CITY OF WINNIPEG
COMPREHENSIVE INTEGRATED WASTE MANAGEMENT PLAN
SUMMARY – DRAFT WASTE MANAGEMENT OPTIONS REPORT

Introduction

The City has retained Stantec, to work with the City Staff and Elected Officials, the Stakeholder Advisory Committee (SAC) and other stakeholders, to develop a Comprehensive Integrated Waste Management Plan (the CIWMP) (also known as the Garbage and Recycling Master Plan) that will establish a long-term approach to manage the municipal waste stream.

The purpose of the CIWMP will be to provide direction for the City's waste management system through recommendations to improve current waste diversion programs, and to address processing and disposal needs over the next twenty years.

The Draft *"Waste Management Options Report"* is part of Stage 1 of the CIWMP and is intended to provide a compendium of waste management approaches that could be included in the CIWMP for the short (over the next five years), mid (over the next ten years) or long (over the next twenty years) term. **The report contains a series of recommendations to the City, which is being considered as one part of the overall process.**

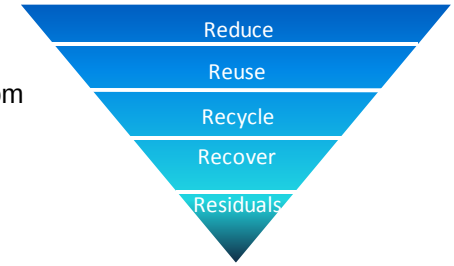
The CIWMP will build upon the current waste management system in the City, which includes:

- Promotion and education for current City programs.
- Single stream recycling collection through curbside blue boxes, apartment recycling carts, depot collection and open space recycling containers. Overall up to 45,000 tonnes of Winnipeg recyclables are processed each year at the current recycling plant.
- Leaf and yard waste collection and composting including seasonal bi-weekly collection for northwest Winnipeg residents. Drop-off depots are available in the community during the spring and fall and year-round at the Brady Road Landfill where the material is composted.
- Other diversion efforts such as Christmas tree chipping, promotion of backyard composting, grass-cycling and 'Giveaway Weekends' for reusable items.

The City currently diverts 17% of residential waste, mostly through the Blue Box

- A depot for scrap metal, automotive batteries, bicycles, used tires, used propane tanks, and used appliances at the Brady Road landfill.
- Collection of garbage through a variety of methods across the City including automated carts (north-west collection zones), manual collection of garbage bags, autobin or communal bin collection in back-lane collection areas, and bin collection for apartment buildings.
- Disposal of waste collected by the City and waste that is hauled to the landfill by City residents or commercial generators at the Brady Road Landfill. There is some use of the landfill as a Regional Site (e.g. the transfer of waste from Provincial Parks to Brady Road) and some entrepreneurship is undertaken at the site (Wood e.g. processing waste elm wood into flooring).

It is proposed that development of the CIWMP be based on the adoption of a waste hierarchy that encourages and promotes efficient use of resources and waste minimization, so that the primary waste management practice in the City switches from disposal to diversion. The waste management options discussed below reflect this hierarchy.



Waste Reduction and Reuse

Options to reduce and reuse waste are essential for 're-thinking' wasteful behaviour. Reduction and reuse options tend to be very cost effective, with budget requirements for staff time and promotion and education initiatives, but very modest capital or on-going operating costs.

The *Draft Options Report* identifies a set of approaches that over the life of the CIWMP could divert up to 10,000 tonnes per year, adding 3% to the current residential diversion rate (increasing it to 20%).

