

Waste Transition Plan

Recommendation

That the August 29, 2019, City Operations report CR_7172, be received for information.

Executive Summary

Waste Services is progressing toward a more environmentally sustainable future that provides Edmontonians with maximum economic and environmental benefits while ensuring rates remain stable and consistent. With a focus on waste reduction, Administration's priorities and initiatives are directed towards programs and services that support the minimization of materials ending up in landfills.

Key focus areas for 2020 to 2022 include:

1. Waste Diversion and Reduction Programs;
2. Citizen and Community Support;
3. Interim Organics Management;
4. Environmental Stewardship;
5. Build Business Maturity; and
6. Fiscal Accountability.

Aligned to the broader 25-year Waste Strategy (August 29, 2019, CR_5829), efforts within these key focus areas will result in positive short and long-term impacts that support the journey toward a healthier city, with vibrant urban places across a broader regional backdrop and increasing climate resilience.

Report

Overview

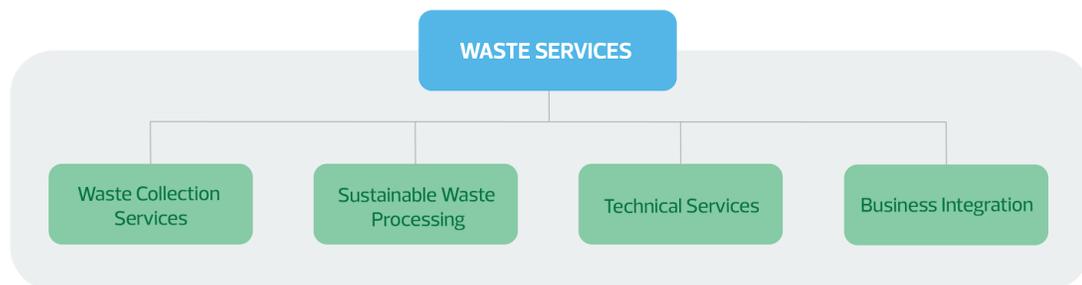
Waste Services' vision to be a customer-driven proponent of sustainable and innovative waste management, will continue to be a focus during this business planning period. The implementation of major program changes will be aligned to Waste Services' mission: to provide waste management services for the City of Edmonton, taking into consideration the needs of residents, the preservation of natural resources, the protection of the environment and the financial capabilities of the City.

Alignment with the vision and mission begins with the organizational structure of the Branch. Waste Services consists of four sections, each strategically aligned to

achieve these goals.

- Waste Collection Services responds to the needs of customers through efficient and effective waste collection and drop-off services.
- Sustainable Waste Processing operates the Edmonton Waste Management Centre with a focus on receiving and sorting residential waste in an effort to recover valuable resources and minimize the amount of waste going to landfill.
- Technical Services is dedicated to the engineering, technical support, innovation and environmental compliance of waste processing and collection operations.
- Business Integration is responsible for defining Branch strategy, facilitating operational direction, resource allocation, financial governance and Branch-wide alignment to corporate directives.

An Asset Management team has been created with specific responsibility for life cycle management of waste processing facilities and infrastructure assets. The team is developing an asset management strategy and plans to guide activities to maximize asset service life, while minimizing the life cycle cost. The team will ensure that all activities align with the City's approved Infrastructure Strategy.



Waste Services' organizational structure is fully aligned to the Corporate Business Plan, which organizes the City of Edmonton's work through:

- **Our strategic objective** - to make transformational impacts in our community
- **Our service objective** - to deliver excellent services to our community
- **Our supporting objective** - to manage the corporation for our community

Waste Services is highly integrated and aligned to this plan and supports the City's success in advancing these objectives.

Waste Diversion

The 25-year Waste Strategy outlines new program directions for single and multi-unit residential waste collection, programming to advance waste diversion within the Industrial, Commercial and Institutional sectors and a more targeted emphasis on waste reduction activities.

Single Unit Programs

- Transition to four stream waste collection (organics; grass, leaf and yard waste; garbage; and recycling) with a cart-based system for organics and garbage (green cart and black cart) and seasonal collection of yard waste. Single unit residences will begin to transition to the new program in fall 2020.
- Learnings from the Edmonton Cart Rollout, where curbside waste collection program changes have been implemented for 8,000 households, will also be used to inform the citywide launch of the Source Separated Organics Program.

