northern Bruce Peninsula, the recycling of mattresses may be particularly advantageous on an operational standpoint and for the site life of a landfill. The physical properties of the mattresses do not allow them to compact well and the metal framing and springs can get caught-up in compaction equipment, potentially creating extra salary and maintenance expenses. Currently, a number of mattress recycling facilities are located in the Greater Toronto Area. Mattresses are recycled by being stripped down to their base materials of which up to 95% of the materials can be recycled or reused. Based on the number of mattresses landfilled in 2010, the Municipality could potentially divert up to 400 to 500 mattresses a year.

It is estimated that C&D waste accounts for over half of IC&I waste received at the landfill. Overall, C&D waste is composed mainly of wood products, asphalt shingles, drywall, and masonry. A number of diversion options are available for these materials. For example, asphalt shingles and tar and gravel roofing can be used for asphalt mixes used in road construction and clean drywall can be reprocessed into new products (e.g. soil stabilizer or pet litter). Wood materials can be converted into particleboard, mulch, or used as landfill cover when shredded. Masonry material such as concrete (without steel reinforcement) can be recycled into aggregates for fill material. Masonry material containing steel reinforcement would require additional processing before final use.
It is recognized that C&D debris is often commingled when dropped-off at the landfill, which makes it difficult to sort for diversion. To encourage sorting prior to disposal, the Municipality could impose higher fees for unsorted C&D waste.

4.2 **Waste Reduction and Reuse Initiatives**

Ultimately reducing the amount of waste generated through reduction and reuse initiatives is most ideal because it reduces the amount of energy and resources that is required to transport, process or dispose of the wastes. The implementation of these options could be achieved at a fairly low cost relative to the waste reduction achieved. Waste reduction and reuse options include the following:

- **Promote Reuse Buildings** – Further promotion of the reuse buildings located at the Eastnor and St. Edmunds landfill sites to ensure residents and especially cottagers are aware of the option to drop-off or pick-up reusable items that would otherwise be landfilled.

- **Clothing Donations** – Encouraging reuse through a partnership with the local thrift shops or other re-use organizations (e.g. Habitat for Humanity). A clothing donation bin could be set-up at a convenient location(s), such as the depot sites or public parking lot.

- **Removal of Dumpsters** – In 2010, residents serviced by dumpsters disposed of 50% more waste per household through their respective service than those serviced by curbside collection. It is recognized that a portion of the extra waste generated through dumpsters may also be attributed to disposal of other items other than typical bagged household waste (e.g., renovation waste, furniture, electronics/small appliances, etc.) that would otherwise be taken to the landfill for disposal. However, based on available information, residents who are serviced by dumpsters tend to produce more residual waste.

The waste generation rate for households serviced by dumpsters versus households serviced by curbside collection for 2010 is shown in the figure below.
The removal of dumpsters and the expansion of curbside garbage collection to those households currently serviced by dumpsters would encourage users to properly sort their waste and dispose of larger waste items at the landfill where disposal fees could be recovered. It is recognized that the expansion of full curbside collection would be an additional expense for the Municipality. However, lost revenue from illegal dumping in dumpsters could be recovered through landfill tipping fees. Full curbside garbage collection would also allow for easier enforcement of bag limits or sorting requirements should the Municipality impose such conditions through a By-law. A cost analysis of the different collection scenarios including full curbside garbage collection is provided in Section 6.3.

- **Implementation of Bag Limit/User Pay System** – The implementation of a bag limit/user pay system has been proven to reduce the amount of residual waste generation by encouraging users to become more conscious of the amount of waste they generate. Typically, bag limit/user pay systems in Ontario will charge users $1.00 to $3.00 per bag of household garbage and may limit disposal to one or two bags a week. Typically this type of initiative is implemented in a full curbside collection system. It is estimated that a bag limit/user pay system in a full curbside garbage collection scenario can increase residential diversion 10 to 15%.

### 4.3 Organics Diversion Initiatives

#### 4.3.1 Backyard Composting

The Municipality encourages residents to manage suitable organic materials through backyard composting. Backyard composting is ideal for a municipality such as the Northern Bruce Peninsula due to the high percentage of rural properties and single detached homes which have the capacity and increased convenience for composting. It is recognized that some residents do not compost for fear of attracting bears. However, through proper management of the composting activities (e.g. keep aerated, compost only plant based materials, etc.) the likelihood of bears becoming a nuisance is low.
Continued public education through local media and newsletters can educate residents on the benefits of backyard composting and methods to avoid attracting bears. It should also be noted that with the introduction of a bad tag program, residents will have more incentive to divert waste and backyard compost. It is estimated that a properly managed and fully implemented home composting program can account for an additional 5 to 10% diversion.

4.3.2 Leaf and Yard Waste Diversion
Although difficult to quantify, it is anticipated that the majority of leaf and yard waste is diverted from the landfill through on-property management (e.g. grasscycling, backyard composting, and burning of brush) due to the nature of the properties in the Municipality as mentioned in the previous section. For residents who choose to dispose of leaf and yard waste off-property the Municipality offers the option to drop-off leaf and yard waste at one of the three Municipal landfill sites. There, the leaf and yard waste (excluding brush) is segregated from the residual waste for use as final cover. Brush is also segregated from being landfilled, but is burned onsite.

At the time of this report, little information was publicly available to residents regarding leaf and yard waste diversion options in the Municipality. Improvements could be made to inform residents of the leaf and yard waste diversion option and encourage residents to segregate these wastes from their residual waste.

4.3.3 Source Separated Organics Collection and Processing
Increased diversion of organics can be achieved under an extended ‘Source Separated Organics Collection’ scenario. Depending on the processing method, SSO waste can include dairy products, plants and flowers, pet waste, food scraps, hygiene products (e.g. diapers), vegetables, fruits, grains products, meat, and paper that is not recyclable. Generally, these wastes are processed at a central processing facility via windrows, aerated static pile and in-vessel composting or anaerobic digestion. These processing facilities generally require a large and somewhat consistent volume of organic material to be economically feasible and are more common to jurisdictions with greater population bases.

An effective and extended source separated organics program has the potential to significantly reduce waste disposal in landfills. Based on information from other municipalities who have implemented such programs, an additional waste diversion of 15% to 20% can be achieved with this option. Provided in the table below are the cost estimates associated with a SSO program.
### Table 4-1: SSO Program Cost Estimates

<table>
<thead>
<tr>
<th>Process</th>
<th>Set-up Requirement</th>
<th>Planning Period</th>
<th>Budgetary Cost Estimates</th>
<th>Total Cost Per Household</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Municipal Processing Facility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals</td>
<td>- Design and Operations Plan&lt;br&gt;- Hydrogeological Assessment&lt;br&gt;- Drainage Study&lt;br&gt;- Odour Impact Assessment and Management and Control Plan</td>
<td>&gt; 5 years</td>
<td>$150,000 - $200,000</td>
<td>$85 - $130(1)</td>
</tr>
<tr>
<td>Development</td>
<td>- Construction and engineering of processing facility</td>
<td></td>
<td>$500,000 - $800,000</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>- Purchase of processing equipment</td>
<td></td>
<td>$200,000 - $300,000</td>
<td></td>
</tr>
<tr>
<td>Operation of Facility</td>
<td>- Salaries, compost quality monitoring, utilities, equipment maintenance, etc.&lt;br&gt;- Environmental monitoring and reporting</td>
<td></td>
<td>$150,000 - $250,000/year</td>
<td></td>
</tr>
<tr>
<td>Curbside collection</td>
<td>- Agreement with waste collection contractor</td>
<td></td>
<td>$40 - $60/ household</td>
<td></td>
</tr>
<tr>
<td><strong>External Processing Facility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curbside Collection</td>
<td>- Agreement with waste collection contractor</td>
<td>±6 months</td>
<td>$25- $50/ household(2)</td>
<td>$30 - $55(3)</td>
</tr>
<tr>
<td>Processing (Tipping Fees)</td>
<td>- Agreement with external processing facility (i.e. Chatsworth/Georgian Bluffs Bio-digester)</td>
<td>±6 months</td>
<td>$45- $60/tonne</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
(1) Applies capital costs amortized over 25 years at 5% interest per year.
(2) Assumes a dual stream collection method.
(3) Assumes an organics collection rate of 375 tonnes per year with full curbside garbage collection.

As shown in the table above, the development of a municipally owned organics processing facility is estimated to cost between $850,000 and $1,300,000 with annual operating costs between $150,000 and $250,000 per year. Including collection costs and amortizing the capital costs over 25 years, the estimated cost to the Municipality is between $80 and $130 per household per year. Based on the limited population of the Municipality and the scale requirements for the effectiveness of such a facility, a municipally owned organics processing facility is not considered to be a viable option. A partnership with other Municipalities to increase the economy of scale could improve the viability; however, a processing facility in the Municipality of Northern Bruce Peninsula (i.e., on a peninsula) would not be ideal, on a logistical standpoint, due to the Municipality’s geographic location.

An agreement with an external processing facility may be a more economical option for the Municipality considering the recent development of a bio-digester organics processing facility in the Township of Georgian Bluffs. The facility, co-owned by the municipalities of Chatsworth and Georgian Bluffs, currently receives municipal SSO. Costs associated with using an external processing facility such as the bio-digester would include the collection of the SSO and disposal fees (tipping fees). Collection of SSO could be combined with garbage collection with the use of a dual stream truck. Under this scenario the total cost is estimated to be between $30 and $55 per household per year.
4.4 **EDUCATION, OVERSIGHT, AND ENFORCEMENT**

It should be recognized that waste reduction, re-use, and recycling relies largely on behavioural changes. Behavioural changes are typically established through educational programs, policy changes, and/or enforcement.

### 4.4.1 Information Distribution

Information regarding the Municipality’s waste management practices and educational materials pertaining to the Municipality’s waste diversion initiatives has involved the distribution of pamphlets to all its residents via mail, and the placement of information on the municipal website. The combination of these two methods is considered to be an adequate means to ensure information and educational materials are reaching the Municipality’s population base, providing that the information is presented in a clear and concise manner.

It is recommended that the Municipality continue to provide diversion and general waste management program information with the annual waste collection calendars and through the municipal website. The Municipality should ensure that the program information provided in the annual calendars and on the municipal website includes:

- Recyclable blue box materials list and sorting guide
- Recyclable electronics and drop-off locations
- Household hazardous waste collection events and acceptable wastes
- A map of recycling depot and landfill locations and hours of operation
- Promotion of reuse buildings
- Composting options

The information should be presented in a way that is easy to read and follow, including pictures. This will help to achieve a higher level of public education related to the diversion options currently provided to municipal residents. Based on the high proportion of seasonal population, the Municipality should also consider a summer “blitz” for such public education programs.

### 4.4.2 Potential Educational Initiatives

Educational materials can be supplied to municipal residents to strengthen commitment from the community with respect to waste diversion. As noted in the previous section, the Municipality currently provides residents with waste management program information and diversion initiatives through mail and the municipal websites. These methods of informing residents of the waste diversion programs available and any changes to the waste management practices in the community is considered to be to be the most cost effective.

It is recommended that any new and existing waste reduction, reuse, recycling and/or composting initiatives undertaken by the Municipality be relayed to the local residents in a similar manner. Increased education and promotion of new and existing programs would help to increase the communities commitment to the waste diversion programs made available to the residents. Increased encouragement of diversion, including composting is recommended in future communications.

Based on the inferred nature of IC&I waste production in the Municipality (i.e., a high proportion of accommodation/recreation/restaurant), the Municipality may also wish to partner
with local campgrounds, tourists offices and businesses to promote recycling and waste diversion within their facilities and inform tourists of the diversion programs available in the Municipality.

### 4.4.3 Oversight and Enforcement

The success of a waste diversion program relies on compliance and commitment from the community. In order to ensure more widespread participation and compliance in waste diversion programs, the implementation of policies and/or By-laws can be effective provided they are properly enforced.

At this time, the Municipality does not have a By-law in place that encourages residents or businesses to recycle. Common municipal By-laws set maximum garbage bag limits and require that recyclables and residual waste be properly sorted by residents for disposal. In some cases, these By-laws are implemented in a curbside collection system with the use of clear bags. This system enables visual inspection by waste collectors to ensure that wastes are sorted properly and bag limits are not being exceeded. Wastes that are not properly sorted (i.e. that contain recyclable or compostable materials) and or exceed the bag limit are not collected and some municipalities may impose a fine for multiple offences.

Typically, these types of By-laws would be imposed in a collection system that offered full curbside collection of garbage and/or blue box recyclables. Under the Municipality’s current program, enforcement would be difficult due to the use of dumpsters for waste collection and depot blue box recyclables collection. Therefore, implementation of such a By-law would require some operational/service adjustments such as full curbside collection or centralized and staffed depot sites in order to enforce the By-law.

Under the current system the Municipality could impose a mandatory recycling By-law for the IC&I sector to discourage businesses or institutions from disposing of recyclables such as cardboard in the landfill. According to the 2010 Annual Report of the Office of the Auditor General of Ontario Office, the IC&I sector generates approximately 60% of the waste in Ontario, and in 2006, only diverted about 12% of its waste. As noted in Section 3.4.1, it is estimated that the IC&I sector contributes 34% of the waste being disposed of in the Municipality’s landfills. Currently, there is no data available on the composition of waste being produced or diverted by the IC&I sector in the Municipality.

Additional policies and or By-laws may need to be considered as additional waste diversion initiatives are implemented.

