Solid Waste Master Plan Actions

Objective 1– Maximize the Reduction and Reuse of Waste

Recommended Actions		Description
1.	Sharing Space/Swaps/ Library/Repair Cafes (for various materials)	The City could develop one or more temporary/event based or permanent sharing spaces, and/or repair cafes for materials that can be shared, reused, or repaired rather than recycled or disposed of in landfill. This could be City-run or in partnership with community/charitable organizations. Examples of items could include books, appliances, waste electronics, construction and demolition material, tools, bicycles, toys, textiles, etc.
2.	Community reuse events	The City could develop one or more drop-off events for personal and household goods that can be reused rather than recycled or disposed of in landfill. Items could be dropped off at designated City facilities or other locations. This could be City-run or in partnership with community/charitable organizations. This action could also include: • Increasing the number of Give Away days from two per year. • Introducing 'move-out programs' held in conjunction with local colleges and universities. Drop-off of reusable items at the events will be sent to and taken by local charities.
3.	Develop community strategies, opportunities, and partnerships to increase reuse and recycling and avoid waste	The City could develop one or more permanent reuse centre(s) for personal and household goods to be reused rather than disposed of in landfill. This could be City-run or in partnership with community/charitable organizations.

		It would involve the City supporting community-based initiatives that increase reuse and recycling and avoid waste. Some examples include: • Create a dedicated Team/Group/Committee to implement waste avoidance, reduction and reuse actions in the community (e.g. thrift markets and secondhand reuse strategy). • Promotion of local waste avoidance, reuse, reduction and recycling initiatives on City website, offering free or reduced cost space, social media, or procurement.
4.	Subsidies, Rebates, Grants for Actions that Avoid, Reduce, or Reuse Waste	As a way to incentivize waste avoidance, reduction and reuse, the City could award a subsidy, rebate or grant to local residents, resident groups or non-profit organizations for actions, ideas or programs that avoid, reduce or reuse waste. Some examples include: • A cloth diaper subsidy program - where the City would provide grants to buy or rent cloth diapers. • Bike repair hubs - where the City would provide a grant to an organization that promotes bike repair and teaching residents how to maintain/repair bikes. • Sharing library - where the City would provide support by provision of space in a City facility. • This action could also include providing space at a City facility for free or at reduced rates to nonprofit organizations. The City would need to develop eligibility criteria, and a process for applying, evaluating, and awarding.
5.	Expand the Take It Back! Program	The City could expand the current Take It Back! program and work with partners to increase the number of items accepted. The current Program encourages local businesses to “take back” some of the materials

		they sell from residents for reuse, recycling, or disposal. Examples of items included in the current program are; automotive products, medical supplies, and electronics. This action would also include improvements to the current program, for example: • an interactive map showing locations that accept products for reuse/recycling or disposal, prioritizing local businesses that reuse or recycle materials, offering disposal actions as a last resort. • providing information on whether the local business reuses, recycles or disposes of the material; and, • requiring members to report annually on the number of materials reused, diverted, or disposed of properly to determine program performance.
6.	Textile Waste Diversion Enhancement	Currently, City of Ottawa residents have access to a few different options for textile diversion. These include Take it Back! Program, clothing donation bins, and at-home clothing collection through charity organizations. The City could enhance the current available textile waste diversion programs in the following ways: • Allowing more convenient placement of bins throughout the City (subject to regulatory requirements pertaining to public health and safety, property maintenance, and nuisance control). • Implement mechanisms to track program performance. • Through P&E aimed at promoting these different programs and develop public awareness campaigns. • The City could consider participating in the Ontario Textile Diversion Collaborative, which

		aims to increase textile diversion rates and encourage the development of a textile recycling industry in Ontario.
7.	Implement a Food Waste Reduction Strategy	The City could implement a food waste reduction strategy, either by licensing a program such as Love Food, Hate Waste or develop its own program to educate residents about food waste reduction. The City could also collaborate with the food industry, Ottawa Public Health and non-profit agencies to direct food to charities and food banks and to provide educational programs geared towards supporting residents in changing food waste behaviour.
8.	Develop and implement Food Waste Reduction Education Initiatives	This action involves developing and implementing food waste reduction initiatives to educate residents and build awareness of food waste and its impact. This could include initiatives such as virtual or in-person waste-free cooking classes or events, rapid messaging about food waste and Green Bin use at events such as Farmers' Markets, expanding existing P&E campaigns and materials, creating educational material regarding meal planning, how to tailor grocery shopping to avoid impulse buys, and how to properly transport and store perishable food. An initiative could also include promoting or developing apps, in collaboration with local restaurants, to offer meals at a reduced cost shortly before closure. Messaging could be done in collaboration with Ottawa Public Health and could leverage initiatives such as Love Food, Hate Waste.

