

Appendix 1: Overview of Preliminary List of Options

Option	Overview
Asset Management	
Convert the Dufferin Recycling facility to a “mixed waste facility” to process waste	Convert the Recycling facility to a “mixed waste facility” to process waste from either: a) predominately the multi-residential sector; or, b) from the entire residential sector.
Decommission the Dufferin Recycling facility and use the space for other waste management requirements such as a new recovery facility, collection yard, durable goods processing facility, or a new Drop-off Depot	Decommission the Recycling facility and use the space for other waste management requirements such as a new recovery facility, collection yard, durable goods processing facility, or a new Drop-off Depot.
Collection & Drop-off	
Container management at multi-residential buildings to improve waste diversion	Use new technology for more efficient container management such as live tracking of container volumes to better manage collection needs.
Alternative collection methods for multi-residential buildings	Use alternative technology for waste collection to increase convenience for participants such as vacuum based collection systems, waste stream colour coded bags and optical sorting, etc.
Drop-off facilities at multi-residential buildings (for materials beyond those in the Blue Bin and Green Bin)	Support expanded drop-off, reuse and sharing opportunities for multi-residential residents at the individual (or group of buildings) level.
Develop a network of permanent, small scale neighbourhood diversion stations in convenient locations	Construct and operate a network of permanent, small scale neighbourhood waste diversion stations throughout the City of Toronto at convenient, high traffic locations.
Develop a mobile depot service for targeted recyclable materials	Develop a mobile depot service which could be located in a high traffic/high density area for a period of time (e.g. two weeks) then moved to the next location. The depot would enable users to divert a wide range of materials (e.g. Household Hazardous Waste, pots/pans and other metals, textiles, batteries, used bikes swap, used eyeglasses collected for charities, books, kitchenware, etc.) and could be used as an education centre to promote other environmental activities, such as water conservation, alternative household cleaners, and food waste reduction.

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Incentive based drop-off system (e.g. reverse vending machines, etc.)	Implement new devices where participation in a drop off/donation centre for specific materials is rewarded through cash or shopping vouchers, movie tickets, etc.
Partnerships with non-profit organizations to collect/manage materials	Partner with non-profit organizations to provide curbside and/or drop-off depot style diversion services for targeted materials. This could be accomplished at an expanded drop-off type facility that includes a waste reuse collection and/or retail component.
Generation, Reduce & Reuse	
Outreach and education campaign to reduce waste (e.g. food waste, single serve/use items, disposable items)	Continue to develop outreach and education campaigns designed to get people thinking about the impact of their lifestyle choices. As demographics and lifestyles change, more convenience items are being developed that contribute to waste generation. Develop outreach and education campaigns to inform and teach people why avoidable waste occurs and how to reduce this waste in the future.
Establish a sustainable food and food waste strategy	Expand on Toronto's existing initiatives (e.g. promotion of food waste reduction at speaking events) by exploring food reuse opportunities, and including food reliance, sustainability and food waste issues such as those addressed by the Toronto Food Policy Council (e.g. local food and food security issues).
Clothing collection and reuse strategy	Develop a used clothing collection and reuse strategy (potentially in partnership with other organizations) for the collection, reuse and/or recycling of used clothing.
Tool share library to allow sign-out of tools	Develop a Tool Share Library (potentially in partnership with other organizations) to allow for the sign-out of tools that receive "occasional" use.
Curbside/common area giveaway/events to enable residents to give away reusable items in good condition, structured to not contribute to litter	Establish curbside/common area giveaway events that would allow residents to get rid of materials for reuse that are in good condition such as furniture, toys, etc. in a convenient way, but also structured in a way that it does not contribute to uncleanliness or litter.
Establish art exchange centre for used arts and crafts supplies	Establish an art exchange centre that would accept and sell gently used arts and crafts supplies, school supplies, office supplies, etc.