### 4.5 Summary of Alternative Prevention and Diversion Options

Summarized in the table below are the prevention and diversion options available to the Municipality with the associated estimated costs and gain in diversion rates. It should be noted the curbside collection of recyclables and SSO options are considered to be long-term initiatives and may be considered cost-prohibitive at this time. It is recommended that the Municipality continue to stay informed of new WDO program plan initiatives, provincial policy, and funding opportunities that may become available.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Set-up Requirement</th>
<th>Estimated Budgetary Cost</th>
<th>Potential Additional Diversion Gained</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recycling Initiatives</strong></td>
<td>Enhancement of recycling depots</td>
<td>Planning and staffing</td>
<td>$15,000</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Provision of free blue boxes</td>
<td>Purchasing and Public Notification</td>
<td>$5,000</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>IC&amp;I outreach and collaboration</td>
<td>Agreement with local business</td>
<td>n/a</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Expansion of blue box waste materials to include polystyrene</td>
<td>Agreement with external facility</td>
<td>$25,000</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Creation of a separate waste diversion stream for mattresses</td>
<td>Agreement with external facility</td>
<td>$15 - $20 per mattress</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Creation of a separate waste diversion stream for C&amp;D waste</td>
<td>Agreement with external facility</td>
<td>$100 - $140 per tonne</td>
<td>3% - 6%</td>
</tr>
<tr>
<td></td>
<td>Curbside collection of recyclables (long-term)</td>
<td>Collection contract agreement</td>
<td>$25 - $50 per household (1)</td>
<td>5% - 10%</td>
</tr>
<tr>
<td><strong>Waste Reduction and Reuse Initiatives</strong></td>
<td>Promote reuse buildings</td>
<td>Preparation and distribution of relevant materials</td>
<td>± $2,000</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Clothing donation bin</td>
<td>Bin placement/partnership</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Removal of dumpsters</td>
<td>Policy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implement Bag Limit/User Pay System</td>
<td>Policy, oversight, and enforcement</td>
<td>($60,000) (2)(3)</td>
<td>10% to 15%</td>
</tr>
<tr>
<td><strong>Organics Diversion Initiatives</strong></td>
<td>Further encourage the use of backyard composters</td>
<td>Promotion and education</td>
<td>± $2,000</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Inform residents of leaf and yard waste diversion options</td>
<td>Promotion and education</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SSO with external processing facility (long term)</td>
<td>Agreement with external processing facility, collection contract</td>
<td>$30 to $55 per household (1)</td>
<td>10% to 20%</td>
</tr>
<tr>
<td><strong>Education, Oversight and Enforcement</strong></td>
<td>Information distribution including collection schedules and detailed information on new and existing waste diversion programs</td>
<td>Preparation and distribution of relevant materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Educational initiatives that provide information to residents regarding waste diversion initiatives and details, such as acceptable and unacceptable materials</td>
<td>Preparation and distribution of relevant materials</td>
<td>± $15,000</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Partner with local campgrounds, tourist offices and businesses to promote recycling and waste diversion and inform tourists of the diversion programs available in the Municipality</td>
<td>Partnership</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impose a mandatory recycling By-law for residents and businesses</td>
<td>Policy</td>
<td>n/a</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Additional policies and/or by-laws may need to be considered as additional waste diversion initiatives are implemented</td>
<td>As required</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Notes:
(1) Assumes a dual stream collection method.
(2) Operation cost for Bag Limits/User Pay Option includes expanded curbside collection costs and bag tag revenue.
(3) Values in parentheses represent positive cash flow.
5.0 EVALUATION OF RESIDUAL WASTE MANAGEMENT OPTIONS

The Municipality currently has an estimated 10 years of approved landfill capacity. Once the Municipality's current approved capacity is exhausted, the Municipality will require further waste disposal capacity or alternative disposal options to meet the Municipality's needs. The following section of the report evaluates potential residual waste disposal options available to the Municipality.

Currently, there are two general approaches to residual waste disposal: incineration/thermal, or landfilling. This Study separates the discussion based on these two general approaches. Within each approach, municipally owned and out-sourced (i.e., third party facilities) have been reviewed at a conceptual level. A summary of the evaluations discussed herein is presented in Table 5-1.

5.1 EVALUATION CRITERIA

As part of this Study, the residual waste disposal options are reviewed at a conceptual level since there are many unknowns that cannot be accounted for. Several of the waste disposal options include the involvement of third parties, and require political and regulatory support, which cannot be estimated with certainty. Additionally, the estimated costs for many of the approaches cannot be known until such a project is complete. Therefore, each approach provides for an evaluation of the advantages and disadvantages based on the following issues:

1. **Security of Disposal Option**
   Municipal control of management and operations, control of costs, long-term availability of disposal option.

2. **Certainty of Approval**
   Environmental Assessment requirements, use of existing approvals and/or infrastructure, proven technology in Ontario.

3. **Applicability**
   Requirement of third party partnership(s), waste generation requirements, operational scale requirements.

4. **Environmental Security**
   Waste transport requirements, potential environmental impact, engineered versus natural attenuation landfill, amount of residual waste at end of process.

Each of these factors has been assigned a low, medium or high designation based on a qualitative evaluation of factors, which are generally discussed for each option specified. A low designation is considered to be a negative weighing and high designation is considered to be favourable.
5.1.1 Cost Evaluation
Since there are many variables with respect to cost, a range of budgetary costs are provided for each approach. Additionally, these costs are provided for comparative purposes only. More detailed costs would require conceptual design and initial site selection considerations.

The costs include capital requirements and estimated long-term requirements in 2011 values. The long-term cost estimates include annual operational costs and capital costs amortized over 25 years. Since this is a comparative exercise, valuation of costs is not conducted as part of this Study.

It should be noted that the estimate of long-term costs is considered conservative. For example, it is considered possible to obtain approval for the development of a considerably larger volume of waste (i.e., greater than 500,000 m³) at a similar cost range depending on the site conditions. Likewise, the lifespan of a thermal facility may be greater than 25-years with potential refurbishment costs.

5.1.2 Planning Period
An estimate of the planning period for each approach is provided for within Table 5-1. The planning period is based on the establishment of the infrastructure and the potential approval process. Where an EA is required, a planning period of a minimum of 5 years has been selected based on the approval period for waste disposal systems in Ontario.

5.2 Thermal and Incineration Waste Disposal Options
Thermal and incineration technologies involve the breakdown of waste and production of energy through gasification or combustion. These technologies typically provide a reduction of residual waste in the range of 60% to 95%, depending on the technology. Thermal and incineration technologies are typically effective only at large scale operations where sufficient feed-stock material (i.e., waste) is available and the feed-stock quality is relatively consistent. This approach is capital intensive since it requires relatively complex infrastructure to conduct operations. Additionally, operation typically requires a greater level of operational expertise and maintenance (relative to landfiling).

This approach is generally considered more environmentally sustainable because of the capture of energy from the waste and the potential reduction of impacts to the environment compared to landfiling. Depending on the specific technology selected, the remaining residual waste may contain high concentrations of metals and require disposal as a designated or hazardous substance. It should be noted that this technology is relatively unproven in Ontario at the full-scale and public debate continues regarding air quality issues from several of the technologies.

The technologies that that were identified as part of this Study include:

- Incineration (starved air, rotary kiln),
- Fluidized bed/gasification,
- Pyrolysis,
- Plasma gasification,
- Thermo-chemical reduction, and
- Gasification/composting.
Typically, these technologies require a consistent and large amount of waste of (>100,000 tonnes/year) in order to be economically feasible. Based on the waste production of the Municipality (i.e., <4,000 tonnes/year), only the use of an established third party facility or a partnership with other parties would be a viable option to the Municipality. It is difficult to assess either of these options since there are no existing “local” operations and the political commitment from potential partners would be required. This area of waste management in Ontario is dynamic with multiple parties involved and concept plans for incineration/thermal facilities on-going. Within the Grey/Bruce region, two proposed developments that involve incineration/thermal technologies include a gasification facility in the Township of Southgate and an incineration facility in the Municipality of West Grey. However, at this time, neither of these potential projects have approvals and there is no certainty of development.

The planning period for a thermal/incineration system is estimated to be in the range of 5 to 10 years.

Security of Option: High
Certainty of Approval: Medium
Applicability: Low
Environmental Security: High
Comparative Cost Range:
   Capital Costs : > $20 Million
   Long-term Costs: $100 to > $150/tonne

As discussed, this technology is not considered to be viable at this time, based on the requirement for a 3rd party system or partnership with multiple parties, neither of which have been developed extensively at this time. The development of these waste management technologies are ever evolving and should continue to be reviewed as information becomes available. Should a third party or partnership option become available in the future, the feasibility of those options could be evaluated at that time.

5.3 LANDFILLING

Landfilling provides the most traditional and established method of residual waste disposal in Ontario and continues to be the most widely used residual waste disposal option. Historically, it has been shown to be the most cost-effective manner to dispose of residual waste. However, based on the Waste Value Chain (Figure 2-1), landfilling without energy capture is considered to be the least preferred.

5.3.1 Development of Additional Capacity at Existing Landfill Sites
Expansion of existing landfill sites is considered to be the most suitable option for the Municipality, as it is considered the most cost effective, has a high probability of approval, and highest level of security. Under historic MOE approvals, the Eastnor and Lindsay landfill sites have additional development potential of 643,250 m³ and 601,500m³, respectively. There is no additional development potential under historic approvals at the St. Edmunds landfill. Therefore, under this scenario, development of additional capacity is only considered at the Eastnor and Lindsay sites.
The development of the additional landfill capacity requires approval from the MOE, which is dependent on the successful completion of the application process. To support the application process, a Hydrogeologic Study and a Plan of Development and Operations (PDO) would be required. It should be noted that there is the possibility of not succeeding with the application or the conditions imposed by the MOE may not be economically feasible to proceed with development. The success of the application or economic feasibility of developing the additional capacity is dependent on a number of variables, including the proposed type and amount of waste to be landfilled, the geologic conditions of the site, environmental sensitivity, etc.

In terms of geologic conditions, the Eastnor landfill site is considered to be more suitable for municipal waste disposal than the Lindsay landfill site. Based on the geologic conditions of the landfill sites a leachate collection system may be required at the Lindsay site where natural attenuation may be sufficient at the Eastnor site. As a result it is anticipated that development of additional capacity of the Eastnor landfill site for municipal waste would require less capital investment and less operating costs. Further regulatory consultation and/or investigation would provide more certainty regarding these options.

Together with an expansion of the Eastnor site for municipal waste, the Municipality could consider expanding capacity at the Lindsay site for construction and demolition debris only. Construction and demolition debris is considered to be more inert than mixed municipal waste. Therefore, the likelihood of receiving MOE approval at the Lindsay site without requiring a leachate collection system is considered to be higher at this time. Under this scenario all construction and demolition waste in the Municipality could be disposed of at the Lindsay site, reserving the capacity at Eastnor for mixed municipal waste. The municipality could even consider beginning the application process first at the Lindsay site. This would help extend the site life of the existing approved capacity for municipal waste under the current C of A.

The development process of the Eastnor site for municipal waste and the Lindsay site for construction and demolition waste is estimated to be 2 to 4 years to complete. Development of the Lindsay site for municipal waste is estimated to take 4 to 6 years, based on the potential requirement of a leachate collection system.

<table>
<thead>
<tr>
<th>Security of Option:</th>
<th>Eastnor Only</th>
<th>Eastnor/Lindsay (C&amp;D)</th>
<th>Lindsay (Only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Certainty of Approval:</td>
<td>High</td>
<td>Medium to High</td>
<td>Low</td>
</tr>
<tr>
<td>Applicability:</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Environmental Security:</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Comparative Cost Range:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Costs:</td>
<td>$150 to $250 K</td>
<td>$200 to $400 K</td>
<td>$1 to $2 Million</td>
</tr>
<tr>
<td>Long-term Costs:</td>
<td>$15 to $20/tonne</td>
<td>$25 to $40/tonne</td>
<td>$65 to $95/tonne</td>
</tr>
</tbody>
</table>

5.3.2 Development of New Municipal Landfill

The development of a new landfill requires locating an appropriate site, conducting several studies to support development, completing the Environmental Assessment (EA) process, and completing the landfill design, which may be required to be an engineered site (i.e., require leachate collection, etc.). Based on the EA process, ultimate approval of the site cannot be guaranteed. The process for this approach is about 5 to 10 years with capital costs of approximately $5 to $10 million. Annual operating costs are estimated to be approximately $50
to $70/tonne based on the operation of leachate capture and treatment system, operational costs, monitoring, reporting, and contingency costs. The resultant long-term costs are estimated to be in the range of $70 to $110/tonne.

Security of Option:    High
Certainty of Approval: Low
Applicability:        Low
Environmental Security: Medium
Comparative Cost Range:
Capital Costs:        $5 to $10 Million
Long-term Costs:      $70 to $110/tonne

5.3.3 **Municipal Partnership for Development of New Landfill**

Once a suitable site has been selected, the process and site development would be the same as for the Municipality with the same estimated planning period of 5 to 10 years. It is recognized that additional complexities, particularly with site selection, may arise due to the involvement of multiple parties/stakeholders. However, the development of a new landfill with municipal partners can take advantage of economy of scale and result in cost savings for the municipalities involved.

The resultant long-term costs are estimated to be in the range of $55 to $95/tonne.

Security of Option:    High
Certainty of Approval: Medium
Applicability:        Low
Environmental Security: Medium to High
Comparative Cost Range:
Capital Costs:        $2 to $5 Million
Long-term Costs:      $55 to $95/tonne

5.4 **Third Party Disposal of Residual Waste**

Third party disposal typically involves exporting waste out of the municipality through a contractor. The current agreement between the City of Owen Sound and Miller Waste Systems is an example where this type of system is in place. Under this system, the waste that Owen Sound produces is shipped to the Miller waste facility located within the city limits. Miller then transports and disposes of the waste at a third party facility.

Since this is a third party system, there is low security with respect to long-term costs and operational controls. However, limited to nil capital costs would be required under this scenario. Costs incurred by the Municipality would only be for those wastes requiring disposal (i.e. would not have base overhead costs). Based on current rates, it is estimated that this type of system would cost the Municipality $100 to $130/tonne.