9.	Supporting Waste Minimization and Diversion at Special Events	Use of recycling stations and organics collection at events is strongly encouraged through the comprehensive Event Guide that the City's Event Central provides to organizers. However, this action would develop a plan to phase in additional waste management requirements at small and large events over the short, medium, and long term. • Creating a waste management toolkit that covers topics such as best practices for waste avoidance and reduction, for example, water refilling stations, deposit return systems, reusable dishware and cutlery, as well as recycling and organics management. • Exploring opportunities for the City to partner with event organizers to promote waste avoidance, reduction, reuse and recycling. • Encouraging event organizers to recruit volunteers to assist with on-site source separation of waste and education around the benefits of doing so. • Exploring opportunity to introduce by-law requirements addressing how materials are collected, processed and disposed of at special events and festivals. • Investigating the City providing collection of recycling, organics and garbage for small special events. • Reviewing the City facility rental agreement to determine how best to integrate waste avoidance, reduction and recycling into small and large events held at City facilities. • Investigating the opportunity to require special event organizers to submit a waste management plan for each special event that outlines their approach to waste management.

Objective 2 – Maximize the Recycling of Waste

Recommended Actions		Description
10.	3-Item Garbage Limit	The City's three (3) item set out limit on the number of garbage bags, containers, or items set out at the curb is to increase participation in the City's waste diversion programs and reduce the amount of waste sent to the landfill. Residents will have the opportunity to set out more garbage at the curb by purchasing additional bags to set out on collection day.
11.	Disposal bans	The City could implement and enforce material disposal bans at the Trail Waste Facility Landfill (TWFL). The ban could be enforced curbside, at the point of collection for multi-residential buildings, at a transfer station and/or at the Trail Waste Facility itself. Disposal bans can help remove hazardous materials from the solid waste stream and support the diversion of recyclables and products collected under industry stewardship programs for proper diversion and processing. The City currently prohibits a range of materials from being placed in the waste stream including household hazardous waste, some electronics, sharps, tires, batteries, Compact Fluorescent Lightbulbs (CFL), asphalt and concrete, soil/firewood/brush, large quantities of construction, demolition and renovation materials, white goods, and wooden pallets. The City could consider expanding disposal ban to include: • Green Bin Organics

		• Industrial, Commercial, and Institutional (IC&I) waste • Construction & Demolition (C&D) waste • Other divertible materials, such as, metals, bulky items such as mattresses, textiles, and additional electronics.
12.	Enforce Source Separation Requirements for Recycling and Organics	Currently, the City's Solid Waste by-law has provisions for the source separation of recyclable material, leaf and yard waste, and organic material which are not currently enforced. This action looks at enforcing the current source separation provisions contained within the Solid Waste by-law, requiring garbage be separated from recycling and/or green bin material. It would apply to all sectors receiving the City's waste collection service.
13.	Making Green Bin a prerequisite to receive City Waste Management services	This action would see the City implement requirements for all multi-residential properties to implement and participate in the City's Green Bin program in order to receive City waste management services.
14.	Multi-residential Building Development Standards	The City would enhance the Multi-residential Building Development Standards under the City's development review process to support waste diversion and reuse in these properties. This would incorporate recent best practices that support increased resident participation in waste diversion programs and reuse activities.
15.	Chute Closure/Conversion to Organic Chutes Program at Multi-Residential Buildings (Pilot)	The City would implement a chute closure program at multi-residential buildings that have single chutes for garbage to facilitate waste diversion or convert the chutes to organics chutes.
16.	Develop a Corporate Strategy to Increase Waste Reduction, Reuse and Recycling	This action involves the City developing a Corporate Waste Avoidance, Reduction, Reuse and Diversion Strategy to identify how the City as a Corporation will reduce the amount of waste it generates, reuses, and

		recycles at its facilities and in its operations, including single-use items and how to support circular economy principles and zero waste opportunities. Examples of what could be included in this strategy include the creation of: • A dedicated team/group/committee to implement waste avoidance, reduction and reuse actions across all City operations. • A City/Corporate Reduction/Reuse Plan (e.g. to leverage procurement practices, staff education, use of reusable items such as cutlery/dishes, establish reuse locations in offices, swap events). • A Single Use Item Reduction Strategy for City facilities and operations. • A green procurement policy and/or strategy to support a move to a circular economy
17.	Single-Use Item Reduction Initiative	This action involves the development of a single-use item reduction strategy to address single use items, including plastic and expanded polystyrene (EPS), as well as other materials such as paper based single-use items. The strategy would encompass City facilities, operations, and events, with the overall goal of the strategy being to reduce the amount of waste generated through the consumption of single-use items.
18.	Mandatory Waste Diversion in all City Facilities	This action would implement mandatory waste diversion in all City facilities. This could include diversion of any or all of the following: • Blue and Black Box recyclables • Green Bin organics • Electronics • Hazardous waste (e.g. batteries, hazardous waste from City operations)