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Overall System Considerations	
Discontinue provision of multi-residential waste collection services	Cease the provision of multi-residential collection services and allow the private sector to manage waste from all multi-residential buildings.
Maintain status quo regarding IC&I waste (accept at transfer stations and provide some collection)	Continue to accept IC&I waste at transfer stations and provide some collection options for IC&I management but generally encourage generators and haulers to use the existing private sector waste management system.
Expand the City share of IC&I waste management to gain more control and influence IC&I waste diversion	Provide City collection service to a broader range of IC&I waste generators, to ensure higher diversion rates through mandatory source separation, mandatory waste audits and waste diversion plans and other policies. More IC&I waste would be directed to City transfer stations through various policy instruments, thereby ensuring higher waste diversion rates.
City implements policies which impact IC&I waste diversion (without providing service)	Implement mandatory source separation and waste quantity or audit reporting policies for IC&I waste, targeted at haulers and IC&I waste generators.
Exit the IC&I market completely	Cease involvement with IC&I waste management (no collection of commercial waste or acceptance of IC&I waste at transfer stations).
Enabling the City to assume more of a role of a facilitator or coordinator rather than providing the service itself	Assume more of a role of a coordinator for others involved with waste reduction and recycling. The City could provide assistance to and support for entrepreneurs for developing new diversion initiatives (e.g. for IC&I or construction, renovation and demolition waste). The City could also provide support for new diversion facilities (e.g. a Green Park, Ecopark or buildings material exchange) or coordinate diversion activities with non-profit agencies (e.g. reuse areas at Drop-off Depots).
Examine/explore mechanisms that could exert control over waste including; bans and levies, by-laws and Acts	Explore bans, levies or fines on specific items such as organics and the appropriate places to enforce bans (i.e. curbside, landfill, etc.)

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Expand collaboration or partnerships to help with advocacy and waste reduction	Expand the City's current program for collaboration with industry and municipal organizations to advocate for change and reduced waste. The City could also expand its consultation with all levels of government and producers so that end of life management of materials is always considered.
Promotion & Education	
New Waste Sorting Mobile Application	Develop a waste sorting mobile application that can provide sorting information and opportunities for reuse and/or recycling directly from mobile smartphone.
Lifecycle Impacts Calculator	Develop a mobile application or online calculator that can provide consumer information on life cycle impacts of different products (e.g. plastic versus wooden stir sticks) to help further educate consumers and promote waste reduction and behaviour change.
Expand Social Media Outreach	Dedicate additional resources to increasing the City's online presence through social media. Social media can be a tool to inform people of program changes, provide reduce and reuse tips, clarify system complexities, and support behaviour change. Opportunities include adding/expanding use of: Facebook, Pinterest, YouTube, Instagram, E-newsletter, Virtual Communities, Mind Mixer, and other social media outlets as they develop, as well as the City Website. There is also opportunity to address cultural diversity through translating and tailoring messages.
Mobilize 3Rs Ambassador Hubs and facilitate community networks to collaborate on outreach opportunities	Create an Ambassador corner on the web site to facilitate connections with Ambassadors in other neighbourhoods, form community hubs to collaborate on outreach initiatives, and provide a forum for Ambassadors to share ideas and initiatives.
Incentivize 3Rs Ambassadors and other volunteer programs	Consider financial incentives for Ambassadors/volunteers to expand the program reach in multi-residential buildings.

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Multi-residential – Communications, explore additional communication tactics	Explore additional opportunities for other communication tactics (e.g. targeted television programs) and alternative (multi-lingual and multi-media) communications to ensure that all audiences in Toronto are reached.
Multi-residential - Workshops and Outreach for non-City serviced buildings	Provide on-site workshops/seminars/outreach to buildings who are currently not receiving City collection services to improve program participation, recycling and reduce contamination.
Implement by-law to mandate waste diversion to all multi-residential buildings regardless of collection service provider	Implement by-laws to support mandatory common waste diversion requirements (Blue Bin service, Green Bin service, etc.) to all multi-residential buildings regardless of collection service provider.
Multi-residential - By-laws and enforcement to ensure comprehensive waste diversion service to all Multi-Residential buildings	Ensure that enforcement plays a critical role in any restrictions placed on waste management activities and that appropriate resources have been allocated to enforce these restrictions.
Recovery	
Mixed Waste Processing	Mixed Waste Processing is the use of mechanical based processing equipment to recover recyclable material from a mixed waste stream.
Mechanical Biological Treatment (MBT)	Mechanical Biological Treatment (MBT) is a combination of mechanical materials recovery and either mixed waste composting or Anaerobic Digestion as a subset technology.
Direct Combustion	Direct combustion (incineration) used heat in the presence of excess air to convert waste to energy. Additional materials can also be recovered for recycling.
Emerging Technologies (Gasification, Plasma Arc Gasification)	Emerging Technologies (Gasification, Plasma Arc Gasification) - involve the conversion of carbonaceous feedstock material into a gas under the application of heat and minimal or no oxygen. Following a cleaning process, this gas, called syngas, can be used as a fuel to generate energy. Additional materials can also be captured for recycling.