The Environmental Security rating to the Municipality, specifically, would be considered low since there is no waste being placed on municipal lands. However, based on the environmental “footprint” of the waste trucking and general landfill disposal, the Environmental Security rating is considered Low to Medium.
Security of Option: Low to Medium
Certainty of Approval: High
Applicability: High
Environmental Security: Low to Medium
Comparative Cost Range: Capital Costs: minor
Long-term Costs: $100 to $130/tonne

5.5 **Residual Waste Disposal Options Summary**

Summarized in the table below are the disposal options available to the Municipality with the estimated costs, and advantages and disadvantages of each option.
### Table 5-1: Potential Residual Waste Disposal Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Pros</th>
<th>Cons</th>
<th>Planning Period</th>
<th>Capital ($20 M)</th>
<th>Annual (^{11}) (per tonne)</th>
<th>&quot;Long-Term&quot; Cost (^{11}) (per tonne)</th>
</tr>
</thead>
</table>
| Municipal System | Selection, Construction, and Operation of Thermal/Inclination Technology by Northern Bruce Peninsula | - Low Residual Waste Production  
- Energy Capture  
- Control of Operation and Management  
- Low Transport Costs | - Only Applicable to Larger Scale Operations:  
Would Require Acceptance of Waste from Grey and Bruce Counties  
- Approvals Potentially Difficult ("Unproven in Ontario") | > 5 years | > $20 M | $40 - $80\(^{11}\) | $150 - >$200\(^{11}\) |
| Third Party System | 1) Proposed Bio-Waste Treatment Technologies - Sorting, Gasification and Composting - Southgate  
2) Proposed Inclination Facility - West Grey | - Low Residual Waste Production  
- Energy Capture | - Loss of Control for Acceptance of Waste  
- Low Security for Long-Term Disposal  
- Proposed Facilities Only at This Time: Uncertainty with Respect to Facility Construction | > 5 years | — | $80 - $120 | $80 - $120 |
| Municipal Partnership | Partner with other Municipalities to Select, Construct and Operate a Thermal/Inclination Plant | - Low Residual Waste Production  
- Energy Capture  
- Control of Operation and Management  
- Low Transport Costs  
- Reduced Capital and Operating Due to Partnership | - Requires Large Volumes of Waste to be Cost-Efficient: May Require Acceptance of Waste from Other Municipalities  
- Approvals Potentially Difficult ("Unproven in Ontario")  
- Requires Commitment From Potential Partners | > 5 years | > $20 M Number of Partners | $40 - $80 | $80 - $120 |
| Completion of Future Phases at Eastnor Landfill | Complete Hydrogeologic Study and PDO to support filing Eastnor to previously approved potential capacity of 643,250 m\(^3\) | - Control of Operation and Management  
- Low Transport Requirements for Waste  
- Existing Property with Existing Studies  
- No Municipal EA Required  
- Relatively Good Environmental Security | - Requires Numerous Studies to Support Development | 2 - 4 years | $150 to $250 K | $10 - $15 | $15 - $20 |
| Completion of Future Phases at Lindsay Landfill | Complete Hydrogeologic Study and PDO to support filing Lindsay to previously approved potential capacity of 601,500 m\(^3\) | - Control of Operation and Management  
- Low Transport Requirements for Waste  
- Existing Property with Existing Studies  
- No Municipal EA Required | Requires Numerous Studies to Support Development  
- May Require Engineered Design  
- Possibility of Not "Succeeding" with Application Process  
- Complex Hydrogeologic Setting: Low Security for Long-term Disposal | 3 - 5 years | $150 to $250 K ($1 to $2 M) | $10 - $15 (\$50 - $70 with leachate collection) | $15 - $20 (\$50 - $90 with leachate collection) |
| Landfills\(^{10}\) | Completion of Future Phases at Lindsay Consult for C&D Waste Only and Eastnor for Municipal Waste | Complete Hydrogeologic Study and PDO to support filing Lindsay to previously approved potential capacity of 601,500 m\(^3\) for C&D Waste with Municipal Waste at Eastnor | - Control of Operation and Management  
- Low Transport Requirements for Waste  
- Existing Property with Existing Studies  
- No Municipal EA Required  
- Increases Site Life Capacity at Eastnor | 2 - 4 years | $200 to $400 K | $20 - $25 | $25 - $30 |
| New Site in Northern Bruce Peninsula | Planning, Design and Construction of a Landfill Site at a New Location within Northern Bruce Peninsula | - Control of Operation and Management  
- Low Transport Requirements for Waste | - Need to locate appropriate site  
- Requires Numerous Studies to Support Development  
- Would Likely Require Engineered Design  
- Possibility of Not "Succeeding" with Application Process | > 5 years | $5 to $10 M | $50 - $70 | $70 - $110 |
| Third Party - Export Residual Waste | Using Miller's Transfer Station in Owen Sound for delivery to 3rd Party Landfill in Ontario | - Existing Approvals  
- Existing "Infrastructure" | - Low Security for Long-term Disposal | ± 6 months | n/a | $100 - $130 | $100 - $150 |

Notes:  
1. Long-term costs apply capital to 25 years or total volume of approved landfill at a fill rate of 3,000 tonnes per year.  
2. Applicable to large scale operations only: cost would depend on price of third party wastes accepted.  
3. Annual tipping fees included where municipality owns the facility.  
4. Landfills assumed approval for 200,000 cubic metres of capacity unless otherwise noted through previous approval.  

\(^{10}\) Landfills assumed approval for 200,000 cubic metres of capacity unless otherwise noted through previous approval.  

\(^{11}\) Budgetary estimates for 2011 funds.
5.6 **Residual Waste Disposal Recommendations**

The Municipality is considered to be in a relatively good position, in terms of disposal options, due primarily to the historically approved capacity at the Eastnor and Lindsay landfill sites. At this time, future development of that capacity is considered to be the Municipality’s most viable waste disposal option.

Incineration and thermal technologies are not considered to be economically feasible for the Municipality based on the limited scale of waste production and geographic location and lack of access to a third party system. However, it is recommended that the Municipality stay abreast of developments within the waste management sector and the applicability of a third party system, should one become available.

5.6.1 **Short-Term Residual Waste Disposal**

It is recommended that the Municipality continue the use of their existing capacity while focusing on diversion and operational improvements such as maximizing compaction of landfilled waste to increase site life.

5.6.2 **Long-Term Residual Waste Disposal**

It is recommended that within the next five years the Municipality begin the application process for the development of additional capacity at the Eastnor and/or Lindsay landfill sites. This will help secure additional waste disposal capacity for the Municipality before the existing available capacity is exhausted (estimated to be in 10 years). It is recommended that the development of additional landfill capacity plan for 25 years of site life.

6.0 **Evaluation of Alternative Collection Systems**

6.1 **Collection System Costs and Potential Diversion**

As part of this waste management study, the use of alternative collection systems have been evaluated. In most cases, the type of collection/drop-off system can dramatically affect the overall diversion rate for the Municipality and is directly correlated with the diversion streams available to the user.

Provided in the Table 6-1, is a summary of the collection options, including the costs associated with the collection system and the additional diversion that is expected to be achieved relative to the current system in place. The collection options include several collection combinations from full drop-off of garbage and recyclables to full curbside collection of garbage, recyclables and organics. It is recognized that some of the collection options presented in Table 6-1 may be cost prohibitive, may not be publically acceptable, or aid in diversion, but have been included for comparison purposes.
As noted in Section 4.2, it is estimated that full curbside collection and the removal of dumpsters would encourage residents to be more conscious of their waste disposal habits. Full curbside collection would also allow for the implementation of a user pay system, which is documented to provide decreased water generation and increased diversion. Under this collection scenario, waste generation is expected to decrease and the Municipality's diversion rate is estimated to increase 10 to 15% for an overall residential diversion rate of 35 to 40%.

As discussed in the Alternative Prevention and Diversion Summary, if the Municipality wishes to reach the provincial diversion target of 60%, the Municipality would likely need to invest in SSO and recyclables collection. When considering the type of collection system to implement, the Municipality is required to decide on the level of service they wish to provide, the level of diversion they wish to achieve, and the budget available. For example, full curbside collection of garbage, recyclables and organics would result in optimal diversion, but the costs associated with this type of collection service may not be acceptable. On the contrary a full dumpster system may be less expensive than the current system, but would likely result in increased waste generation with a lower diversion rate.
<table>
<thead>
<tr>
<th>Service</th>
<th>Annual Cost(^{(1)})</th>
<th>Garbage Bag Tag Revenue(^{(4)})</th>
<th>Net Cost Annual</th>
<th>Net Cost Per Household</th>
<th>Cost Increase(^{(2)}) Annual</th>
<th>Cost Increase(^{(2)}) Per Household</th>
<th>Estimated Additional Diversion(^{(3)})</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Service</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Partial Dumpster/Curb-side Garbage Collection</td>
<td>$240,000</td>
<td>---</td>
<td>$240,000</td>
<td>$50</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>- Depot Blue Box</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>All Dumpster</strong></td>
<td>$180,000 to $200,000</td>
<td>---</td>
<td>$180,000 to $200,000</td>
<td>$35 to $40</td>
<td>$(60,000 to $40,000)</td>
<td>$(15) to $(10)</td>
<td>(10%) to (15%)</td>
</tr>
<tr>
<td>- Dumpster Garbage Collection</td>
<td></td>
<td></td>
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<tr>
<td>- Depot Blue Box</td>
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</tr>
<tr>
<td><strong>All Drop-off</strong></td>
<td>$60,000 to $80,000</td>
<td>---</td>
<td>$60,000 to $80,000</td>
<td>$12 to $16</td>
<td>$(180,000 to $160,000)</td>
<td>$(38) to $(34)</td>
<td>5% to 10%</td>
</tr>
<tr>
<td>- Drop-off at Landfill</td>
<td></td>
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<tr>
<td>- Depot Blue Box</td>
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</tr>
<tr>
<td><strong>Full Curbside Garbage</strong></td>
<td>$320,000 to $390,000</td>
<td>$150,000 to $200,000</td>
<td>$170,000 to $190,000</td>
<td>$35 to $40</td>
<td>$(70,000 to $50,000)</td>
<td>$(15) to $(10)</td>
<td>10% to 15%</td>
</tr>
<tr>
<td>- Curbside Garbage Collection</td>
<td></td>
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<tr>
<td>- Depot Blue Box</td>
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</tr>
<tr>
<td><strong>Full Curbside Garbage/Recycling</strong></td>
<td>$390,000 to $540,000</td>
<td>$142,500 to $190,000</td>
<td>$247,500 to $350,000</td>
<td>$50 to $70</td>
<td>$7,500 to $110,000</td>
<td>$0 to $20</td>
<td>15% to 25%</td>
</tr>
<tr>
<td>- Curbside Garbage Collection</td>
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<tr>
<td>- Depot Blue Box</td>
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</tr>
<tr>
<td><strong>Full Curbside Garbage/Organics</strong></td>
<td>$445,000 to $570,000</td>
<td>$135,000 to $160,000</td>
<td>$310,000 to $410,000</td>
<td>$65 to $85</td>
<td>$70,000 to $170,000</td>
<td>$15 to $35</td>
<td>20% to 35%</td>
</tr>
<tr>
<td>- Curbside Garbage Collection</td>
<td></td>
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</tr>
<tr>
<td>- Depot Box</td>
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<td></td>
</tr>
<tr>
<td>- Curbside SSO Collection + Disposal</td>
<td>$560,000 to $705,000</td>
<td>$127,500 to $140,000</td>
<td>$432,500 to $565,000</td>
<td>$90 to $115</td>
<td>$192,500 to $325,000</td>
<td>$40 to $65</td>
<td>25% to 45%</td>
</tr>
<tr>
<td>- Curbside Garbage Collection</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>- Depot Blue Box</td>
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<td></td>
</tr>
<tr>
<td>- Curbside SSO Collection + Disposal</td>
<td>$580,000 to $725,000</td>
<td>$130,000 to $145,000</td>
<td>$450,000 to $590,000</td>
<td>$95 to $120</td>
<td>$205,000 to $340,000</td>
<td>$45 to $68</td>
<td>30% to 40%</td>
</tr>
</tbody>
</table>

Notes:
(1) Collection costs include processing of recyclables and organics, but do not include garbage disposal costs (e.g., landfill operations, etc.).
(2) Values in parenthesis represent a cost decrease in collection system costs relative to the current system.
(3) Values in parenthesis represent a decrease in diversion.
(4) Garbage tag revenue based on $2.00 per bag.
6.2 **Municipally Operated Recyclables Collection and Processing**

Depot collection of blue box recyclables is currently completed by Miller Waste who transports the recyclables to their transfer station for processing. This type of system, where the recyclables are collected, transported and processed by the same organization (e.g., Miller Waste, Waste Management, Bruce Area Solid Waste Recycling (BASWR), etc.) is common for handling, efficiency, and quality control purposes. Consequently, it is not reasonable to expect that a third party would allow for the collection of recyclables by the Municipality for delivery to their facility. Under this scenario the Municipality would be required to consider the development of their own transfer station along with a collection system.

Depending on the scale of the project and available resources, establishing a processing facility is anticipated to cost in the range of $700,000 to $1,400,000 to establish and greater than $200,000 to operate on an annual basis. Below is list of expenditures to consider when implementing and operating a processing facility.

- Construction of Processing Facility
- Certificate of Approval (waste processing)
- Procurement of Processing Equipment (Compactors, Bailers, Fork Lifts, Conveyer, etc.)
- Sorting of Recyclables
- Residual Waste Disposal
- Sale of Collected Materials and Fluctuating Markets for These Materials
- Insurance
- Facility and Equipment Maintenance
- Labour
- Fuel/Energy Consumption

As with many operations discussed herein, the development of such a system is not typically effective at a small-scale, as base costs for larger systems are similar. Therefore, based on these preliminary cost estimates, a more detailed cost review is not considered warranted at this time. Consequently, a third party system (such as that currently being utilized) is considered to be the most viable option to the Municipality based on the population size and lack of existing waste processing infrastructure.