		• Other materials (e.g. textiles (sheets, towels, uniforms), construction and demolition materials) Waste diversion could be mandatory through a by-law or administrative policy. It could also be achieved by a ban on organics or recyclables at Trail Road Facility landfill.
19.	Expanded Diversion Program at City Facilities and Operations	This action reviews the opportunity for the City to implement a standardized recycling and green bin program across all of its facilities and operations. It also reviews the possibility for the City to roll out other waste diversion programs for batteries, cartridges/toners, electronics, office furniture, needle collection and scrap metal in its facilities and operations. These additional diversion programs would be internally facing and not for the public to drop-off items.
20.	Waste Diversion Program in Parks and Other Public Spaces	This action considers implementing a broad-scale, comprehensive waste diversion program, with recycling and/or organics bins in parks and public spaces, across the City. The action would include consistent signage on bins, with the results of the pilot being used to inform any future parks waste diversion program. The City is currently running a multi-year pilot program to determine the efficiency and effectiveness of rolling out a City-wide parks waste diversion program, including co-locating green bins with recycling and garbage receptacles in select parks across the City.
21.	Residential C&D Waste Diversion Strategy	The City may impose a requirement, by way of a by-law, to divert construction and demolition (C&D) waste from landfill. While such a requirement could apply to both the residential and IC&I sectors, for the purpose of this action, the scope would be limited to C&D waste from residential and City sources (projects, operations and facilities) only. It would also extend to C&D waste

		disposed of at the Trail Waste Facility landfill. Jurisdiction for IC&I waste diversion lies with the Province.
22.	Bulky Waste Diversion Strategy	Develop a strategy to review bulky waste that will focus on decreasing waste generation and maximizing diversion of bulky waste from the landfill. The intent is to facilitate the separation of some items for recycling (e.g., mattresses, scrap metal, furniture, bulky plastics, clean wood, window glass, etc.) or reuse/upcycling, if possible.
23.	Municipal Hazardous Solid Waste Strategy Development	Develop a strategy to focus on decreasing Hazardous and Special Products (HSP) generation and maximizing the diversion of HSP from the landfill. This could include the expansion/improvement of the current City-held one-day mobile depot events but the strategy will also include exploring other alternative initiatives for collecting and diverting this material.
24.	Waste Diversion Infrastructure Fee for New Development	The City would implement a Waste Diversion Infrastructure Fee for developers that would require developers of new single-family and multi-residential homes to pay for and/or distribute Green Bins and educational materials to new homes as part of the subdivision/site plan approval process. Distribution of bins by the developer would make the move in process easier for the developer and reduce new homeowner complaints associated with waste collection until collection services in the new development is transitioned to the City.
25.	Development Charges for Waste Diversion Growth	Development charges are one-time fees paid to the City to offset the growth-related capital costs required to provide municipal services arising from new development and redevelopment. The City would use

		development charges to fund growth related waste diversion and collection.
26.	Bonds for Green Buildings	The City would implement a financial mechanism to ensure waste reduction/diversion or waste-related green building standards that are incorporated into new developments and are performing as planned by requiring developers to provide financial Security. An example of this could be a system that builds upon the City's existing letters of credit process for planning applications and require developers to post a letter of credit to ensure convenient collection systems for divertible materials are developed and maintained. After a certain time has elapsed, buildings are inspected for successful operation and that the building has met the City's requirements, and the letter of credit cancelled.

Objective 3: Maximize the Recovery of Waste and Energy and the Optimal Management of Remaining Residuals

Recommended Actions		Description
27.	Anaerobic Digestion (AD)	This action explores the use of AD technology to process household organics (e.g., food waste, soiled paper products, pet waste). Anaerobic digestion (AD) is a biological process where bacteria break down organic matter without oxygen to produce biogas and solids (digestate). The biogas can be used as fuel for boilers, be converted into electricity, and can be upgraded to Renewable Natural Gas (RNG). RNG can replace conventional natural gas derived from fossil fuel. It can be injected into the natural gas distribution or transmission systems, reducing the amount of fossil natural gas needed. The digestate can be used directly as a soil amendment or to produce a compost product.