Multi-unit Programs

- Extending waste diversion strategies into the multi-unit residential sector will include setting a targeted diversion goal for this sector and determining required collection programs and associated communications and educational programs. The methodology and baseline measurements for the sector will be established, along with a Program Business Case and recommended bylaw provisions by the end of fall 2020.
- The multi-unit sector has unique challenges and educational needs, and this recommended approach allows more preparation and transition time to help ensure these needs are accommodated. Source separation program changes for the multi-unit sector are planned to begin implementation in the fall of 2022.

Non-residential Programs (Industrial, Commercial and Institutional)

- A strategic and policy review continues in this area and public engagement was completed with the non-residential sector to help determine whether the City's current path would meet the policy objectives. The City's participation in the non-residential sector is not part of its regulated mandate, which is to provide waste services to residential households.
- Reports on the Industrial, Commercial and Institutional Sector were presented to Utility Committee on August 23, 2018 (CR_6217) and February 1, 2019 (CR_6361). Based on the information in those reports and Council's direction, a Request for Proposal was issued in June 2019 to seek a third party operator for the Construction and Demolition waste operations. The Request for

Proposal is expected to close in August 2019. At that time, proposals will be evaluated and the contract will be awarded to the successful proponent.

- The 25-year Waste Strategy recommends changes to other business lines in this sector, including a wind-down of commercial collection and a migration of self-haul work to support greater diversion (pending processing capacity). Additional changes include recommended restrictions on single-use plastics and other single-use materials to come into effect January 2021 and source separation program changes to begin implementation in the fall of 2022.

Waste Reduction

Waste reduction encourages more effective use of natural resources and prevents the generation of waste in the first place. Reduction is at the top of the waste hierarchy as it is the most effective method of pollution prevention and is often the most cost-effective waste management option in the long term.

Waste reduction means using processes, practices, materials or products that avoid or minimize the creation of waste or environmental disturbance and reduce risk to human health or the environment.

The City will pursue three streams of activities over the next three years to begin to shift emphasis on waste reduction:

Quick Wins

These initiatives are all about refining current operations to better support waste reduction efforts; working more strategically and collaboratively with potential partners in the community, including the not-for-profit sector; and developing a more active “trouble-shooting” effort between the City, residents and partner organizations. Addressing these items should not require resource allocations or policy change.

Direct Facilitation

There are multiple areas where existing community-based programming is challenged by resource or structural issues, but where the City could play a direct facilitation role, including between organizations, to help bridge gaps. A number of potential initiatives originated from community members who noted gaps and identified opportunities for the City to step into this facilitating role. The City will develop a Waste Reduction Community of Practice to prioritize, assess and problem-solve initiatives within this category.

Innovation

A number of organizations are seeking to launch new business models, technologies and initiatives that could substantially improve the City’s waste reduction and reuse, and diversion efforts. Activities in this category would require allocation of new

resources and a process to streamline, evaluate and support the advancement of qualified initiatives. The City will continually evaluate opportunities to improve the waste system, in alignment with a zero waste goal.

Citizen and Community Support

Through the public engagement process, Administration was able to better understand the types of programs Edmontonians are looking for to support the city's progression toward a more environmentally sustainable future. A few of the key program support areas that will be the focus over the next three years include:

Education and Outreach

Administration engages Edmontonians in a wide variety of education and outreach initiatives aimed at increasing awareness, expanding knowledge and supporting environmental practices. In addition to ongoing waste reduction campaigns, Waste Services provides programs, tours, presentations and workshops to education facilities, individuals and public groups in an effort to improve Edmonton's environmental sustainability.

Administration will be broadening its outreach efforts over the next few years, creating new partnerships, programs, initiatives and materials to support all sectors in their waste reduction efforts. By focusing on an inclusive Waste Reduction Program, Waste Services aims to enable up to 10 percent of its 90 percent diversion from this programming.

The Waste Reduction Program is also aligned to support the Waste Services Interim Organics Management work through increased awareness and expansions of current composting programs.

Composting Programs

A key element of the Waste Reduction Program is the removal of organic materials from the waste stream. Currently Administration offers a number of programs aimed at turning organic materials into compost, most notably the Master Composter Recycler Program. This 'learn and serve' program sees volunteers completing forty hours of free training followed by at least 35 hours of volunteering. They are community advocates for waste reduction and help Edmontonians reduce, reuse, recycle and compost. Other programs that support the removal of organic materials from the waste stream include Compost Workshops, where residents are introduced into the world of soil and how to get started with backyard composting and Compost 'S cool that teaches Edmontonians everything from composting and soil building to weed and pest management. From Labour Day to Victoria Day residents have around the clock access to drop off food scraps in the site compost bins and, during the summer, at the Compost 'S cool site. Through the Compost 'S cool, a Composting Coach helps residents start composting by answering questions, providing a tour and

a chance to try some tools, sharing a few tricks and helping residents make a mini-worm bin to take home.