6.3 **Municipal Waste Collection**

The Municipality currently services approximately two thirds of the population with weekly curbside garbage collection and the remainder of the residents are serviced with dumpsters. Under this collection contract, the service cost approximately $180,000 in 2010. Full curbside collection through contract is estimated to cost $280,000 per year. A list of implementation and operational cost estimates that the Municipality could expect to incur with operating a full curbside garbage collection system are presented in the Table 6-2.
Table 6-2: Estimated Waste Collection Costs

<table>
<thead>
<tr>
<th>Expense Items</th>
<th>Costs/Year (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Waste Collection Trucks</td>
<td>$63,500</td>
</tr>
<tr>
<td>Waste Collection Truck Operators and Labourers</td>
<td>($500,000 amortized over 10 years at 5%)</td>
</tr>
<tr>
<td>Truck Maintenance</td>
<td>$150,000 - $200,000</td>
</tr>
<tr>
<td>Truck Fuel</td>
<td>$5,000 - $10,000</td>
</tr>
<tr>
<td>Insurance</td>
<td>$30,000 - $40,000</td>
</tr>
<tr>
<td>Certificate of Approval (Waste Hauling)</td>
<td>$5,000 - $10,000</td>
</tr>
<tr>
<td>Admin. (Scheduling, Routing, etc.)</td>
<td>$10,000 (initial one-time cost)</td>
</tr>
<tr>
<td><strong>Inaugural Year</strong></td>
<td><strong>$273,500 - $348,500</strong></td>
</tr>
<tr>
<td><strong>Annually (Year 2 to 10)</strong></td>
<td><strong>$263,500 - $338,500</strong></td>
</tr>
</tbody>
</table>

Note:
(1) The above estimate is based on 2011 dollars. Future costs have not been adjusted for inflation.

Based on weekly collection services provided by two waste collection trucks and the associated costs of operating the waste collection trucks, the total projected costs (in 2011 dollars) are estimated to be between $273,500 and $348,500 for the inaugural year and $263,500 to $338,500 annually from year 2 to 10.

The Municipal costs are estimated to be similar to that of a private waste hauler. However, in comparison, a private waste hauler would have the advantage of having more resources available (such as additional trucks and staff) for contingency measures such as truck breakdown/accident, and staff holidays/sick time. As a result, the expanded resources of a private contractor would result in less service interruptions and less administrative effort on behalf of the Municipality.

6.4 MUNICIPALLY OPERATED COLLECTION AND PROCESSING SUMMARY

As part of this study, a review of the viability of municipally operated collection services or processing facilities was completed. The review included the feasibility of both a SSO processing facility and a recycling facility, as well as municipally operated waste and recyclable collection services.

The development of a municipally operated SSO processing facility and recycling facility were reviewed separately. In both instances it was found that the Municipality did not have the waste generation or access to outside waste sources required to make such a waste processing facility economically viable. Processing facilities of this nature are not typically effective at a small scale as base costs and operational costs are similar to larger scale operations.

In terms of recyclables collection, it was found that collection and processing was typically completed by the same organization (e.g., Miller Waste, Waste Management, BASWR, etc.) for handling, efficiency, and quality control purposes. As a result the Municipality would be required to develop their own processing facility, which as noted above, is not considered to be economically viable.

In the case of residual waste and organics collection, handling and sorting, is potentially more applicable to the Municipality. Organic wastes, unlike recyclables are generally accepted from third parties and the residual waste is already being delivered to a municipally owned facility.
Therefore, further development would not be required. The feasibility review determined that a municipally run collection operation would have similar costs to that of a contractor. However, a municipal collection operation would have limited resources (staff and trucks) relative to a contractor. Therefore, at this time it appears the use of a contractor for waste collection services would be the preferred alternative.

7.0 PUBLIC CONSULTATION

As part of the development of this Study and the WRS, public consultation was conducted through:

- interviews with stakeholders,
- survey advertisement in local paper,
- internet survey, and
- mail-out and hand-out survey.

The following stakeholder groups were included in this consultation process:

- the Municipality’s Waste Diversion Group,
- the public,
- private camp grounds,
- Parks Canada, and
- small businesses.

The findings of the survey are provided within the WRS (enclosed in Appendix A). Some of the findings from the survey included:

- Adding more recycling depot locations.
- Ensure recycling depots were clearly labelled and tidy.
- Respondents indicated that the addition of curbside recycling collection would promote recycling.
- Impose bag limits/user pay.
- Discontinue dumpster service.
- Approximately 2/3 of respondents preferred curbside waste collection,
- Approximately 50% of the respondents do not compost organic wastes.
- Circulate a newsletter of which items can be recycled.
- Provide residence with a recycling bin to store and transport recyclables.
- Impose a by-law that enables the municipality to fine those who don’t recycle.
- Adopting a new collection technology in the parks and campgrounds.

A draft of the report was presented to municipal staff, council, and the Waste Diversion Group. Feedback from this consultation process has been used as part of the development of this Waste Management Plan.
8.0 STUDY SUMMARY AND RECOMMENDATIONS

The purpose of this study can be summarized as follows:

1) To assess the performance of the Municipality's current waste management system, and to develop projections regarding future waste management practices including waste volumes, types, and sources.

2) To assess the Municipality's current waste diversion strategies and to identify and assess alternative diversion approaches for potential future consideration, such as:
   - Solid waste collection systems,
   - Public promotion, education and incentives,
   - Expansion of recyclable materials,
   - User pay systems,
   - Municipal by-laws,
   - Organics diversion, etc.

3) To review the technical and financial merits of each of the proposed waste collection and diversion initiatives and to compare the positives and negatives of each initiative.

4) To evaluate residual waste disposal options with respect to the long-term waste management plan that is most suitable to the Municipality.

The options investigated as part of this study are presented to the Municipality to assist in developing a long-term waste management program in consideration of existing policy, legislation, status of waste management practice in Ontario, and the Municipality-specific waste production characteristics. Ultimate selection of the options is to be made by the Municipality with consideration of public comment and the social, environmental, and economic applicability of the options. Presented in the following sections is a summary of the findings, which have been described in more detail within the report.

It should be noted, that where the potential applicability of specific options are considered uncertain, further study may be warranted. Additionally, where waste management options rely on third parties, further agreements and commitments may be sought to establish applicability. Prior to the selection of any one option, we recommend that continued study and review of applicability of the option be conducted as further information becomes available.

8.1 ALTERNATIVE PREVENTION, DIVERSION, AND COLLECTION SYSTEM OPTIONS

The unique geography and low population density of the Municipality offers many logistical and economic challenges relative to less rural municipalities. Despite these challenges, the Municipality has managed to provide a relatively cost efficient waste management program. As previously noted, the current system offers a mixture of curbside and dumpster garbage collection and depot blue box collection. Under this program, the Municipality has a five year average diversion rate of 24%, which is only slightly below their municipal grouping (i.e., 25.6% in 2010), but is well below the Provincial average (44% in 2010) and the Provincial goal of 60%.
In particular, it is noted that the disposal rate for residential waste is approximately 110 kg/cap (approximately 15%) higher than the Municipality’s grouping.

While achieving the provincial goal of 60% is possible, it is recognized that the Municipality would likely be required to invest in full curbside collection of garbage, organics and recyclables. At this time, it is also recognized that the applicability of these types of collection systems are typically limited to jurisdictions with a larger population base and/or are more geographically central (where service sharing or third party facilities are available). Consequently, as part of the waste management planning, it is important for the Municipality to determine their diversion targets, budget, and implementation timeframes.

Based on the findings of this study and the initiatives identified within the WRS, it appears that an economically feasible approach towards an increase in prevention and diversion would be to remove the dumpsters and expand curbside collection to those areas. As discussed in Section 4.2, households serviced by dumpsters typically produce more residual waste. The removal of the dumpsters and the expansion of curbside garbage collection would also allow for better oversight of waste disposal habits and easier enforcement of bag limits, garbage bag tags, and recycling By-laws if the Municipality choose to impose such initiatives.

The implementation of the user pay system (garbage bag tags) has been proven by many municipalities to reduce the amount of residual waste generation by encouraging residents to become more conscious of their residual waste generation and disposal habits. Typically, bag limit/user pay systems in Ontario will charge users $1.00 to $3.00 per bag of household garbage and may limit disposal to one or two bags a week. The revenue gained through garbage bag tags would off-set the extra costs associated with expanding curbside service to those currently serviced by dumpsters. It is estimated that a user pay system in a full curbside garbage collection scenario can increase residential diversion rate from 24% to between 30% and 40%.

Other diversion initiatives the Municipality could consider in the short-term include:

- Enhancement of recycling depots
- Provision of free blue boxes
- IC&I outreach and collaboration
- Creation of additional waste diversion streams
- Promote reuse buildings
- Provide drop-off bins for clothing donations
- Further encourage the use of backyard composters
- Inform residents of leaf and yard waste diversion options
- Distribution of information materials that include collection schedules and detailed information on new and existing waste diversion programs
- Educational initiatives that provide information to residents regarding waste diversion initiatives and details, such as acceptable and unacceptable materials
- Partner with local campgrounds, tourist offices and businesses to promote recycling and waste diversion and inform tourists of the diversion programs available in the Municipality
Based on the review provided within this study, it appears that remaining with the use of contracted services for recycling collection, processing, and sales and waste collection is most feasible for the Municipality.

Following the implementation of the diversion initiatives put forth by the Municipality, we recommend that the Municipality re-evaluate their program performance with their diversion targets and budgeting constraints. At that time, a review of diversion and service options (as provided herein) could be conducted and implemented, if warranted. Should alternative collection options be considered in the future, further review in coordination with collection contractors and processing facilities is recommended.

8.2 Residual Waste

The Municipality is considered to be in a relatively good position, in terms of disposal options, due primarily to the historically approved capacity at the Eastnor and Lindsay landfill sites. At this time, future development of that capacity is considered to be the Municipalities most viable waste disposal option as incineration and thermal technologies are not considered to be economically feasible for the Municipality based on the limited scale of waste production and geographic location.

In the short-term, it is recommended that the Municipality continue to utilize their existing capacity while focusing on increasing the site life through continued diversion and operational improvements.

Within the next five years it is recommended that the Municipality begin the application process for the development of additional capacity at the Eastnor and/or Lindsay landfill sites. This will help secure additional waste disposal capacity for the Municipality before the existing available capacity is exhausted (estimated to be in 10 years). The development of additional landfill capacity should plan for 25 years of site life.

Based on the rapidly changing regulatory and science framework of waste disposal options, we recommend that the Municipality stay abreast of developments. In particular, evaluation of a third-party thermal/incineration program should be considered, in the event one becomes available.

8.3 Summary of Recommendations

As noted, to achieve the Provincial 60% diversion rate the Municipality would be required to make significant service changes to its current program such as removing the dumpsters and implementing a full curbside collection system with SSO. However, it is recognized that these service changes would require an increased level of investment and community support.

Therefore, in light of the information provided in this study, we recommend that the Municipality review their diversion targets, implementation timeframe, and budget to select the options they wish to pursue. Although recommendations have been provided herein, only the Municipality can decide what programs they wish to implement and what level of resources are available to implement the programs.
Based on the review of the information collected as part of this study and feedback gained through the consultation process, the recommendations that are considered to be most applicable to the Municipality at this time have been summarized in Table 8-3. Specific information regarding each recommendation and other options available are provided within the body of this report and in the Tables referenced below.

### Table 8-3: Summary of Recommendations

<table>
<thead>
<tr>
<th>Category</th>
<th>Implementation Timeframe</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Collection / Reduction / Diversion and WRS (Table 4-2 and 6-1)</td>
<td>Annually</td>
<td>Review and Evaluate Residual Waste Collection Options and Incentive Programs, Promotion and Public Education Program, Training of Key Program Staff, Explore Additional Waste Diversion Streams, Enhancement of Recycling Depots, Provision of Free Blue Boxes, IC&amp;I outreach and collaboration, Evaluate SSO Collection System, Evaluate Curbside Recycling Collection</td>
</tr>
<tr>
<td>Residual Waste (Table 5-1)</td>
<td>Short-term</td>
<td>Evaluate Preferred Future Landfill Options for Lindsay and/or Eastnor</td>
</tr>
<tr>
<td></td>
<td>Within 5 Years</td>
<td>Initiate Application Process for Future Landfilling at Eastnor and/or Lindsay</td>
</tr>
<tr>
<td></td>
<td>Long-term</td>
<td>Close St. Edmunds and Consolidate Waste Operations to Lindsay and/or Eastnor</td>
</tr>
<tr>
<td>Monitoring and Continual Improvement</td>
<td>On-going</td>
<td>Monitor Programs to Compare Benchmarks to Targets/Goals, Review Program Initiatives and Update Based on Results of Monitoring, Stay Abreast of Diversion and Waste Disposal Options</td>
</tr>
</tbody>
</table>

### 9.0 IMPLEMENTATION, MONITORING, AND CONTINUAL IMPROVEMENT

Once program initiatives have been implemented and established, it is important to monitor the performance of the initiatives against the base line performance of the current system. It is recognized that the Municipality currently monitors residential waste generation and disposal rates for annual submission to the WDO. This information is gathered through recycling tonnages reported by the recycling contractors, weigh scale data recorded by landfill site attendants, and other program information such as composters sold by the Municipality, etc.

These monitoring practices have aided in determining the Municipality's current performance relative to other municipalities and has also aided in establishing a baseline for future program evaluations. It is noted that the Municipality's current monitoring system for waste received at the landfill sites is very comprehensive in that the various waste material types (e.g., asphalt shingles, furniture, wood, etc.) and source of the material (i.e. residential or IC&I) are recorded.
For operational purposes the remaining capacity and capacity used in the landfills is also monitored on an annual basis through topographic surveys.

To further enhance diversion records, it is recommended that the Municipality estimate the materials diverted through the reuse buildings.

Based on the changing regulatory framework and developments in the waste management sector, it is important for the Municipality to stay abreast of diversion and waste disposal options. In particular, availability of third party systems may influence recommendations provided herein. Therefore, it is recommended that a review of the findings of this Waste Management Plan be completed at least every 5-years.

Respectfully submitted,

GAMSBY AND MANNEROW LIMITED,

Per:

D.C. Sinclair, B.Sc., A.Sc.T.