		RNG production has the ability to reduce the City's GHGs and support the targets set out in the City's Climate Change Master Plan. Update: This Action is currently undergoing evaluation as a part of a prefeasibility study on the use of Anaerobic Digestion to process household organics.
28.	Co-digestion of Sewage and Organics at the Robert O. Pickard Environmental Centre (ROPEC) or Co-location of Anaerobic Digestion (AD) Processing Facility for Organics at ROPEC	Explore the co-digestion/co-location of a new anaerobic digester to process household organics at the Robert O. Pickard Environmental Centre (ROPEC) wastewater treatment facility which currently uses anerobic digestion (AD) to process sewage sludge. This action could produce a renewable source of energy, Renewable Natural Gas (RNG) which has the ability to reduce the City's GHGs and support the targets set out in the City's Climate Change Master Plan. Update: This Action is currently undergoing evaluation as a part of a prefeasibility study on the use of Anaerobic Digestion to process household organics.
29.	Separate Composting of LYW	Increase the amount of Leaf and Yard Waste collected and processed separately from Green Bin organics. Leaf and yard waste (LYW) is currently collected either in the Green Bin, for processing at the City's contracted organics processing facility (Convertus), or bagged and bundled LYW is separately collected during peak periods for processing at the City's outdoor composting facility on Barnsdale Road. It is also accepted for drop-off at the Trail Waste Facility, where it is transported to the Barnsdale site for composting. Update: As of 2026, LYW will no longer be accepted in the Green Bin. This change was included in the changes to the curbside collection contract which was carried at City Council on September 27, 2023.

30.	Mixed Waste Processing (Mechanical Pre-sort only)	Develop a mechanical pre-sort facility to recover some recyclables and organic materials. This does not include facilities to process recyclables, organics, or other materials (including into refuse derived fuel (RDF)). A mixed waste processing (MWP) facility uses mechanical processing to sort and recover recyclables and/or organics from garbage. MWP starts with unsorted and unseparated solid waste from residential and/or commercial sources which is then typically off-loaded onto a tipping floor. Materials are first sorted on the floor using manual labour (if appropriate) and mobile equipment to remove larger or bulky items such as appliances, dimensional wood, metal, or large pieces of plastics that might clog or interrupt operations of the processing systems. Depending on the design of the facility, and types of materials received and recovered, materials are processed using largely mechanical processes (including in some cases artificial intelligence and robotics) to separate fibre, plastic, metal and glass containers, organics and small contaminants or primarily separation of organic material. The remaining material is shipped to a disposal facility (e.g. landfill) or another appropriate waste processing/conversion facility for further processing (i.e. into RDF). Update: This action is currently being evaluated through a feasibility study on MWP and Waste-to-Energy. This study will be complete by mid-2025.
31.	Mechanical Biological Treatment (MBT)	Develop a MBT facility to recover recyclables and organics from the City's garbage. This would include a pre-sort facility (such as MWP), an organics treatment facility, and

		could include a facility to create refuse derived fuel (RDF) from the residue. A mechanical biological treatment (MBT) facility uses mechanical processing to recover recyclables and a biological process to recover organics from garbage. This action would therefore involve the combination of the development of a mechanical pre-sort system and an organics processing system within a facility. The residual material could be further processed into Refuse Derived Fuel (RDF) through a shredding process to make an alternative fuel source.
32.	Waste to Energy Incineration (Direct Combustion)	This action examines the possibility of the City developing a mass burn incineration facility to manage post-diversion residual waste. Mass burn incineration is the direct combustion of a mixed, typically unprocessed, waste stream where the heat is captured by boilers and converted to a form of energy. Outputs of the process include fly ash (hazardous material) and bottom ash produced from the burning of waste, residual metals which are extracted from the ash and energy. Mass burn incineration is also referred to as waste-to-energy (WTE) or energy from waste (EFW). Robust waste diversion programs would be required to keep non-combustible, wet and hazardous material out of the WTE facility. Update: This action is currently being evaluated through a feasibility study on MWP and Waste-to-Energy. This study will be complete by mid-2025.
33.	Landfill Gas Management Strategy	Under this action, the City would develop a Landfill Gas Management Strategy that considers the City's current commitment through the PowerTrail agreement and the Climate Change Master Plan greenhouse gas (GHG) reduction targets. The strategy would also consider the

		Renewable Natural Gas Strategy project identified in the City's Energy Evolution Strategy. Currently, energy is recovered from the Trail Waste Facility landfill through a Landfill Gas Utilization Agreement with PowerTrail Inc. to manage landfill gas (methane) and turn it into electricity. This agreement expires in January 2027, with the possibility of two 5-year extensions, based on City Council approval and pending the ability of PowerTrail to secure a Power Purchase Agreement with the Province. The agreement with PowerTrail provides them with exclusive rights to all landfill gas generated at the Trail Waste facility landfill. The City owns the existing gas collection and flaring system infrastructure in place for the management of landfill gas which, will be available for use beyond its current agreement with PowerTrail beyond 2027. PowerTrail owns and operates the landfill gas to energy plant. There is an opportunity to develop a landfill gas to renewable natural gas (RNG) project at the Trail Waste Facility landfill. Such a project would have the potential to reduce GHG emissions and produce a clean fuel source. RNG could be used for a variety of energy uses, including transportation fuels, electricity, and heating. Update: This strategy is currently in development and has been selected as both a Strategic Initiative Project and as a part of the Corporate Service Review. The City hopes to deliver a business case to Council with a recommended path forward by the end of 2024.
34.	TWFL Expansion within existing footprint	The Trail Waste Facility Landfill (TWFL) is permitted to accept solid, non-hazardous waste generated within the boundaries of the City of Ottawa (City). The TWFL has a total site area of 153 hectares, of which 85 hectares are approved for landfilling and the remaining 68 hectares is