In the near-term, the focus would be to build on the City's current programs:

- Increasing promotion and education initiatives for programs like backyard composting at a cost of around $1 per household each year (around $300,000 annually). Additional promotion and education can add over 1% to the residential diversion rate.
- Working with the community to identify and promote existing re-use options provided through community organizations to supplement the Giveaway Weekends. This could include an on-line and/or published guide to re-use options available across the City. Generally, just staff time would be needed for this.
- Improving the current diversion of waste generated by City operations, by developing and implementing an updated Operational Waste Reduction Strategy.
- The City could develop or support a new re-use centre(s) as part of new diversion infrastructure at the Brady Road Landfill or elsewhere in the City. The cost to develop a re-use centre can range from $150,000 to $400,000 depending on the building and set up. They are often operated by Community organizations under contract, with costs around $200,000 a year. They can divert up to 1,000 tonnes or up to 0.5% each year.

Options for the medium and long-term include:

- Establish a City-wide per-capita (per-person) waste reduction target. This could offset the trend in Manitoba which seems to indicate that waste disposal rates are increasing by more than 12% each year, while the population is growing at 2.5% per year.
- Increase promotion of grass-cycling (leaving grass on the lawn after mowing). This could be extended to ban collecting grass in curbside garbage. A grass-ban could remove 3,000 tonnes or more from the waste stream, diverting up to 1% of residential waste each year at little cost to the City.

- Campaigns for waste avoidance, extending beyond the City's current "Bring Your Own Bag" campaign and those programs established at a provincial level by MMSM, to target other waste streams (such as avoiding bottled water).

- Incentives and social marketing approaches, where residents would 'buy-into' behaviour changes. This could include diversion 'pledges', providing rewards to households with great diversion performance (e.g. a 'gold' recycling box) and other community based incentives.
- City support for Provincial Extended Producer Responsibility (EPR) initiatives and waste minimization legislation.
- Garbage restrictions/disincentives to reduce the amount of garbage collected and to encourage use of City diversion programs (see Collection).

Resource Recovery

Resource recovery options typically recover value from the waste stream. They are essential to increase diversion from landfill and to switch the focus from managing 'garbage' to managing 'materials'. Some capital investment will be needed for new infrastructure to support resource recovery, either by the City or by the private sector through either provincial EPR initiatives or voluntary initiatives such as the current elm wood waste recovery program supported by the City.

The *Draft Options Report* identifies a set of approaches that over the life of the CIWMP could recover 40,000 tonnes or more of various materials each year, adding another 12% to the current residential diversion rate.

In the near-term, the focus would be to build upon current programs:

- The Province currently has a depot service for household hazardous waste (HHW) collection and disposal. A new *Household Hazardous Material and Prescribed Material Stewardship Regulation* (HHMPM) was gazetted in February 2010 and requires that stewards have programs in place to divert HHW by April 1, 2011. The City could have a role in supporting this program, for example by hosting a permanent HHW depot at Brady Road, with costs covered by stewards. HHW makes up less than 1% of the City's waste stream, but is a important material to keep out of landfills.
- In February 2010, the *Electrical and Electronic Equipment Stewardship Regulation* under the WRAP Act was registered and gazetted, requiring the implementation of a stewardship plan by April 1, 2011. The City could support this program, by hosting a permanent electronics drop-off depot at Brady Road with costs covered by stewards. Around 1,300 tonnes of electronics could be diverted each year, adding 0.5% to the diversion rate.
- Develop new Community Resource Recovery Centre(s) (CRRCs) so that residents can separate and divert various bulky and construction and demolition materials. The cost depends on the design, ranging from $1 to $2 million. Net operating costs (after revenues) ranges from $100,000 to $500,000 depending on the market for recovered materials. Each CRRC could divert between 5,000 and 10,000 tonnes of material each year, adding up to 3% for each CRRC to the residential diversion rate.

At minimum, one centre should be set up at Brady Road, where residents would separate out materials like clean wood, metals, shingles and other materials that would be diverted from landfill.

- Encourage private sector initiatives that currently divert materials. For example companies diverting materials such as: Palliser (wood waste), Wood Anchor (Elm wood waste) and Rocky Road (concrete).

Additional options considered for the mid to long-term include initiatives to:

- Separate and process durable goods like mattresses and furniture to recover textiles, metal and wood.
- Work with the Province and other community partners to enhance programs for recycling in public spaces and at special events.