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Province of Ontario
- Ministry of the Environment (MOE)
  - Environmental Protection Act (EPA)
  - Waste Diversion Act (WDA)
  - Ontario’s 60% Waste Diversion Goal – A Discussion Paper (June 10, 2004)
- Office of the Auditor General of Ontario
  - 2010 Annual Report
- Waste Diversion Ontario (WDO)
  - 2006 – 2010 Municipal Datacall
  - Blue Box Program Plan (BBPP) – April 29, 2010
  - Blue Box Program Enhancement and Best Practices Assessment Project Vol. 1 (July 31, 2007)
  - Blue Box Program Enhancement and Best Practices Assessment Project Vol. 2 (July 6, 2007)
  - Guide to the Blue Box Program (October 17, 2007)
  - Waste Electrical & Electronic Equipment Program Plan (July 10, 2009)
  - Municipal Hazardous or Special Waste Program Plan (November 26, 2007)
  - Used Tire Program Plan (February 27, 2009)

Bruce County
- Official Plan (August 2011)
- Website

Municipality of Northern Bruce Peninsula
- Strategic Plan (June 2008)
- Website
- Waste & Recycling Programs Pamphlet
- Staff input

Annual Monitoring Reports
- Eastnor Landfill – 2010 Annual Monitoring Report, Gamsby and Mannerow Ltd
- Lindsay Landfill – 2010 Annual Monitoring Report, Gamsby and Mannerow Ltd
- St Edmunds Landfill – 2010 Annual Monitoring Report, Gamsby and Mannerow Ltd

Other Resources
- The Composting Council of Canada – Composting Processing Technologies
LONG-TERM WASTE MANAGEMENT PLAN
MUNICIPALITY OF NORTHERN BRUCE PENINSULA

APPENDIX “A”
WASTE RECYCLING STRATEGY
WASTE RECYCLING STRATEGY
CIF No. 293

prepared for:

THE MUNICIPALITY OF
NORTHERN BRUCE PENINSULA

Our File: 210268
April 2012

GAMSBY AND MANNEROW LIMITED
CONSULTING PROFESSIONAL ENGINEERS
GUELPH – OWEN SOUND – LISTOWEL – KITCHENER – EXETER
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1.0 INTRODUCTION

This Waste Recycling Strategy (WRS) was initiated by the Municipality of Northern Bruce Peninsula (Municipality) to develop a plan to increase the efficiency and effectiveness of the current recycling programs and maximize the amount of blue box material diverted from disposal. Specifically, the purpose of this recycling plan is to improve service, use and cost efficiency, and increase the site life of the municipal landfills through adoption of 'Best Practices’. This plan will help build upon the Municipality’s commitment to the environment and create the opportunity to receive increased funding from Waste Diversion Ontario (WDO), as funding distribution is increasingly dependent on the performance of the Municipality’s recycling program and adoption of ‘Best Practice’ initiatives.

It is the responsibility of the Municipality to manage their own residential solid waste through offering and maintaining a range of waste management services which currently include:

- Weekly curbside pick-up and dumpster service for household waste,
- Five recycling depot locations,
- Three municipal waste disposal sites, and
- Free drop-off of tires and electronics at the municipal landfills.

The Municipality faces a number of waste management challenges, which this WRS will help address. In particular these challenges include, a low population density, limited accessibility to residents due to the geography, high seasonal and transient population, and lack of neighbouring municipalities.

This WRS was developed with funding support from the Continuous Improvement Fund (CIF) and using the CIF's Guidebook for Creating a Municipal Waste Recycling Strategy (March 2010). This WRS generally follows the format structure of the template provided within the CIF Guidebook.

2.0 OVERVIEW OF THE PLANNING PROCESS

This WRS was prepared by Gamsby and Mannerow Ltd. in consultation with the Municipality.

In developing the WRS the following steps were completed:

- A review and an evaluation of the current system.
- Estimating the amount of material available for recycling and capture rates.
- Assess current trends, practices, and future needs.
- Develop a preferred inventory of potential alternative recycling diversion options.

To ensure the public and local stakeholders were able to participate in the preparation of this WRS, stakeholder interviews including circulation of a survey to residents and business owners were completed. For more details on our public consultation process, see Section 4.
3.0 STUDY AREA

The study area for this WRS includes the Municipality of Northern Bruce Peninsula.

This WRS will address the following sectors:

- fulltime residents,
- seasonal residents,
- campgrounds and parks, and
- small businesses.

4.0 PUBLIC CONSULTATION PROCESS

The public consultation process followed in the development of this WRS consisted of the following activities:

- interviews with stakeholders,
- survey advertisement in local paper,
- internet survey, and
- mail-out and hand-out survey.

The following stakeholder groups were included in this consultation process:

- The Waste Diversion Group,
- the public,
- private camp grounds,
- Parks Canada, and
- small businesses.

The response from the public and stakeholders included:

- Adding more recycling depot locations.
- Ensure recycling depots were clearly labeled and tidy.
- Provide curbside recycling pick-up service.
- Impose bag limits/user pay.
- Discontinue dumpster service.
- Circulate a newsletter of which items can be recycled.
- Provide residence with a recycling bin to store and transport recyclables.
- Impose a by-law that enables the municipality to fine those who don’t recycle.
- Adopting a new collection technology in the parks and campgrounds.

A complete list of public and business responses are provided in the survey report enclosed in Appendix B.
5.0 STATED PROBLEM

Management of municipal solid waste, including the diversion of blue box materials, is a key responsibility for all municipal governments in Ontario. The factors that encourage or hinder municipal blue box recycling endeavours can vary greatly and depends on a municipality’s size, geographic location and population.

The key drivers that led to the development of this WRS include:

- Shrinking landfill capacity
- Opportunity to improve recycling service and convenience for residents and visitors
- Opportunity to increase service efficiency and minimize costs
- Increase funding through optimizing the recycling program and adopting ‘Best Practice’ initiatives
- Opportunity to conserve landfill space and avoid expensive disposal alternatives
- Environmental conservation

6.0 GOALS AND OBJECTIVES

The goals and objectives identified as part of the WRS are presented in the following table:

Table 1: Waste Recycling Goals and Objectives

<table>
<thead>
<tr>
<th>Goals</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>To maximize diversion of municipal solid waste through the recycling program</td>
<td>• Divert 20% of municipal solid waste through the blue box program by 2016</td>
</tr>
<tr>
<td>To maximize capture rates of blue box materials through existing and future programs</td>
<td>• Meet WDO capture rate of 70% of available recyclables through the blue box program by 2025</td>
</tr>
<tr>
<td>To minimize costs of recycling in our community</td>
<td>• Maintain recycling costs at or below the provincial average</td>
</tr>
<tr>
<td>To expand the lifetime of our landfill</td>
<td>• Add 2 years to the lifespan of the remaining approved landfill capacity by increasing blue box diversion</td>
</tr>
</tbody>
</table>
7.0 CURRENT SOLID WASTE TRENDS, PRACTICES, AND SYSTEM AND FUTURE NEEDS

7.1 COMMUNITY CHARACTERISTICS

In 2010, the Municipality of Northern Bruce Peninsula reported a permanent population of 3,850. Total households or dwellings reported for the Municipality is 4,870. All of which, are considered single-family households. Of these households only 1,738 are occupied by permanent residents with the remaining 3,132 being occupied by seasonal residents. These seasonal households are estimated to account for an equivalent permanent population of 1,305. This is based on an average of 2.5 people per household and the estimation that 6 seasonal households would generate the equivalent annual volume of refuse as 1 permanent household. Considering the seasonal residential component, the population is more accurately estimated to be 5,155 with regard to residents serviced by the municipal waste disposal program.

7.2 CURRENT WASTE GENERATION AND DIVERSION

For the purpose of this report, data on waste generation and blue box diversion rates from 2006 through 2010 for the Municipality have been included within this report to determine “existing” waste disposal practices, or benchmark values. Data from the last five years has been included due to variations in reported waste generation and diversion rates to obtain an overall average.

From 2006 to 2010, the Municipality has generated an average of 2,570 tonnes of residential solid waste per year. Of this, an average of 312 tonnes, or 12 percent, of waste has been diverted through the blue box program.

Table 2: Blue Box Diversion Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Waste Generated</th>
<th>Papers</th>
<th>Metals</th>
<th>Plastics</th>
<th>Glass</th>
<th>Diverted Blue Box Materials</th>
<th>Proportion of Total Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>3,982</td>
<td>193</td>
<td>20</td>
<td>27</td>
<td>0</td>
<td>239</td>
<td>6%</td>
</tr>
<tr>
<td>2007</td>
<td>1,732</td>
<td>233</td>
<td>28</td>
<td>37</td>
<td>0</td>
<td>298</td>
<td>17%</td>
</tr>
<tr>
<td>2008</td>
<td>1,788</td>
<td>275</td>
<td>31</td>
<td>41</td>
<td>0</td>
<td>347</td>
<td>19%</td>
</tr>
<tr>
<td>2009</td>
<td>2,317</td>
<td>256</td>
<td>34</td>
<td>56</td>
<td>0</td>
<td>335</td>
<td>14%</td>
</tr>
<tr>
<td>2010</td>
<td>3,033</td>
<td>263</td>
<td>32</td>
<td>43</td>
<td>0</td>
<td>339</td>
<td>11%</td>
</tr>
<tr>
<td>Average</td>
<td>2,570</td>
<td>244</td>
<td>29</td>
<td>41</td>
<td>0</td>
<td>312</td>
<td>12%</td>
</tr>
</tbody>
</table>

Notes:
(1) Values reported in tonnes unless otherwise stated.
(2) Metals and plastics for 2006 to 2008 and 2010 were estimated using 43% and 57%, respectively, of total reported plastics and commingled blue box recyclables for metals and plastics. These percentages are derived from the ratio of metals and plastics reported for 2009.

As shown in the table below, paper based material such as boxboard, cardboard, news print, etc. accounts for almost 80% of blue box material recycled. Metals and plastics account for 9% and 13%, respectively with glass at 0%. Although glass is reported to be 0%, it should be noted that the Municipality does collect the material through their blue box program. However, in recent years, no glass from the Municipality has been recycled due to market conditions.
### Table 3: Average Diversion Rates of Blue Box Materials (2006 – 2010)

<table>
<thead>
<tr>
<th>Blue Box Material</th>
<th>Proportion of Total Waste Generated</th>
<th>Proportion of Diverted Blue Box Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papers</td>
<td>9%</td>
<td>78%</td>
</tr>
<tr>
<td>Metals</td>
<td>1%</td>
<td>9%</td>
</tr>
<tr>
<td>Plastics</td>
<td>2%</td>
<td>13%</td>
</tr>
<tr>
<td>Glass</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

#### 7.3 Municipal Performance

To complete an evaluation of the Municipality’s performance, the diversion rates of the Municipality are compared to the Municipality’s grouping (Rural Depot – South), the municipal grouping of Rural Collection – South and the provincial average. The diversion data used for performance comparison is published by WDO.

### Table 4: Municipal Blue Box Diversion Performance Comparison

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Diversion Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipality of Northern Bruce Peninsula (2006 – 2010)</td>
<td>12%</td>
</tr>
<tr>
<td>Municipal Grouping: Rural Depot – South (2010)</td>
<td>17%</td>
</tr>
<tr>
<td>Municipal Grouping: Rural Collection – South (2010)</td>
<td>18%</td>
</tr>
<tr>
<td>Provincial (2010)</td>
<td>19%</td>
</tr>
</tbody>
</table>

**Notes:**
1. The municipal grouping of Rural Depot – South is a group of municipalities as developed by WDO with similar characteristics that includes the Municipality of Northern Bruce Peninsula.
2. Township of Augusta was not included in the calculation of the diversion average for the Rural Depot – South municipal due to a reporting error within the WDO municipal datacall.

As shown in the table above, the Municipality’s diversion rate is below that of their municipal grouping, the Rural Collection – South municipal grouping, and provincial average. It should be noted that a higher diversion rate of blue box recyclables, is expected for the Rural Collection – South municipal grouping and the province due the curbside collection programs. However, comparing the municipal grouping average provides a good indicator of the Municipality’s performance relative to similar municipalities with similar programs.

#### 7.4 Potential Waste Diversion

To estimate the composition of the Municipality’s waste, approximations for the composition of waste for the District Municipality of Muskoka were used. These approximations are taken from the CIF Guidebook for Creating a Municipal Waste Recycling Strategy (Guidebook). The Guidebook contains waste composition approximations for several municipalities which are based on single-family waste audit data collected from the Stewardship Ontario’s Waste Audit program. The waste composition approximations for the District Municipality of Muskoka were used due to the similarities of the two municipalities, most notably; the high proportion of seasonal residents and the same list of residential blue box materials collected by each municipality.
Figure 1: Residential Composition of Waste

Assuming the same composition of waste for the Municipality of Northern Bruce Peninsula as for the District Municipality of Muskoka, a total of 1234 tonnes (48% of 2,570 tonnes of total waste generation) of blue box recyclable materials are available for diversion. From 2006 to 2010 an average of 312 tonnes per year has been recycled. Assuming a waste composition of 48% blue box recyclables, approximately 900 tonnes of recyclables remain in the waste stream. Estimates of blue box material available for diversion are listed in the following table.

Table 5: Current and Potential Diversion

<table>
<thead>
<tr>
<th>Material</th>
<th>Total Available in Waste Stream (tonnes/year)</th>
<th>Available Recyclables Captured</th>
<th>Recyclables Remaining in Waste Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tonnes</td>
<td>%</td>
</tr>
<tr>
<td>Papers</td>
<td>720</td>
<td>244</td>
<td>34%</td>
</tr>
<tr>
<td>Metals</td>
<td>77</td>
<td>29</td>
<td>38%</td>
</tr>
<tr>
<td>Plastics</td>
<td>231</td>
<td>41</td>
<td>18%</td>
</tr>
<tr>
<td>Glass</td>
<td>206</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>1234</td>
<td>312</td>
<td>25%</td>
</tr>
</tbody>
</table>

From 2006 to 2010, the Municipality’s average capture rate of available recyclables in the waste stream is 25%. This is below that of the provincial WDO target of 70% that was set for the end of 2011. Relative to the provincial target, the Municipality’s capture rate is considered low. However, it is noted that most if not all Municipality’s in Ontario have not met this target. As illustrated in the graph below, the Municipality is achieving greatest capture rates with paper and metals, and its poorest capture rates with plastics. It should be noted that glass is collected by the Municipality, but is not marketed due to economic reasons. As a result, the amount of glass captured is not recorded.
7.5 Existing Programs and Services

Collection services of regular waste are provided to the residents using contracted curbside service and drop-off at dumpsters and landfills. At present, approximately two thirds of residents are serviced by curbside collection and the remaining one third are serviced by dumpsters. Residents using curbside collection are limited to 2 bags/week and can dispose of 2 free bags before tipping fees apply at the landfills. There are currently no limitations or enforcements in place at the dumpster drop-off locations.