		considered buffer land, which is designed to attenuate potential landfill impacts on the surrounding area and local communities. The TWFL has an approved capacity of 16.9 million cubic metres, with approximately 5.1 million cubic metres (30%) of airspace remaining. New or additional disposal capacity will need to be secured before the closure of the TWF. This action examines the possibility of expanding the approved capacity of TWFL. Based on previous studies, there are limited opportunities to expand the TWFL. Previous studies have indicated that the area north of Stages 1, 2 and 3 (area B) would be the most favourable action to expand due to the geotechnical characteristics and available area. Update: City Council approved commencing the assessment process for the expansion of the TWFL on December 6, 2023.
35.	Use of Private Landfill(s)	This action is intended to explore the requirements and implications of using an existing landfill to supplement current disposal capacity at TWFL or be subsequent to the TWFL closure via contract with a private owner and/or operator of a landfill facility. Update – On September 27, 2023, City Council approved the staff recommendation to allow for the use of private landfills to divert approximately 60,000 tonnes of curbside garbage from the Trail Waste Facility Landfill, annually, over the term of the 2026 Curbside Collection Contract. This was a part of a larger update to the Curbside Collection Contract.
36.	Ban IC&I Waste from the TWFL	This action would ban IC&I Waste from the TWFL. The City is uniquely positioned to consider preserving TWFL capacity for residential use only, given the number of

		private sector landfills and transfer stations located within the city's boundaries and within 100km of its boundaries. This action is similar to the Disposal Ban action, where the City would implement a policy mechanism that prohibits IC&I materials or items from being disposed of in a landfill.

Objective 4 : Maximize Operational Advancements

Recommended Actions		Description
37.	Pilot Alternative Collection Containers	The action reviews the use of alternative waste collection containers in parks and public spaces across the City. This could include containers such as in-ground collection, plastic front-end load containers, multi-stream containers, and waste bins with solar compactors to improve collections efficiency and/or aesthetics and is applicable to City parks, including for dog waste, other public spaces. In-ground collection containers could also be installed at multi-residential properties; however, this would be at the discretion of property owners/developers. An in-ground waste collection container refers to a container where waste is stored securely underground and has an above ground opening to deposit waste material. They provide an alternative to traditional waste collection containers (e.g., roll off bins). In-ground waste collection systems are more aesthetically pleasing than the traditional waste collection containers, and can reduce odors, since the waste is stored underground at cooler temperatures and the above ground portion makes these systems easy and safe to use. Depending on the type of in-ground container, it is serviced by either a standard front- end loading collection vehicle or a more specialized vehicle with a hydraulic crane or boom. Currently, many different types of waste containers are used in parks and public spaces across the City. Some of

		these containers are owned by the City, with others being owned and serviced by the private sector. Frequency of collection is dependent on such factors as the season and frequency of use. Collections are completed on a daily, biweekly or weekly basis and some are seven days per week.
38.	RFID Technology on Waste Collection Containers	Equip waste collection containers with radio-frequency identification (RFID) capabilities to gain information about collection services and performance and ensure systems are in place to capture information on vehicles or programs. A RFID chip is typically embedded in a waste collection container or bin, which enables data to be transmitted to the collection vehicle at the time of collection or uploaded through a web-based application. RFID equipped receptables are commonly attached to existing municipality supplied containers or bins. Attaching RFID tags to resident owned receptacles is not implemented by municipalities as bins need to be uniform to ensure they are properly read by the system. RFID bins are typically used in conjunction with vehicle systems such as GPS and/or weigh scales. Depending on the type of RFID tag and vehicle system used, data can be used for waste container management for live tracking the collection of waste, providing data and statistics on waste generation rates, weight or volume of waste collected, waste densities and/or diversion and sensing when containers are near capacity or highly odorous and issuing an alert to the collection operator. GPS data on the collection vehicle's location and movements can also be used for optimizing waste collection operations in terms of routing, live tracking of waste vehicles, identifying potential issues/incidents through taking pictures and tracking locations and driver information.