Recycling

Currently, single stream recyclables are collected from single family homes, apartment buildings and recycling depots. The existing Materials Recycling Facility (MRF) processes around 45,000 tonnes per year of City material. The existing MRF also processes material from the City of Brandon. The current MRF is at capacity.

The *Draft Options Report* identifies program improvement for recycling that over the life of the CIWMP could divert another 25,000 tonnes or more of recyclables each year, adding another 7% to the current residential diversion rate.

Program improvements for the near-term include:

- Increase volume of recyclables collected by use of larger recycling containers like automatic carts, larger (or more blue boxes):
    - Carts can cost between $40 and $50, or up to $9 million to provide one to each residence. Carts provide a secure container for outside storage of recyclables, improve the quality of recyclables and can reduce collection costs. However, it is hard to remove unwanted materials from the carts, and there can be problems placing them at the curb in winter.
    - Providing a new larger blue box to each home could cost around $7 per residence, or up to $1.2 million. Provides flexible capacity and makes it easy to remove unwanted materials. However, materials can blow out of the boxes, snow and rain reduce the quality of the recyclables and more effort is required to lift and empty the boxes..
    - Blue bags (plastic recycling bags) can improve the quality of recyclables and reduce collection costs. However, it is more difficult to remove contaminants and can cost up to $11/tonne more for processing to remove the bags.

- Use of incentives to recognize good diversion performance (e.g. give gold boxes to households with good performance).
- Use of disincentives (e.g. restrictions on garbage set-outs). See Collection.

For the near-term, the focus will be on reviewing provisions of the current collection contract that extends to September 2011 and the processing contract which runs until early 2018, to determine where improvements could be made. The City will need additional processing capacity in the near-term. Additional processing capacity could be provided through: changes to the current MRF operations, expansion of the current MRF, or developing a new facility. A viable option would be to develop a new MRF at Brady Road.

The cost to develop a new MRF would range from $15 to $20 million, depending on the size and equipment used. Over its operating life that would work out to around $17 to $20 a tonne. The net cost of running a MRF, once you consider the revenue from the sale of recyclables is often $0/tonne or sometimes revenue positive (meaning it can make money).

For the mid to longer term the City will require capacity to process 70,000 or more tonnes of recyclable materials each year. In the long-term the City could contract out processing and/or develop City-owned capacity. It is likely that the long-term system could include multiple facilities serving the City and potentially include surrounding rural municipalities.

Organics

Organic materials like leaf, yard (weeds, grass & brush) and food waste make up over 1/3 of the residential waste stream. Other organic materials in residential garbage include compostable paper (e.g. paper towel), pet waste and diapers. Organics are also generated by businesses and institutions in the City. The majority of these organics are landfilled at Brady Road.

Two key initiatives have been identified:

- In the near-term, the City could expand on its current leaf & yard waste program. At minimum this would expanding the current collection program offered in the Northwest of the City to provide four pick-ups a year across the City. This could divert another 3,000 tonnes or more a year. If this was coupled with a new CRRC, an additional 5,000 tonnes a year could be diverted. The annual cost to pick up leaf & yard waste 4 times a year across the City could be around $1.4 million.

  If leaf & yard waste was collected across the City more frequently (bi-weekly from April to November) and at a permanent drop-off location (e.g. a new CRRC) the City could divert an additional 20,000 tonnes from disposal every year (adding around 6% to the current residential diversion rate). Based on collection models developed for other communities, the annual cost for more extensive leaf and yard collection could be around $2 million.

  Leaf & yard waste material could be processed at an enhanced composting area at Brady Road. This would include installing a larger and more effective composting pad and possibly new equipment at a cost of up to $1 million and a cost between $400,000 and $800,000 a year to operate. Overall, it could cost up to $50 per tonne, or up to $1 million each year to compost the leaf & yard waste. Some revenues could be earned from the sale of the compost.