There is currently no blue box curbside collection service. A total of five depot locations are available to residents. These include the three landfills and two depot locations located along Highway 6. Recyclable materials are collected at the depots by Miller Waste Systems and are taken to the Miller Waste Transfer Station located in Owen Sound.

The current list of recyclable items accepted at the depots is included in the following table.
Table 6: Recyclable Blue Box Materials

<table>
<thead>
<tr>
<th>Metal</th>
<th>Plastic</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Food tins and pop cans</td>
<td>• #1 PETE plastic containers &amp; trays</td>
</tr>
<tr>
<td>• Steel paint cans</td>
<td>• #2 HDPE screw-top plastic bottles (excluding motor oil bottles)</td>
</tr>
<tr>
<td>• Aluminum foil and pie pans</td>
<td>• #3 V or PVC plastic bottles</td>
</tr>
<tr>
<td></td>
<td>• #4 LDPE plastic bottles</td>
</tr>
<tr>
<td></td>
<td>• #5 PP plastic bottles, tubs, lids and bottle caps</td>
</tr>
<tr>
<td></td>
<td>• #7 OTHER plastic bottles</td>
</tr>
<tr>
<td></td>
<td>• Tupperware</td>
</tr>
<tr>
<td>Glass</td>
<td>Paper</td>
</tr>
<tr>
<td>• Bottles and jars</td>
<td>• Newspapers and inserts</td>
</tr>
<tr>
<td></td>
<td>• Magazines</td>
</tr>
<tr>
<td></td>
<td>• Catalogues</td>
</tr>
<tr>
<td></td>
<td>• Office paper</td>
</tr>
<tr>
<td></td>
<td>• Construction paper</td>
</tr>
<tr>
<td></td>
<td>• Envelopes (with the plastic windows removed)</td>
</tr>
<tr>
<td></td>
<td>• Paperback books</td>
</tr>
<tr>
<td></td>
<td>• Telephone books</td>
</tr>
<tr>
<td></td>
<td>• Gable top cartons (milk and juice cartons)</td>
</tr>
<tr>
<td></td>
<td>• Tetra Pak cartons (juice, wine, soup boxes, etc.)</td>
</tr>
<tr>
<td></td>
<td>• Wax &amp; plastic coated paper cups</td>
</tr>
<tr>
<td></td>
<td>• Paper bags</td>
</tr>
<tr>
<td></td>
<td>• Box board (cereal, frozen food, tissue boxes, etc.)</td>
</tr>
<tr>
<td></td>
<td>• Paper egg cartons</td>
</tr>
<tr>
<td></td>
<td>• Greeting cards</td>
</tr>
<tr>
<td></td>
<td>• Gift wrap</td>
</tr>
</tbody>
</table>

Disposal and recycling services are paid for primarily through the tax base, tipping fees, scrap metal revenue, and grants. Revenue from marketed blue box recyclables revenue is not received by the Municipality. Revenue from recyclables is factored into the contractor costs.

Collection contracts for regular waste and blue box recyclables are renewed on an annual basis.

In 2010 the blue box recycling program cost the Municipality approximately $78,000 to operate. This equates to approximately $230 per tonne and $16 per household. These recycling costs are well below the Municipal average and are similar to the provincial average. The following figure shows the Municipality’s recycling costs compared to the provincial average and to those municipalities within the Rural Depot – South municipal grouping.
7.6 **ANTICIPATED FUTURE WASTE MANAGEMENT NEEDS**

Based on historic trends, it is anticipated that the population will increase slightly while residential solid waste generation, on a per capita basis, will remain similar over the next 10 years. Therefore, overall waste generation is expected to increase proportionally to the population.

### 7.6.1 Projected Population

The census data reports a municipal population of 3,850 permanent residents in 2006, 3,599 in 2001 and 3,500 in 1996. This represents an increase in permanent residents of approximately 1% per year on average. By applying this growth rate and using the linear regression model, the projected permanent population to the year 2021 has been estimated. The calculated seasonal component based on the number of seasonal homes, as noted in Section 7.1, has also been applied to estimate the total contributing population. For more detail regarding the seasonal to permanent population equivalent refer to Section 7.1.

#### Table 7: Population Projection

<table>
<thead>
<tr>
<th>Year</th>
<th>Permanent Population</th>
<th>Seasonal Permanent Equivalent Population</th>
<th>Total Contributing Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>3,850</td>
<td>1,305</td>
<td>5,155</td>
</tr>
<tr>
<td>2011</td>
<td>4,046</td>
<td>1,372</td>
<td>5,418</td>
</tr>
<tr>
<td>2016</td>
<td>4,253</td>
<td>1,442</td>
<td>5,694</td>
</tr>
<tr>
<td>2021</td>
<td>4,470</td>
<td>1,515</td>
<td>5,985</td>
</tr>
</tbody>
</table>

(1) Contributing Population = permanent population + seasonal permanent equivalent population (1 seasonal household = $\frac{1}{4}$ regular household (2.5 people per regular household))

(2) Future population is extrapolated using a 1% increase per year
7.6.2 Projected Waste Generation Rates

Based on the population growth model and the maintenance of the current per capita residential waste disposal rate (499 kg per capita), it is anticipated that annual solid waste generation will be approximately 3,000 tonnes per year by 2021. The table below summarizes the projected solid waste generation rates and estimated available blue box materials.

| Table 8: Projected Solid Waste Generation Rates and Available Blue Box Material |
|-------------------------------------------------|-----------------|-----------------|-----------------|
| Population                                      | 2011            | 2016            | 2021            |
| Total Waste (tonnes)                            | 5,418           | 5,694           | 5,985           |
| Blue Box Material Available (tonnes)            | 2,570           | 2,841           | 2,987           |
| WDO Target of 70% Capture Rate                  | 864             | 955             | 1,004           |

(1) Available blue box material = 48% of total waste based on waste audit data for the District Municipality of Muskoka.

8.0 RECOMMENDED DIVERSION OPTIONS

A number of diversion options were reviewed for consideration in the recycling plan for the Municipality. Each diversion option was scored based on a number of criteria which included the following:

- **Waste Diversion Potential** – This refers to how much waste an option may potentially help to divert. Some options may divert more waste than others, while other options may not directly divert waste but instead support other programs or initiatives that do.

- **Proven Results** – Some options are considered proven, while others may be newer with less documentation regarding their efficacy.

- **Economically Feasible** – This refers to whether an option is economically feasible for the municipality considering it. Municipalities will need to weigh the cost of the option against their ability to afford it and the resulting benefit.

- **Accessibility to Public** – This considers if the option will be easy or difficult for the public to access or use. This will depend in large part on how the option interfaces with the target user.

- **Ease of Implementation** – Some options are less costly and easier logistically and politically to implement than others. This criterion considers the level of cost and effort involved in implementing the option.

A summary of the diversion options and their scoring is provided in Appendix A.
Based on the scores, the diversion options were divided into two categories; Priority Initiatives and Future Initiatives. Diversion options scoring of 80 and above are considered Priority Initiatives and diversion options scoring 79 and below are considered Future Initiatives. The Priority and Future Initiatives are presented in the following Sections.

8.1 PRIORITY INITIATIVES

8.1.1 Promotion and Public Education Program
Promotion and public education (P&E) programs are crucial for ensuring the success of local recycling programs. Well-designed and implemented education and promotion programs can have impacts throughout the municipal recycling program, including participation, collection, processing, and marketing of materials. Furthermore, having a P&E plan contributes toward the amount of WDO funding a municipality receives as identified in best practice section of the WDO municipal datacall. For example, benefits of promotion and public education programs include:

- Greater participation levels and community involvement
- Higher diversion rates
- Less contamination in recovered materials
- Lower residue rates at recycling facilities

Stewardship Ontario has prepared a Recycling Program Promotion and Education Workbook and other materials. These are available on Stewardship Ontario’s Recyclers’ Knowledge Network (http://www.stewardshipontario.ca/service_providers).

8.1.2 Training of Key Program Staff
A well-trained staff can lead to greater cost and time efficiencies and improved customer service. 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 Municipal Waste Association (MWA), Waste Diversion Ontario (WDO), the association of Municipalities of Ontario (AMO), Stewardship Ontario and the Solid Waste Association of Ontario (SWANA) are good sources of information guides, workshops, or training on recycling or solid waste management.

8.1.3 Bag Limits/User Pay
Bag limits restrict the number of bags of garbage a resident can dispose of per collection. This encourages residents to divert more recyclable materials in order to not exceed the bag limit.

Bag limits can also be used in conjunction with bag tags (e.g., user fees). For example, some municipalities allow residents to dispose of a number of bags for free, with additional bags requiring a purchased bag tag.
8.1.4 Enhancement of Recycling Depots
Where curbside collection programs are not feasible, recycling depots provide an inexpensive means for municipalities to divert recyclable materials from disposal. Enhancements to recycling depots may include:

- Providing satellite depots to improve public access and convenience;
- Enhancing the conditions at the landfill depot (e.g., landscaping, general cleanliness, maintenance);
- Incorporating friendly, easy-to-read signage;
- Providing additional part-time staff to address seasonal fluctuations and visiting traffic.

8.1.5 Provision of Free Blue Boxes
Providing free blue boxes helps to ensure that residents have sufficient storage capacity for recyclables. While this is initially done at the roll-out of the blue box program, many municipalities offer free boxes to new residents or residents moving into new homes. Some municipalities also offer one extra free box or bin for residents per year. However, in municipalities offering only basic recycling services, one blue box container may be sufficient.

8.1.6 Expansion of Recyclable Blue Box Materials
For maximum diversion a wide variety of recyclable materials is required. Deciding on which recyclable materials to include in the blue box program typically depend on the availability, collection costs, and market viability for the respective material. Markets are constantly changing; therefore, it is important for municipalities to stay abreast of material markets. In the short-term, a recyclable material that the Municipality could consider adding to the blue box program is polystyrene packing material. The recycling polystyrene may be particularly advantageous to the Municipality due to the low density and bulkiness of the material. The physical properties of the material do not allow it to compact well; therefore, taking up more landfill space.

8.1.7 IC&I Outreach and Collaboration
Although the Municipality is not responsible for the management of IC&I waste, the majority of IC&I waste generated within the Municipality is disposed of in the municipal landfills. A collaboration between the Municipality and local businesses, including but not limited to local campgrounds, the transportation ferry and hotels, creates the opportunity to divert more waste from the landfill through recycling while still meeting the needs of the businesses. For example, the Municipality could consider providing local businesses with more accessible recycling opportunities. It is recognized that certain businesses can generate a relatively high volume of recyclables, and by providing the added convenience, there is the potential to increase capture rates and diversion.

9.0 FUTURE INITIATIVES

9.1 CURBSIDE COLLECTION
The efficiency of curbside collection of recyclables is dependent on a number of factors, including the rural nature of the community, the types of recyclable materials included in the recycling program, the type of equipment used to collect the recyclables, among other things.
When considering collection frequency, bi-weekly collection of recyclables can be more cost-effective than weekly collection, assuming that collected tonnages remain the same overall and residents have enough storage capacity to accommodate storing their blue box materials for two weeks.

9.2 MULTI-MUNICIPAL COLLECTION AND PROCESSING OF RECYCLABLES

Small and medium-sized municipalities often face considerable cost and capital challenges when looking to collect and process recyclables from its residents. However, working collaboratively with other municipalities to provide these services can increase economies of scale and allow for the sharing of resources.

10.0 IMPLEMENTATION PLAN

The implementation plan involves breaking down the initiatives into a series of steps, for which the diversion options will be implemented. Each of the diversion options and implementation steps are provided in the following table.
<table>
<thead>
<tr>
<th>Diversion Option</th>
<th>Priority Initiatives</th>
</tr>
</thead>
</table>
| Promotion and Public Education Program   | • Establish the level of financial resources available (an effective P&E program typically requires a budget of $1 per household)  
• Identify the target audience and messaging  
• Determine the type of media to be used (e.g., calendars; brochures; newsletters; newspaper; postings at depots, landfills, visitor centres, municipal website, etc.)  
• Develop and distribute communications materials |
| Training of Key Program Staff            | • Keep program staff current with emerging technologies  
• Communicate end goals and purpose of programs  
• Cross training of staff that rotate positions  
• Continue annual refresher training |
| Bag Limits/User Pay                      | • Determine bag limits and user pay fees  
• Remove dumpsters/expand garbage collection routes  
• Notify the public of bag limit/user pay system  
• Design and develop bag tags  
• Establish retail outlets to distribute bag tags |
| Enhancement of Recycling Depots          | • Establish financial resources available  
• Determine enhancement options (e.g., landscaping, provide satellite depots, improved signage, etc.)  
• Carry out enhancement options |
| Provision of Free Blue Boxes             | • Purchase recycling boxes and make available at municipal office  
• Notify public of availability |
| Expansion of Recyclable Blue Box Materials Polystyrene | • Determine market viability  
• Determine collection option (e.g., additional bin at depots)  
• Establish shipping and processing contract  
• Notify users of recyclables expansion and collection option |
| IC&I Outreach and Collaboration          | • Determine which businesses to focus on first and prepare meetings  
• Identify current barriers to recycling for the businesses  
• Identify and evaluate potential diversion options (e.g., provision of cardboard recycling bins)  
• Implement and monitor diversion initiatives |
| Curbside Collection                      | • Assess collection options and costs  
• Determine a collection option and make recommendation to council  
• Obtain necessary equipment and/or contracts  
• Notify users of recycling service changes |
| Multi-Municipal Collection and Processing of Recyclables | • Identify potential municipal partnerships  
• Identify service needs and goals of co-operative municipalities  
• Implement communication and working protocols  
• Establish a task group  
• Determine and document how the program will be funded  
• Identify a governance strategy for accountability, monitoring and decision making  
• Estimate costs and cost saving of the co-operative program  
• Implement strategies with least risk and build upon them |

Future Initiatives

- Assess collection options and costs
- Determine a collection option and make recommendation to council
- Obtain necessary equipment and/or contracts
- Notify users of recycling service changes

Multi-Municipal Collection and Processing of Recyclables

- Identify potential municipal partnerships
- Identify service needs and goals of co-operative municipalities
- Implement communication and working protocols
- Establish a task group
- Determine and document how the program will be funded
- Identify a governance strategy for accountability, monitoring and decision making
- Estimate costs and cost saving of the co-operative program
- Implement strategies with least risk and build upon them
It is recommended that certain priority initiatives be implemented in a timeline that allows for inclusion of the seasonal residents due to the high proportion of the seasonal population in the Municipality during the summer months. For example, the distribution of promotional and educational materials during the beginning of the summer months would reach more people than it would during the off-peak season for tourism (November to April).