39.	Collection of More Materials at the Curb	This action includes having the City offer curbside collection of additional materials such as batteries and electronics, light bulbs (some may be considered hazardous waste), wood pallets, textiles, Styrofoam and construction and demolition (C&D) materials such as wood, drywall and asphalt shingles. Collections would be offered periodically throughout the year or could be by appointment. The collection frequency required would be dependent upon the material, resources required to execute collection, processing, end of life management plans and budget. There is the potential for the City to implement new recycling programs to increase diversion with respect to waste streams not currently collected at the curb. As new recycling programs are potentially implemented, careful planning needs to occur including the identification of recycling end markets to determine the cost-benefit analysis, potential partnerships and collection actions. The City may decide to charge a fee for separate collection or the cost may be built into overall solid waste management fees charged to customers.
40.	Identify Curbside Collection Efficiencies	The City would undertake a curbside collection efficiency study, including a business case review, to determine contract requirements in advance of the future curbside collection contract being awarded. The study would consider costs, servicing the collection needs of a growing City and how to reduce greenhouse gas (GHG) emissions related to collection of waste. The study could include exploring: • The feasibility of a reduced collection week e.g. 4-day collection; • Night-time/early morning collection to avoid traffic; • Single stream versus co-collection of material;

		• Collection of waste from mixed use areas (residential and small business) e.g. Byward Market; • The use of/need for transfer station capacity; • The feasibility and cost implications of separate collection of leaf and yard waste (LYW), considering the future processing technology for organics post-2030; • The feasibility of decentralized LYW processing; • The use of semi or fully automated curbside garbage cart collection; • Separate collection of bulky items; and • Opportunities to leverage technology to enhance operations through data collection. • The study could also include exploring actions related to reducing the GHG impact of the curbside collection fleet. Update: Many of these items were reviewed as a part of the 2026 Curbside Collection Contract. City Council approved the 2026 Curbside Collection Contract on September 26, 2023.
41.	Undertake a review of the Yellow Bag program for Small Businesses	Under the Universal Program Review in 2004, the City ceased collecting waste from small businesses. Subsequently, the Yellow Bag Program was created as a user pay program to provide waste diversion services to small businesses, which no longer had access to them. It is a registration-based curbside collection program for garbage, recyclables and organics for small business that do not generate large amounts of waste. There are approximately 485 commercial business registered in the Yellow Bag Program. Participating business must purchase special yellow bags for garbage from participating Home Hardware retailers or the City of Ottawa Client Service Centers. Businesses can

		offset costs by using the City's recycling and organics programs, which are provided at no charge. They can set out up to 16 bags of garbage, 15 boxes of recycling, three green bins and up to 15 leaf and yard waste bags/bundles. Under this action, the City would undertake a review of the Yellow Bag program, including eligibility requirements and impacts on Individual Producer Responsibility (IPR) for the recycling portion of the program.
42.	Automated Cart Collection for Curbside Garbage	Determine the feasibility of switching to cart-based curbside collection of garbage using carts. Cart collection is the collection of residential garbage, typically in wheeled carts for curbside collection, and can be done through semi-automated or fully automated collection. Carts are either a standard size for all households or there may be an action for varying sizes, depending on the program approach. Important factors when considering the transition to cart-based program are typically related to health and safety considerations, modernization of collection infrastructure (allowing for automated collection, use of RFID/real-time per household data collection, etc.), citizen satisfaction (e.g., ease of use, storage), protection from animals/birds and associated litter. For the purposes of this action, this would require the City to switch to cart-based curbside collection of garbage using carts. Currently, curbside garbage is collected bi-weekly using customer owned garbage cans or garbage bags and the garbage limit is six items, which are manually collected.
43.	Innovation and Technology Strategy	The City would develop a strategy to integrate innovation into solid waste technologies and approaches. The Solid Waste Innovation and Technology Strategy would help the City proactively match it's short, medium and long-term

		waste management needs with innovation and technology solutions that will help address key challenges and drive the City towards its Zero Waste, Circular Economy and Climate Change Master Plan Goals. The strategy would include a framework, governance model and procurement strategy for how to attract local and international green-tech and knowledge-based industries to drive innovation, collaboration and local economic development. Helping further build upon Ottawa's strong history of innovation and diversity as a technology hub, this framework would seek to make Ottawa a hub that addresses key challenges facing the waste management industry. The strategy would support the core goals of the Smart City 2.0 Strategy to create a Connected City, Smart Economy and Innovative Government and align opportunities to support the City's Economic Development Strategy by further strengthening and supporting the continued diversification of the local knowledge-based business sector. The strategy would explore opportunities to partner with the private sector and other partners, including local universities, government researchers, and local economic development partners, such as Invest Ottawa and the Innovation Centre at Bayview Yards, to support and enable the creation, testing, demonstration and commercialization of new and innovative technologies and approaches to managing waste. It would also include the development of a governance model that would detail the roles and responsibilities of the City and all partners in delivering initiatives identified in the strategy, and include a funding strategy that would help attract and leverage grants and public sector funding and private investment to support initiatives.