- In the mid to longer term, the City could implement a Source Separated Organics program, collecting and processing kitchen (food) waste and other materials. This could divert up to 41,000 tonnes or more from disposal each year, adding around 12% to the current residential diversion rate. This program would take more time and financial commitment. There would be significant change to the collection program, and a new processing facility would have to be developed. The cost to process kitchen waste ranges from $60 to $130 per tonne, or $2.5 to $5.3 million a year including capital costs. The cost to collect kitchen waste depends on how it is collected and how often. Weekly green cart collection could cost around $6.2 million annually. Some revenues could be earned through the sale of recovered energy and/or compost.

Collection

Improvements to the collection system are needed to address current issues associated with differences in collection approaches in the City and to support increased diversion.

Key Collection Change: Move to consistent curbside service

In the near-term the focus will be on moving to a consistent curb-side collection approach and away from unlimited garbage collection. The same garbage containers and collection service would be provided across the City, as well as the same bulky materials and leaf & yard collection service.

The key change will be the move away from AutoBin collection service, to address community and local issues with the AutoBins that were raised at the recent “Garbage Expo” and other public forums.

The types of garbage containers considered for the near-term include use of bags (manually collected) or automated carts such as those that are used in the north-west part of the City.

- Garbage bags would be purchased directly by residents. Manual collection of bags can be very efficient and provides flexible garbage capacity to residents within any limits that are set (e.g. three bags a week which is equal to cart capacity). Bag limits have been effective in other communities, increasing diversion by 2% or more.
- Automated carts could be provided by the City, at a cost of up to $7 million (not including the north-west). Automatic collection can also be very efficient and results in less worker injury. Limiting the volume of garbage collection to the size of the cart has been effective in other communities, increasing diversion by 2% or more.

Any bag or container limit set in the near-term should reflect the amount of garbage households would generate if they use the diversion programs that would be available. For example, regular collection of leaf & yard waste will support limits in garbage collection. Changes in the near-term would also include a consistent level of service to collect bulky items.

For the mid and longer-term, the focus will shift to collection system improvements. There may be some options to improve collection efficiencies for curbside materials including co-collection, where multiple material streams could be collected on the same truck. As more diversion options would be in place, the longer term system could include further garbage restrictions like: increased bag limits, bi-weekly garbage collection or use of clear garbage bags. Partial or full user pay for garbage collection could be considered, both as a means of encouraging diversion and also as an alternate way of financing garbage collection instead of property taxes.

Disposal

The Brady Road Landfill is a 790-ha Class I facility that opened in 1973. It is currently operating under an Operating Permit from the Province issued in 1993. A licensing process is currently underway. The Brady Road landfill currently contains approximately 8.5 million metric tonnes of waste. The site has capacity for at least 100 more years, assuming the current disposal rate of 400,000 tonnes per year.

A number of key areas of potential operating and design improvements have been identified for Brady Road and will be addressed in detail in the new operating plan for the site. Key examples include:

- Direct all residential traffic to a new Community Resource Recovery Centre (CRRC) which would reduce the amount of residential waste disposed at the site and would allow for closure of the residential tipping face.
- Operational improvements to the active tipping face.
- Improvements in leachate and landfill gas management.

Over the course of the CIWMP there would be a shift in use of the site from being primarily a ‘disposal facility’ to a resource management facility. New diversion infrastructure that could be developed on the site in the near term includes:

- A CRRC for residents to separate and drop off materials, many of which can be diverted from the landfill. This could include HHW and electronic material depots funded by the Provincial Stewardship program.
- Enhanced leaf & yard waste composting.
- A Material Recovery Facility (MRF).
- A ‘smart park’ that could encourage development of industrial/commercial enterprises that would focus on recovering value from various waste streams.

Over the mid to long-term further changes at Brady Road could include:

- A processing facility for Kitchen Organics.
- Bans on disposal of certain materials, assuming that options are in place to divert drywall, shingles, organics, wood, cardboard and other materials.
- Use of Brady Road as a Regional Facility, accepting additional materials from surrounding rural municipalities for diversion and/or disposal.