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Organics Recycling Biocell or Landfill Biomodule	<p>An Organics Recycling Biocell/Landfill Biomodule is a specialized lined landfill cell designed to process mixed organic wastes and wastewater biosolids/sludge. Waste with high organic content (and energy value) is placed into a lined cell and kept moist with a leachate collection layer under the waste and perforated recirculation piping on top. The cell is then capped to seal the waste and to create an anaerobic environment initially decomposing the volatile organics to generate methane. This is followed by a second stage of introducing air to the waste to create an aerobic (i.e. composting) degradation process and further breakdown the organic portion of the waste in the cell. Once the waste has been composted, it is excavated from the cell and screened to remove physical contaminants and any non-processed materials. The resultant compost product then goes through a final curing period for future use. The cell can then be recharged with fresh organic waste and begin another cycle.</p>
Refuse Derived Fuel (RDF) production	<p>Refused derived fuel (RDF) involves processing solid waste into a refined, homogenous solid fuel called RDF that can then be used by a thermal process to produce energy. These technologies can either produce a RDF fluff, pellet or briquette that can be sold to existing facilities such as cement kilns as an alternative fuel source.</p>
Waste to liquid fuel technologies	<p>Waste to liquid fuels technologies involve the generation of liquid fuels (e.g. methanol, ethanol) from residual waste using technologies such as hydrolysis, pyrolysis, etc.</p>
Landfill Gas Recovery	<p>Landfill gas recovery involves placing waste material in a lined cell and collecting the resultant landfill gas for the purposes of energy generation. This is currently being explored by the City for the Green Lane Landfill as part of an ongoing biogas study.</p>

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Anaerobic Digestion gas recovery	Anaerobic Digestion is the biological decomposition of organic materials in the absence of oxygen under controlled conditions to produce a biogas, which can be recovered for the purposes of energy generation. This is currently being explored by the City for both the Disco and Dufferin Anaerobic Digestion facilities as part of an ongoing biogas study.
Recycling & Processing	
Multi-Residential - On-site organics processing	Develop on-site aerobic or digestion technologies at multi-residential buildings where organic materials are either composted or digested on-site on a small scale and the resultant compost product is used by the building or in neighbouring areas.
Garburators	Explore use of garburators (garbage disposal unit, waste disposal unit) in the City (currently banned in areas where stormwater and sanitary sewers are combined) in place of source separated collection for the diversion of Green Bin materials, particular for multi-residential buildings. Impacts on wastewater treatment facilities and other lifecycle impacts need to be quantified.
Future Blue Bin Processing Capacity	Review future requirements for Blue Bin material processing. The City currently contracts Blue Bin processing to a private sector contractor, however, at the end of that contract, a decision will be required on whether blue bin processing should continue to be outsourced or whether the City should assume this responsibility. This could potentially require establishing new infrastructure and capacity to continue supporting the Blue Bin program based on projected tonnages of Blue Bin material requiring management developed as part of the Strategy.
Future Green Bin Processing Capacity	Review future requirements for Green Bin organics processing. Based on projected tonnages of Green Bin organics requiring management developed as part of the Strategy, over the term of the planning period, the City's current green bin processing facilities will not have sufficient processing capacity. This could potentially require establishing new infrastructure and capacity to continue supporting the Green Bin program.