Bag limits and user pay initiatives should be implemented in conjunction with the provision of free blue boxes. Free blue boxes will provide residents with storage capacity and increase the convenience of recycling when being face with bag limits and/or user fees. During this transition the Municipality should discontinue the use of unattended depot and dumpster services and expand the curbside collection for waste to those residents formerly serviced by dumpsters.

Provided in the table below, are the implementation timelines and estimated costs for the Priority Initiatives. The Future Initiatives are considered to be in the ‘long term’ (~5 years) and will be further evaluated with respect to implementation timelines and costs once the Priority Initiatives have been tested and/or established.

Table 10: Timelines and Estimated Costs of Priority Initiatives

<table>
<thead>
<tr>
<th>Diversion Option</th>
<th>Implementation Timeline</th>
<th>Estimated Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion and Public Education Program</td>
<td>Summer of 2012</td>
<td>Implementation: $5,000</td>
</tr>
<tr>
<td>Training of Key Program Staff</td>
<td>Ongoing</td>
<td>$1,500</td>
</tr>
<tr>
<td>Bag Limits/User Pay</td>
<td>Beginning of 2013</td>
<td>$15,000</td>
</tr>
<tr>
<td>Enhancement of Recycling Depots</td>
<td>Spring of 2012</td>
<td>$15,000</td>
</tr>
<tr>
<td>Provision of Free Blue Boxes</td>
<td>Beginning of 2013</td>
<td>$5,000</td>
</tr>
<tr>
<td>Expansion of Recyclable Blue Box Materials (Polystyrene)</td>
<td>Spring of 2012</td>
<td>$25,000</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>Implementation: $66,500</strong></td>
</tr>
</tbody>
</table>

Note:
(1) Operation cost for Bag Limits/User Pay Option includes expanded curbside collection costs and bag tag revenue
(2) Values in parentheses represent positive cash flow.

11.0 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 delay. The table below identifies contingencies for possible planning delays.
Table 11: Waste Recycling Strategy Contingencies

<table>
<thead>
<tr>
<th>Risk</th>
<th>Contingency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient funding</td>
<td>• Explore and apply for other funding sources</td>
</tr>
<tr>
<td></td>
<td>• Delay lower-priority initiatives</td>
</tr>
<tr>
<td></td>
<td>• Raise/implement user fees</td>
</tr>
<tr>
<td>Public opposition to planned recycling initiatives</td>
<td>• Improve public communications</td>
</tr>
<tr>
<td></td>
<td>• Engage community/stakeholders to discuss initiatives/recycling plan</td>
</tr>
<tr>
<td>Lack of available staff</td>
<td>• Prioritize department/municipal goals and initiatives</td>
</tr>
<tr>
<td></td>
<td>• Hire summer student to help with planning (may be available funding)</td>
</tr>
</tbody>
</table>

12.0 MONITORING AND REPORTING

The monitoring and reporting of the Municipality’s recycling program is considered a Blue Box program fundamental ‘best practice’ and will be a key component of this WRS. Once implementation of the strategy begins, the performance of the WRS will be monitored and measured against the baseline established for the current system. Once the results are measured, it is recommended that they be reported to Council and the public.

The approach for monitoring the Municipality’s waste recycling program is outlined in the table below.

Table 12: Recycling System Monitoring

<table>
<thead>
<tr>
<th>Monitoring Topic</th>
<th>Monitoring Tool</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total waste generated (by type and by weight)</td>
<td>Measuring of wastes and recyclables at disposal site/depots (e.g., weigh scale records)</td>
<td>Each load</td>
</tr>
<tr>
<td>Total waste landfilled</td>
<td>Monitoring landfill elevations through topographic surveys</td>
<td>Annually</td>
</tr>
<tr>
<td>Diversion rates achieved (by type and by weight)</td>
<td>Formula: (Blue box materials + other diversion) ÷ Total waste generated * 100%</td>
<td>Monthly</td>
</tr>
<tr>
<td>Waste disposed (by type and by weight)</td>
<td>Reconciliation of weigh scale tickets</td>
<td>Monthly</td>
</tr>
<tr>
<td>Program participation</td>
<td>Customer survey (e.g., telephone); monitoring recycling habits</td>
<td>Every 1 to 3 years</td>
</tr>
<tr>
<td>Customer satisfaction</td>
<td>Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office</td>
<td>Every 1 to 3 years</td>
</tr>
<tr>
<td>Opportunities for improvement</td>
<td>Customer survey (e.g., telephone); tracking calls/complaints received to the municipal office</td>
<td>On-going</td>
</tr>
<tr>
<td>Planning activities</td>
<td>Describe what initiatives have been fully or partially implemented, what will be done in the future</td>
<td>Annually</td>
</tr>
<tr>
<td>Review of Recycling Plan</td>
<td>A periodic review of the Recycling Plan to monitor and report on progress, to ensure that the selected initiatives are being implemented, and to move forward with continuous improvement</td>
<td>Every 3 to 5 years</td>
</tr>
</tbody>
</table>
Waste Recycling Strategy

Appendix A: Waste Recycling Option Scores
<table>
<thead>
<tr>
<th>Suitable? Y/N</th>
<th>Description of Options/Best Practices (For more information: More information: Blue Box Program Enhancement and Best Practices Assessment Project Final Report, Volume 1)</th>
<th>Criteria (Score out of 5)</th>
<th>Total Criteria Score</th>
<th>Total Criteria Score (out of 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Public Education and Promotion Program</td>
<td>4, 5, 5, 4, 5</td>
<td>23/25</td>
<td>92</td>
</tr>
<tr>
<td>Y</td>
<td>Training of Key Program Staff</td>
<td>3, 5, 5, n/a, 5</td>
<td>18/20</td>
<td>90</td>
</tr>
<tr>
<td>N</td>
<td>Optimization of Collection Operations</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>Bag Limits/User Pay</td>
<td>5, 5, 5, 4, 2</td>
<td>21/25</td>
<td>84</td>
</tr>
<tr>
<td>Y</td>
<td>Enhancement of Recycling Depots</td>
<td>4, 5, 5, 3, 5</td>
<td>18/25</td>
<td>88</td>
</tr>
<tr>
<td>Y</td>
<td>Provision of Free Blue Boxes</td>
<td>3, 4, 4, 5, 5</td>
<td>21/25</td>
<td>84</td>
</tr>
<tr>
<td>Y</td>
<td>Curbside Collection</td>
<td>5, 5, 2, 5, 2</td>
<td>19/25</td>
<td>76</td>
</tr>
<tr>
<td>Y</td>
<td>Expansion of Recyclable Blue Box Materials (Polystyrene)</td>
<td>3, 5, 3, 5, 5</td>
<td>21/25</td>
<td>84</td>
</tr>
<tr>
<td>N</td>
<td>Optimization of Processing Operations</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>Multi-Municipal Collection and Processing of Recyclables</td>
<td>3, 3, 4, n/a, 1</td>
<td>11/20</td>
<td>55</td>
</tr>
<tr>
<td>N</td>
<td>Standardized Service Levels and Collaborative Haulage Contracting</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>Outreach and Collaboration with the IC&amp;I Sector</td>
<td>4, 4, 4, n/a, 3</td>
<td>15/20</td>
<td>80</td>
</tr>
<tr>
<td>Y</td>
<td>Assess Tools and Methods to Maximize Diversion</td>
<td></td>
<td>Currently being done as part of the WRS</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>Following Generally Accepted Principles for Effective Procurement and Contract Management</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Waste Recycling Strategy

Appendix B: Waste Recycling Survey
Are you completing this survey on behalf of a business?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>14</td>
<td>12.2%</td>
</tr>
<tr>
<td>No</td>
<td>101</td>
<td>87.8%</td>
</tr>
</tbody>
</table>

How often do you recycle?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>5</td>
<td>4.3%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>17</td>
<td>14.8%</td>
</tr>
<tr>
<td>Usually</td>
<td>18</td>
<td>15.7%</td>
</tr>
<tr>
<td>Always</td>
<td>77</td>
<td>67%</td>
</tr>
</tbody>
</table>

If you selected sometimes or never, please indicate why.

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inconvenient</td>
<td>8</td>
<td>34.8%</td>
</tr>
<tr>
<td>No storage space for recyclables</td>
<td>8</td>
<td>34.8%</td>
</tr>
<tr>
<td>Unable to take recyclables to depot</td>
<td>3</td>
<td>13%</td>
</tr>
<tr>
<td>Not convinced that it makes a difference</td>
<td>5</td>
<td>21.7%</td>
</tr>
<tr>
<td>No interest</td>
<td>2</td>
<td>8.7%</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>13%</td>
</tr>
</tbody>
</table>

How often do you use the recycling depots?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly</td>
<td>36</td>
<td>32.7%</td>
</tr>
<tr>
<td>Biweekly</td>
<td>31</td>
<td>28.2%</td>
</tr>
<tr>
<td>Monthly</td>
<td>24</td>
<td>21.8%</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>20</td>
<td>18.2%</td>
</tr>
</tbody>
</table>

Which recycling depot do you use most often?
### Value
<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastnor Landfill &amp; Recycling Facility on West Road</td>
<td>9</td>
<td>8.9%</td>
</tr>
<tr>
<td>Eastnor Recycling Depot on Highway 6 in Ferndale</td>
<td>59</td>
<td>58.4%</td>
</tr>
<tr>
<td>Lindsay Landfill &amp; Recycling Facility on Ira Lake Road South of Miller Lake</td>
<td>9</td>
<td>8.9%</td>
</tr>
<tr>
<td>St. Edmunds Recycling Depot on Highway 6 just south of Tobermory</td>
<td>22</td>
<td>21.8%</td>
</tr>
<tr>
<td>St. Edmunds Landfill &amp; Recycling Facility on McArthur Road southwest of Tobermory</td>
<td>2</td>
<td>2%</td>
</tr>
</tbody>
</table>

### Beyond the 5 basic recyclable materials (Newsprint/paper, Glass, Aluminum Cans, Steel Cans, and #1 Plastics (e.g., water bottles)), please indicate which of the following items you recycle?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum packaging and foil</td>
<td>40</td>
<td>35.7%</td>
</tr>
<tr>
<td>Empty paint cans</td>
<td>33</td>
<td>29.5%</td>
</tr>
<tr>
<td>Plastic containers (e.g., yogurt and margarine containers)</td>
<td>91</td>
<td>81.3%</td>
</tr>
<tr>
<td>Paper coffee cups</td>
<td>32</td>
<td>28.6%</td>
</tr>
<tr>
<td>Corrugated cardboard</td>
<td>97</td>
<td>86.6%</td>
</tr>
<tr>
<td>Boxboard (e.g., cereal and cracker boxes)</td>
<td>90</td>
<td>80.4%</td>
</tr>
<tr>
<td>Milk and juice containers</td>
<td>59</td>
<td>52.7%</td>
</tr>
<tr>
<td>None of the above</td>
<td>7</td>
<td>6.3%</td>
</tr>
</tbody>
</table>

### How long does it take you to drive to the recycling depot you use most often?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 5 min</td>
<td>20</td>
<td>18%</td>
</tr>
<tr>
<td>5 to 10 min</td>
<td>50</td>
<td>45%</td>
</tr>
<tr>
<td>10 to 15 min</td>
<td>29</td>
<td>26.1%</td>
</tr>
<tr>
<td>more than 15 min</td>
<td>12</td>
<td>10.8%</td>
</tr>
</tbody>
</table>

### Do you store and transport your recyclables in a blue box?
<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>44</td>
<td>40%</td>
</tr>
<tr>
<td>No</td>
<td>66</td>
<td>60%</td>
</tr>
</tbody>
</table>

**What do you think would help you recycle more?**

<table>
<thead>
<tr>
<th>Item</th>
<th>Total Score</th>
<th>Overall Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curbside collection for recyclables</td>
<td>208</td>
<td>1</td>
</tr>
<tr>
<td>Were more informed about which materials could be recycled</td>
<td>181</td>
<td>2</td>
</tr>
<tr>
<td>Were provided with a blue box to store and transport recyclables</td>
<td>164</td>
<td>3</td>
</tr>
<tr>
<td>Additional drop-off locations for recyclables</td>
<td>139</td>
<td>4</td>
</tr>
</tbody>
</table>

*Total Respondents: 92*

1 Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

**Do you use a backyard composter for your plant based organic kitchen waste?**

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>36</td>
<td>32.1%</td>
</tr>
<tr>
<td>Usually</td>
<td>11</td>
<td>9.8%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>7</td>
<td>6.3%</td>
</tr>
<tr>
<td>Never</td>
<td>58</td>
<td>51.8%</td>
</tr>
</tbody>
</table>

**How many bags of garbage does your household produce in a typical week?**

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 1</td>
<td>49</td>
<td>43.4%</td>
</tr>
<tr>
<td>1 to 2</td>
<td>54</td>
<td>47.8%</td>
</tr>
<tr>
<td>3 to 4</td>
<td>8</td>
<td>7.1%</td>
</tr>
<tr>
<td>5 or more</td>
<td>3</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