In addition to landfill, the CIWMP will examine if there is a long-term role for alternative technologies to process the waste that remains after diversion, further reducing the quantity and type of garbage that would be disposed. These technologies include conventional Waste-to Energy (WTE) approaches such as incineration, and more advanced approaches such as gasification or pyrolysis, and mechanical processing to recover solid fuel from the garbage. While alternative technologies can divert additional waste from landfill, they generally have higher costs than all other diversion or disposal options, with costs ranging from $150 to $200 per tonne or higher.

Approach to System Development

Time-lines for implementation (near, mid or long-term), cost estimates, potential changes in diversion, and potential changes/improvements in level of service will be identified for each diversion, collection and disposal option.

The integrated waste management system for the near, mid and long-term will be identified by:

- Determining the diversion program options that 'best fit' in the near, mid and long-term. It is expected that a group of diversion options could be carried forward, with some of these evolving over time (e.g. start with leaf & yard waste composting, and expand to collect kitchen organics).
- Collection and processing options for the near, mid and long-term will be evaluated. The Study will identify the most appropriate approaches required for each phase of implementation.
- Once the diversion components are determined, the Study will forecast tonnes and composition of garbage that would require disposal at Brady Road. It is expected that the quantity and type of materials will change, thus reducing landfill disposal requirements.
- The role and use of the Brady Road landfill during each phase of implementation will be identified, including any new diversion infrastructure that could be developed on the site.

The following table outlines some of the reasonable components for the near-term waste management system.

Conceptual Near-term System (first five years)		
Component	**Additional Cost**	**Additional Diversion**
Reduction & Reuse: • Expanded Promotion and Education • Reuse Programs and Reuse Centre • Waste Reduction Strategy for City Operations	**Capital: $150,000 to $400,000** **Annual Operating: $500,000**	**1 to 2%**
Resource Recovery: • HHW and Electronics Depots • New Community Resource Recovery Centre(s), ***one or two?*** • Private Sector Initiatives	**Capital (per CRRC): $1 to $2 million or more** **Annual Operating: $500,000 to $1 million (per CRRC)**	**Up to 3 % (one CRRC)** **Up to 6% (two CRRCs)**
Recycling: • Increase Volume Collected ***(Carts or Blue Boxes?)*** • Incentives to participate (e.g. Gold Boxes) • More Processing capacity (additional MRF)	**Capital:** Between $1.2 (Blue Boxes) to $9 million (Carts) $15 to $20 million for MRF **Annual Operating:** may 'break-even'	**Up to 6 to 7%**
Organics: • Expand leaf & yard waste collection ***(4 pick-ups a year or more?)*** • Enhance Composting Area at Brady Road	**Capital (Composting): $1 million** **Annual Operating: $1.8 to $2.8 million**	**Up to 6%**
Collection: • Consistent single family residential garbage collection ***(automated carts, manual bags?)*** • Consistent level of bulky collection (e.g. call in service) • ***Volume limit for garbage (carts or number of bags)?***	**Capital (if automated carts): $7 million** **Annual Operating: change in annual costs to be determined**	**Supports increased diversion for above programs.**
Brady Road: • Residents directed to new CRC, away from landfill • Operational and other improvements to landfill • HHW and/or electronic depots • Enhanced Leaf & Yard composting • New Materials Recycling Facility • "Smart Park" for Private Enterprise	**Capital: noted above** **Annual Operating: noted above**	**Brady Road shifts from 'Disposal' to Resource Management Facility**
In Summary	**Capital: from $3.35 to $19.4 million** **Annual Operating: from $2.8 to $4.3 some additional costs to be determined**	**Increase residential diversion rate from 17 to 37%**

A number of municipalities have implemented similar programs. A tabular summary of some of these examples is provided separately.

The conceptual near-term system described above is estimated to cost **around $18 to $28 per household per year**, while increasing diversion up to 37%. Up to 71,000 additional tonnes of material could be diverted annually.