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Future Mattress Recycling and Other Reuse Related Processing	Expand material specific recycling/reuse infrastructure, depending on the results of the evaluation of some of the other options identified.
Residual Disposal	
Green Lane Landfill Expansion	Expand the landfill either vertically and/or horizontally in the existing footprint and on separate landforms.
Landfill Mining and Reclamation	Mine and reclaim space at active or closed landfills. Solid wastes which have previously been landfilled can be excavated, processed and relocated. Could potentially be applied at Green Lane Landfill.
Bio-reactor Landfill Technology Implementation	Implement bio-reactor landfill technology (utilize liquid or air to accelerate waste decomposition to increase the rate of methane production). Could potentially be applied at Green Lane Landfill (GLL) as a means of maximizing landfill capacity.
Improve landfill operations	Modify operational practices to minimize airspace depletion rate (extending the service life) through use of advanced compaction equipment and technology (e.g. GPS) and alternative daily covers.
Adjust tipping fees or customer base	Adjust disposal fees or discontinue acceptance of paid private customers at GLL.
Procure landfill capacity at a private sector site(s)	Procure landfill capacity at a private sector site(s).
Purchase a new landfill	Acquire another licensed landfill site in Ontario.
System Financing	
Fully Independent Utility with No Rebate Program	Fully remove the property tax rebate currently provided to customers to make SWMS a fully independent utility that is primarily funded through volume based user fees.
Public-Private Partnerships (“P3”) for Major Capital Works	Enter into a long-term agreement with a private sector partner to design, construct, finance, operate and maintain a major capital project. The City (with the assistance of P3 advisors) would define the scope of the project and undertake a procurement process to select a consortium that provides the best value to the City.
Debt Financing	Borrow funds to pay for new initiatives or programs that may have higher upfront costs during the initiation phase.
Increases to the Customer Base	Explore ways (e.g. financial, bylaw, etc.) to

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	increase the multi-residential customer base to generate additional revenues and potentially realize some economies of scale in processing the materials.
Allocating Costs for Waste Management to Applicable Waste Streams	Charge customers for collection of applicable waste streams (garbage, recycling, organics) rather than a lump sum basis for garbage collection that is intended to cover the cost of all services.
Alternative Revenue Generation Opportunities	Secure additional revenue sources for residential solid waste management through Extended Producer Responsibility (EPR) funding for Blue Bin and other programs, selling merchant capacity in new facilities, IC&I rate structures at transfer stations, etc.
Multi-residential - Performance Based Incentives	Institute performance based incentives (e.g. financial) for occupants, superintendents, landlords, building managers or building management companies to increase diversion levels. These options could include mechanisms to directly incent the individual users, rather than the buildings as an example.
Transfer	
Relocation of Commissioners Street transfer station within the Port Lands area, either in the short to mid-term or designation of land for long term relocation	Construct and operate a new waste transfer facility which could be integrated with a new Drop-off Depot at a new site located within the Port Lands area, either in the short to mid term or designation of land for long-term relocation.
Relocation of Commissioners Street Drop-off Depot within the Port Lands area, either in the short to mid-term or designation of land for long term relocation	Construct and operate a new waste Drop-off Depot at a new site located within the Port Lands area, either in the short to mid term or designation of land for long-term relocation.
Redirect Commissioners Street transfer station waste to an existing transfer station(s) (e.g. Ingram or Bermondsey), which will require the facility(ies) to be updated/ expanded	Redirect all waste-related traffic currently being received at the Commissioners Street Transfer Station and Drop-off Depot to an existing City of Toronto Transfer Station (e.g. Ingram and/or Bermondsey). Facility design/operation at receiving facilities may need to be modified to reflect additional traffic volumes.
Procure transfer capacity at a private	Procure waste transfer station capacity from a

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transfer station in the vicinity of the Port Lands area (if available) to manage waste currently received at Commissioners Street transfer station	private sector facility operator in the vicinity of the Port Lands area (if available) to manage waste currently received at Commissioners Street transfer station.