**How many people reside in your household?**

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2</td>
<td>79</td>
<td>71.2%</td>
</tr>
<tr>
<td>3 to 4</td>
<td>26</td>
<td>23.4%</td>
</tr>
<tr>
<td>5 to 6</td>
<td>5</td>
<td>4.6%</td>
</tr>
</tbody>
</table>
### Where do you dispose of your household garbage?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curbside collection</td>
<td>76</td>
<td>66.7%</td>
</tr>
<tr>
<td>Dumpsters</td>
<td>34</td>
<td>29.8%</td>
</tr>
<tr>
<td>Landfill</td>
<td>46</td>
<td>40.4%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

**Statistics**
- Total Responses: 114

### Which of the following disposal methods do you prefer?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dumpsters</td>
<td>30</td>
<td>26.5%</td>
</tr>
<tr>
<td>Curbside collection</td>
<td>74</td>
<td>65.5%</td>
</tr>
<tr>
<td>Drop off at landfill</td>
<td>21</td>
<td>18.6%</td>
</tr>
</tbody>
</table>

**Statistics**
- Total Responses: 113

### What type of residency do you have in the Municipality of Northern Bruce Peninsula?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulltime</td>
<td>85</td>
<td>75.9%</td>
</tr>
<tr>
<td>Seasonal</td>
<td>29</td>
<td>25.9%</td>
</tr>
<tr>
<td>Visitor</td>
<td>1</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

**Statistics**
- Total Responses: 112

### What area do you reside in?

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrow Bay</td>
<td>7</td>
<td>6.3%</td>
</tr>
<tr>
<td>Bradley Harbour</td>
<td>3</td>
<td>2.7%</td>
</tr>
<tr>
<td>Cape Chin</td>
<td>3</td>
<td>2.7%</td>
</tr>
<tr>
<td>Dorcas Bay - Johnsons Harbour</td>
<td>11</td>
<td>9.9%</td>
</tr>
<tr>
<td>Dyers Bay</td>
<td>4</td>
<td>3.6%</td>
</tr>
<tr>
<td>Ferndale</td>
<td>8</td>
<td>7.2%</td>
</tr>
<tr>
<td>Hope Bay</td>
<td>2</td>
<td>1.8%</td>
</tr>
<tr>
<td>Lion's Head</td>
<td>26</td>
<td>23.4%</td>
</tr>
<tr>
<td>Miller Lake</td>
<td>9</td>
<td>8.1%</td>
</tr>
</tbody>
</table>

**Statistics**
- Total Responses: 111
<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pike Bay</td>
<td>12</td>
<td>10.8%</td>
</tr>
<tr>
<td>Stickes Bay</td>
<td>7</td>
<td>6.3%</td>
</tr>
<tr>
<td>Tobermory</td>
<td>19</td>
<td>17.1%</td>
</tr>
</tbody>
</table>

Do you have any suggestions on how the municipality can improve its diversion rate?

<table>
<thead>
<tr>
<th>Count</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>the dumpsters need to be gone - clear bags - bag tags</td>
</tr>
<tr>
<td>1</td>
<td>Dumpsters for tourists and cottagers.</td>
</tr>
<tr>
<td>1</td>
<td>Empty containers at recycling depot more often. Most times they are full.</td>
</tr>
<tr>
<td>1</td>
<td>Focus on recycle and get rid of dumpsters.</td>
</tr>
<tr>
<td>1</td>
<td>For a fee! Offer road and ditch clean up for people as fill.</td>
</tr>
<tr>
<td>1</td>
<td>Have a dumpster in one location for cottagers.</td>
</tr>
<tr>
<td>1</td>
<td>Have all recyle bins accessable 24/7.</td>
</tr>
<tr>
<td>1</td>
<td>Keep cottagers from bringing their garbage here to dispose of it.</td>
</tr>
<tr>
<td>1</td>
<td>More recycling</td>
</tr>
<tr>
<td>1</td>
<td>Recycling depot in Lion's Head would be more convenient than Ferndale.</td>
</tr>
<tr>
<td>1</td>
<td>Reduce waste at source.</td>
</tr>
<tr>
<td>1</td>
<td>Send out list of all recyclables.</td>
</tr>
<tr>
<td>1</td>
<td>The implementation of a green bin programme.</td>
</tr>
<tr>
<td>1</td>
<td>There needs to be more drop off sites or more bins at Ferndale.</td>
</tr>
<tr>
<td>1</td>
<td>To be able to recycle a wider variety of goods.</td>
</tr>
<tr>
<td>1</td>
<td>Twice a year disposal of electronics/paint cans as near to Lion’s Head community as possible.</td>
</tr>
<tr>
<td>1</td>
<td>What is diversion rate?</td>
</tr>
<tr>
<td>1</td>
<td>a recycle depot in the Dorca Bay area.</td>
</tr>
<tr>
<td>1</td>
<td>bag tags</td>
</tr>
<tr>
<td>1</td>
<td>clear bags - charge people who don't recycle.</td>
</tr>
<tr>
<td>1</td>
<td>curbside collection of recyclables.</td>
</tr>
<tr>
<td>1</td>
<td>curbside pick up</td>
</tr>
<tr>
<td>1</td>
<td>curbside pick-up!</td>
</tr>
<tr>
<td>1</td>
<td>curbside service or more dropoffs.</td>
</tr>
<tr>
<td>1</td>
<td>limit # of garbage bags, sell tags, more awareness.</td>
</tr>
<tr>
<td>1</td>
<td>more information</td>
</tr>
<tr>
<td>1</td>
<td>more recycle bins at Ferndale</td>
</tr>
<tr>
<td>1</td>
<td>offer curbside pickup and blue boxes.</td>
</tr>
<tr>
<td>1</td>
<td>pick up recycling in summer months</td>
</tr>
<tr>
<td>1</td>
<td>take more kinds of items</td>
</tr>
<tr>
<td>1</td>
<td>For visitors who create household garbage in rental and campsites, dumpsters at certain locations along Highway 6 would make disposal easy.</td>
</tr>
</tbody>
</table>
1 Show people how a dump makes property look. Tree huggers would go nuts. We have limited property to use as a dump so why not recycle. Show people the profits if any from selling recyclables.

1 I wish more people would recycle. I was trained to recycle at Kitchener Ont (Laidlaw) when I finished my training, they sent me to Mississauga to run the setup for the whole area.

1 Please add recycling dumpsters adjacent to the garbage dumpsters. This will dramatically reduce the amount of recyclable material going into the landfill.

1 Have recycling facility in Lion’s Head. Name me a town that does not have recycle other than Lion’s Head.

1 Would be great if EVERYBODY would recycle - it’s simple and painless! Then trucks to pick recyclables wouldn’t be needed of course, backyard composter makes sense (but occasionally a bear visits us!!)

1 Anything that makes recycling more convenient would probably help, but no, we are a garbage culture and that’s not likely to change. Support any program that will help reduce packaging of consumer goods.

1 By allowing 1 bag and changing for more a week a place to break down old frig, stoves, washers, tines for road mix roads like some municipalities do. Get tougher on people who don’t even try to recycle even tourists with their forgotten water bottles on the sides of the roads and so called eco snacks on road.

1 Recycle more things as in other communities and offer more hazardous waste days & depots for electronic waste etc.

1 - Clearly label dumpster at recycle drop-off sites with what should go in them i.e. where do we put milk containers? (in the paper or cardboard bins) - the proposed recycle/reuse/share facility being built on West Road dump site is a GREAT idea! - I don’t believe an outdoor composter is a good idea because of the wildlife it could attract.

1 Be much more strict about what goes into the dumpsters at the landfill sites. Only accept clear plastic bags. - Significantly raise tipping fees for clearly identifiable garbage such as cardboard, newspaper, plastic, & food containers that can easily be recycled. - I visit Eastnor Landfill 2-3 time/week and it angers me how lazy some of our neighbours are in their recycling habits!

1 Curbside pick-up of recyclables would be appreciated. I indicated I sometimes do recycle - about 95% of the time. If I only have 3 or 4 cans then I won’t stop at the drop-off station and will dispose of them with garbage. Perhaps offer recycling at the dumpsters would help too.

1 Awareness/advertising campaign with positive reinforcement messages tied to the Biosphere/preservation/beauty of the natural environment and individual/collective responsibility for both residents and visitors/tourists.

1 Commercial co-composting programme that is open to residents also. Many people are reluctant to do back-yard composting for fear of bears.

1 Curbside collection in major areas (i.e. Lion’s Head and Tobermory) would be very beneficial. For those in the less dense areas, better recycling depot locations may help divert some of the waste. More promotion of composting.

1 - Add a 2nd dumpster at each site - so, I for garbage & I for mixed recyclables. - More free blue boxes to encourage homeowners to recycle in their homes.

1 Tidier recycling depot at Ferndale! It is pathetic at present! Routine emptying (especially during peak times), and then individuals would not feel the need to leave things BESIDE the bins!
<table>
<thead>
<tr>
<th>Count</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>more effective and engineered recycling depot. The current depots are not user friendly. It needs more upkeep in summer. Use the &quot;covered&quot; area at Ferndale. Bigger space - weather protected (wind) drive in and dump recycle.</td>
</tr>
<tr>
<td>1</td>
<td>If you aren't going to have curbside collection of recyclables than make sure the collection centres are emptied a little more regular and keep the parking lot clear of broken glass and garbage.</td>
</tr>
<tr>
<td>1</td>
<td>I do...in Europe they send out, or deliver, to each home a list of &quot;what goes where&quot; as well as a list of what cannot be recycled. Also they promote these yellow bags for all plastics. In Germany...the garbage dumps are really incredible...clean...efficient. I think part of the problem here and for us...is that we are a rural community and we have these cottagers who break rules. I also think you should send out letters to inform each householder what to do and whom to call when we see folks leaving things at the Dumpsters that they know full well they shouldn't be leaving there. Thanks for the opportunity to give feedback. Hoffmann-Taylors</td>
</tr>
<tr>
<td>1</td>
<td>At our winter home compostable material is collected with our recyclables. This greatly reduces the amount going to landfill. We refrain from composting in Lion's Head because of bear issues.</td>
</tr>
<tr>
<td>1</td>
<td>1) Rather than only once a year, have hazardous waste days say semi-annually 2) Establish an electronics recycling depot in the area, possibly in partnership with South Bruce Peninsula.</td>
</tr>
<tr>
<td>1</td>
<td>Curbside recycling would be nice - we find that people are abusing the drop off centres, contaminating the recycling...and we all know what happens to contaminated recycling! If it were curbside, those who want to recycle would, doing it correctly. Rather than a tourist just dumping their garbage wherever they can find a spot (including our business dumpsters)</td>
</tr>
<tr>
<td>1</td>
<td>By curbside collection of recyclables and better information of what is recyclable and more things that can be recycled</td>
</tr>
<tr>
<td>1</td>
<td>I like the Scouts Beer &amp; wine bottle collection depot which I feel helps support the youth activities in the area.</td>
</tr>
<tr>
<td>1</td>
<td>-3 bag system (compost, recyclables, garbage) - then get rid of composters, so people don't have an option not to follow system.</td>
</tr>
<tr>
<td>1</td>
<td>* more frequent emptying of bins at recycle depots * encourage residents to compact their recyclables such as boxboard, pop cans, large plastic containers * Lindsay landfill &amp; recycling needs to be open both Sat. &amp; Sun. during summer</td>
</tr>
<tr>
<td>1</td>
<td>Our hesitation re: backyard composting is a fear of attracting bears. Is this a problem? Is it worth collecting organic kitchen waste in a central location?</td>
</tr>
<tr>
<td>1</td>
<td>- steady communication: with every tax bill &quot;commercial recycling enforce&quot; - ferry, comm. businesses, Federal, Prov, campgorunds - Trailer parks &quot;everyone&quot; including tourists</td>
</tr>
<tr>
<td>1</td>
<td>Dump the dumpsters! When we lived in Miller Lake, with only curbside pick-up, there were no problems. The dumpsters are just being abused!</td>
</tr>
<tr>
<td>1</td>
<td>At present some rates are very high. I'm not saying don't charge but people should be rewarded for bringing garbage and debris to the landfill. Some rates are more like a penalty for having waste. Some waste can't be helped. Some of our dumpy places around may not be so dumpy if it didn't cost so much.</td>
</tr>
<tr>
<td>1</td>
<td>Yes. Clearer, larger signage on dumpsters. More warnings re fines for dumping illegal wastes. Reminders that we are in an ecologically sensitive area which needs respect. Pare down exhorbitant fees for disposing of things like mattresses at the municipal waste sites for residents who have difficulty with these fees. Clearer communication with the municipality and tax payers re decision making. (i.e. How do people know about this survey?) Why was a consultant necessary?</td>
</tr>
<tr>
<td>Count</td>
<td>Response</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>1</td>
<td>We would like to see a basic cover (roof) for any article you dispose of, that someone else could use. No charge. Drop off and pickup by residents four times a year advertise clean out and dispose rest in landfill.</td>
</tr>
<tr>
<td>1</td>
<td>1. Offer curbside recycling to those who currently have curbside garbage collection. 2. Actively engage public in challenge of increasing diversion rates - newsletters, better info and easier access on municipal website, articles in newspaper, info at landfills, etc. 3. Have stricter garbage bag limits -- for both curbside and dumpster collection. 4. Bylaw that prohibits putting recyclable materials into garbage.</td>
</tr>
<tr>
<td>1</td>
<td>Educate the public. Have supervision at recycling depots at least for a while. Provide a place to leave items someone else could use.</td>
</tr>
<tr>
<td>1</td>
<td>We are pleased with the recycle separation possible now. We would like to be able to compost but don't want to attract animals - racoons and bears. I would like to see a sheet provided that clearly states what items can be recycled.</td>
</tr>
<tr>
<td>1</td>
<td>Similar to Owen Sound. Provide biweekly or monthly recycle pickup. You will need a special truck, but it will cut down the amount that is going into the general pickup.</td>
</tr>
</tbody>
</table>