Over the 20-year planning period, the system could evolve to include additional diversion initiatives like collection and diversion of kitchen organics. Further infrastructure would be developed to support the transition to a system where the majority of the waste is managed as a resource, not disposed.

Conceptual Mid to Long-term System (ten to twenty years)		
Component	**Additional Cost**	**Additional Diversion**
Reduction & Reuse: • Per capita waste reduction target • Ban collection of grass • Waste avoidance campaigns • Incentives and social marketing	**Capital: no new capital** **Annual Operating: $ 300,000 to $400,000**	**Up to 1%**
Resource Recovery: • Additional Community Resource Recovery Centre(s) • Processing and diversion of bulky waste and other materials • Public space recycling in partnership with Provincial programs	**Capital (per CRRC): $1 to $2 million or more** **Annual Operating: $500,000 to $1 million or more (per CRRC)**	**Up to 6%**
Recycling: • Further Incentives to participate • Long-term Processing capacity (additional MRF)	**Annual Operating:** to be determined, may 'break-even'	**Up to 1%**
Organics: • Collect and process Kitchen (food) waste and other household organics • Develop processing facility at Brady Road	**Annual Operating (collection and processing): $8.7 to $11.5 million**	**Up to 12%**
Collection: • Further restrictions like bi-weekly collection, full or partial user-pay or clear garbage bags	**Annual Operating: change in annual costs to be determined**	**Supports increased diversion for above programs.**
Brady Road: • Further improvements to landfill • Expand "Smart Park" for Private Enterprise	**Capital: noted above** **Annual Operating: noted above**	**Brady Road shifts from 'Disposal' to Resource Management Facility**
In Summary	**Full costs to be determined**	**57% of Residential Waste Diverted**

The conceptual mid to long-term system described above would increase overall costs to **between $45 and $66** per household per year, while increasing diversion up to 57%. Up to 150,000 additional tonnes or more of material could be diverted annually.

Next Steps

The Draft Waste Management Options Report is part of the first Stage of the CIWMP. In addition to this report, the consultant will be developing other draft documents for discussion including:

- A discussion paper on the Vision, Goals and Objectives for the CIWMP;
- An Overview of the Current Waste Management System;
- Projections of Future Waste Management Needs.

Consultation will be ongoing over the next few months with the SAC, the public and other stakeholders such as commercial generators, on the Draft Options Report and other study documents.

The City should invite feedback on:

- **Promotion and Education programs**. What information do you need to effectively participate in diversion programs? What type of communication do you need? Electronic? Ads? How can we engage the community to support diversion programs, providing local support?
- **Proposed additional diversion programs**. Should the City develop one or multiple Community Resource Recovery Centres to provide residents with year-round convenient access to drop off materials like wood waste, shingles, bulky items (like furniture)?
- **Changes to the recycling program**. Should the City provide more blue boxes or large automated carts to pick up recyclables? What incentives would increase participation in recycling? Should another recycling facility be developed?
- **Diversion of organics**. What would be the best level of leaf & yard waste service? More depots? Collection four (4) times a year? More regular collection over the growing season?
- **Changes to garbage collection**. How should the City pick-up residential garbage, automated cart or manual bags with a bag limit (e.g. three bags a household each week)? How should the City pick-up bulky waste weekly with regular garbage? A few times a year? Year-round if you call-in and request it?
- **Changes at Brady Road**. Should the City develop new diversion facilities at the landfill like a CRRC? What is the broader community vision for the landfill site? When and how should the City ban certain materials like cardboard from disposal in the landfill?

Following the outcome of this consultation, the next Stages of the CIWMP (to be completed later in the spring) will include:

- Selection of the Preferred System and Development of the Implementation Plan
- Preparation of the Draft and Final CIWMP Reports.

We welcome your comments and questions. Please access the study information and find out about opportunities to participate at speakupwinnipeg.com or by calling 311.