44.	Future Use of Bufferlands Around TWFL and Nepean Landfill	This action would see the City complete the review of potential alternate and identify future uses for these lands. The City owns a number of properties abutting or in the vicinity of the Trail Waste Facility (TWF) and the closed Nepean Landfill, which are commonly referred to as 'bufferland properties'. These properties serve as contamination attenuation for the two waste management facilities, as a visual barrier for the TWF and are also used for City operational needs. Some of these properties are woodlots and are currently undeveloped. TWF also has a woodlot onsite which is used as contaminant attenuation for Stages 1 and 2. In total there are approximately 309 hectares (ha) of land in 7 locations: • Dewatering Pond, approximately 32 ha; • West of Moodie, three individual properties comprising approximately 25 ha; • Former White Pit, approximately 15 ha; • Noel Property, approximately 4 ha; • Aggregate Extraction Properties, two individual properties comprising approximately 150 ha; • South of Barnsdale Road, approximately 45 ha; and, • TWF woodlot, approximately 38 ha. The current land uses are not intensive and other facilities, such as buildings, yard and equipment lots for example, could be constructed while still maintaining their intended purpose of contamination attenuation and visual barriers. The City is currently reviewing actions for alternate and additional uses for the bufferland properties. Potential actions could include for the re-located Small Loads Facility (drop-off facility for residents, businesses and private haulers), future soil management or leachate treatment facility, leaf and yard waste processing, other City operations, leased to third-party for operations or for

		community use such as a BMX park, bird observatory, or nature trails. In addition, the bufferland properties could also be used as demonstration/pilot sites for future waste management technologies
45.	Working Towards a Zero Emissions Solid Waste Fleet	Build on the City's past and future Green Fleet related work and the Energy Evolution Strategy. It would consider opportunities such as different fuel types, including Renewable Natural Gas (RNG) and hybrid or electric vehicles for the solid waste fleet, which includes residential waste collection trucks, landfill equipment, trucks used to collect waste from parks and other public spaces such as transit stops, as well as other vehicles used by solid waste staff to carry out their work. The solid waste fleet contributes to greenhouse gas (GHG) emissions in Ottawa. This action would aim to reduce GHG emissions from the solid waste fleet, which includes residential waste collection trucks, landfill equipment, trucks used to collect waste from parks and other public spaces such as transit stops, as well as other vehicles used by solid waste staff to carry out their work. A phased approached towards a zero emissions solid waste fleet is proposed. Measures for progressively reducing the GHG impact of the fleet would be implemented according to the availability of technology, continuous research and piloting/testing of technologies to determine their suitability to the City's needs. The transition to a zero-emissions solid waste fleet will occur over time, as technology becomes available, collection contracts are issued and as fleet vehicles and equipment are replaced at the end of their lifecycle. This action could be advanced and supported through Fleet Services' work. The City's Fleet Services actively monitors technologies available and implements them once they have been demonstrated in an Ottawa context. Fleet Services also undertakes trials to test new

		technologies and alternate fuels, where funding is available and operations are not negatively affected. It is critical that vehicles and equipment can operate in Ottawa's climate conditions and geography and suit operational needs. The focus is therefore on proven technologies that will meet service delivery needs.

Objective 5: Develop a Zero Waste Culture Across the City

Recommended Actions		Objectives
46.	Develop and implement New/Expanded Outreach Initiatives	This action would see the City develop new outreach initiatives and expand existing outreach programs to support Solid Waste Master Plan goals and programs. The outreach initiatives would go beyond providing program information and target specific actions and behaviours that are necessary for optimal waste avoidance, waste diversion and program performance. Specific initiatives would be tailored using an evidence-based approach, for example, using waste audit data and would be informed by the market research been done on resident's behaviour and attitudes towards waste. Initiatives would typically be characterized as direct interactions with people (either in person or virtually) that engage participants and can be targeted towards specific materials, behaviours, programs or sectors (e.g. the multi-residential sector). This action could include undertaking engagement initiatives such as waste awareness and reduction campaigns, promotion of nationally or internationally recognized certification programs (e.g. 3R Certified Program), waste awareness events, appreciation events, promotion of waste reduction and diversion competitions and challenges, ambassador programs, community breakfasts (e.g. Metro Vancouver sustainability issues) and public art projects.

		The initiatives could be developed and delivered by the City or in partnership with local organizations, for example, groups that offer programs and events to newcomers to Ottawa. Building on the work that the City has done on identifying different audiences and their attitudes and behaviours related to solid waste, the City would look for new and ways to engage people who are not participating in the City's programs, and to educate them about new programs and initiatives.
47.	Behavioural Change Management Strategy	The City would develop an overarching Behavioural Change Management Strategy to achieve waste avoidance, reduction and diversion goals and objectives. The strategy would facilitate change by understanding the habits and behaviours behind current waste management and disposal practices and leveraging behavioural science to identify approaches for adapting these behaviours or creating new ones that will improve waste avoidance, reduction and diversion. Behaviour change is at the heart of many waste reduction and diversion efforts and it will be critical to their success. Behaviours need to shift away from waste creation and disposal to waste avoidance, reduction, reuse and recycling. Making this change requires a shift in the capabilities, motivations and opportunities for residents to reduce and divert their waste. It's about changing individuals' habits and scaling up to entire communities and cities. This is needed because waste reduction and diversion are big challenges that require collective changes. A conventional approach might only look at ways to raise awareness. A behaviour insights approach is more systematic, trying to understand the drivers and opportunities for change. This supports the development of communications and outreach plans and campaigns to

		address each of the issues and barriers, while also making it convenient and cost effective to change behaviour. Behaviour science can help us understand how to best put policy into practice. For example, a plastic bag tax is an example of a transparent nudge that has been introduced by some governments. The cost is usually low enough that it shouldn't have an impact on behaviour, but even a low bag tax can be surprisingly effective. Behaviour scientists suggest that the tax achieves this by sending a signal that it isn't good to use plastic bags.
48.	Develop and Implement Educational Initiatives	This action would see the City develop and implement new educational initiatives aimed at educating residents on the importance of and how to avoid, reduce and divert waste. The educational initiatives would go beyond providing program information and target specific actions and behaviours that are necessary for optimal waste avoidance, waste diversion and program performance. Specific initiatives would be tailored using an evidence-based approach, for example, using waste audit data and would be informed by market research done on resident's behaviour and attitudes towards waste. The initiatives may be media-oriented and could include initiatives such as a zero waste or circular economy education centre at an existing or new waste facility, or online tools and mobile applications such as online waste sorting games. They could also include tailored presentations, workshops, courses and tours of waste management facilities for City staff, schools, the public and the IC&I sector. These could be developed and delivered by the City themselves or in partnership with local organizations.
49.	Develop and Implement Marketing & Communication Tools	This action would see the City develop and deploy new marketing and communication tools. This could include scheduled newsletters or blogs, a TV/video series

		(including on YouTube), displays in public spaces, print materials, direct mail, targeted campaigns, collection staff appreciation programs, etc. These tools would be informed by the market research that has been done on resident's behaviour and attitudes towards waste. This action could also include exploring behaviour related to waste as part of workshops, design sprints, focus groups, etc., in order to tailor tools to issues relevant to the Ottawa context. The Waste Explorer app could be enhanced through integrating mapping of locations for reuse, recycling or disposal into the app (i.e. integrating retailers and charitable organizations participating in the City's, "Take it Back!" Program). The City would ensure that all tools and outreach materials are optimized for use with mobile phones. These tools could be developed and delivered by the City, by an external provider or in partnerships with local organizations.
50.	Develop a Circular Economy Strategy & Implementation	This action would see the City develop a Circular Economy Strategy that would align with Provincial and Federal efforts and be the primary framework and action plan for how Ottawa will work towards its aspirational vision of becoming a Zero Waste and circular city. Zero Waste and Circular Economy share similar principles and objectives, in that they prioritize waste avoidance, reduction, and reuse (supporting sharing economy, refurbishment and remanufacturing) above recycling and disposal. The strategy would be developed based on the three core principles of a circular economy: 1. Designing out waste and pollution; 2. Keeping products and materials in use; and 3. Regenerating natural systems.

		According to the Ellen McArthur Foundation, city governments have a strong influence over the physical development of a city, the management of its assets, and the procurement of public goods and services. By embedding circular economy principles into urban policy levers, cities can bring about changes to the use and management of materials in cities; and urban priorities around access to housing, mobility and economic development can also be met in a way that supports prosperity, jobs, health and communities. This action would involve the development of a dedicated cross-departmental Circular Economy Committee, with support from external stakeholders and industry experts that would work to develop a community and organization Circular Economy Strategy and action plan and work collectively to implement it. At a high level, the strategy would: • Explore the integration of circular economy principles into public procurement frameworks and develop implementation plans and frameworks that can be implemented across departments. • Develop a circular framework that can also be embraced and implemented in a phased approach across all City facilities and operations. • Investigate municipal policy levers, initiatives and actions the City could implement to support the community transition to a circular economy. • Explore opportunities to become an innovation hub for circular economy innovations and accelerate the transition to a circular economy.