Finally, the composting program includes collaborative efforts with the Parks Section with City Operations' Parks and Roads Branch and Sustainable Food Edmonton, a non-profit organization that initiates and supports projects and programs to encourage the building of community through urban agriculture, to assist composting initiatives with Community Gardens.

To increase the amount of organic material being diverted from landfill, the composting programs will be expanded making them available to a wider audience, and increasing the amount of education and outreach provided to communities across Edmonton.

Assisted Waste Program

Administration offers an assisted waste collection service for eligible customers who have difficulty getting their recycling or garbage to the curb or lane. The program sees collectors picking up garbage and recycling from outside the front or back door of the home at no additional charge for this service.

With the transition to automated-collection, Administration is reevaluating program delivery to ensure that eligible residents with mobility issues receive the same level of care and service with the new cart rollout system.

Eco Stations

The City has four Eco Stations where residents can drop off unwanted waste material. Waste Services embarked on extensive public engagement in an effort to understand how to best support residents transitioning to more environmentally sustainable waste management practices. Residents identified more accessible Eco Station hours as a key support element. Waste Services will be implementing a change of Eco Station hours starting this fall to better support resident access to these facilities. Eco Stations will be open on a trial basis seven days a week during spring and fall. Residents will be able to drop off uncontaminated grass, leaf and yard waste free of charge throughout the year. These changes will not only increase diversion of this material from landfill but support residents in achieving the City's environmental goals by making drop off options more available.

Excess Waste Program and Variable Rates

Throughout the extensive public engagement sessions, the message has been clear that while residents are comfortable with the transition to the new waste set-out program, they will also need help in managing the transition. Providing options to residents for waste disposal will help to smooth the transition. During the first phase of cart roll out, all residents will receive a 240L black cart for residual waste at the

start of the program and will be given the option to change to a 120L cart within six months of program start, should they choose. Residents who choose a smaller cart will receive some rate benefit associated with this choice. This is a direct incentive for those households who choose to set out less waste. The potential rate impact of this program is described in the Single Unit Set-out Business Case (CR_7173).

Administration will also implement an Excess Waste Program for residual waste. This program will allow residents the ability to purchase specially branded clear bags for disposal of residual household garbage only. To support the City's goal of 90 percent diversion from landfill, use of these bags for yard and leaf waste, recyclables and organic materials would not be permitted.

The Excess Waste Program is meant to provide options that give some flexibility to households who may need occasional access to additional residual waste set-out capacity (ordinary household trash) yet provide a direct economic incentive to generate less waste and to increase recycling and source separation of organics.

The program will be based on a full cost-recovery model and the initial price per bag for the program will be included as part of the 2020 Rate Filing.

Interim Organics Management

Edmonton is transitioning toward a more environmentally sustainable future. A key component of that progression is the implementation of a four-stream waste management system, where organic material and recyclables are removed from the residual waste stream that ends up in landfills. The transition is anticipated to be complete in 2025 with the commissioning of the new Organics Processing Facilities. In the interim, Administration has identified options to ensure that as much material as possible is diverted.

Edmonton Composting Facility

The Aeration Hall (where composting takes place) was officially shut down in May 2019. Facility condition investigations of the structure in 2017 showed signs of significant structural deficiencies. A recent investigation indicated that conditions in the facility have deteriorated further and Administration concluded it was no longer safe to operate the facility.

The Edmonton Composting Facility was the primary source of organic waste processing capacity for the rate payers and commercial customers. The facility is anticipated to be replaced over time (see section below). Without access to the Aeration Hall the only organics processing capacity available for the next five years will be the new Anaerobic Digestion Facility and the capacity that exists at the Edmonton Waste Management Centre cure site to windrow compost yard waste.

Therefore, in the short term, organics processing will be partially directed to the Anaerobic Digestion Facility. Once fully commissioned, the Anaerobic Digestion Facility is anticipated to process up to 40,000 tonnes of organic waste per year. The residential Source Separated Organics Program, once implemented citywide, will produce an estimated 68,000 tonnes of material per year, leaving a processing gap of an estimated 28,000 tonnes per year. Through the Source Separated Organics demonstration area (8,000 homes) Waste Services continues to evaluate the projected volume of Source Separated Organics for the full roll-out.

In the interim, priority access to the Anaerobic Digestion Facility will be given to Edmonton Cart Rollout participants and major commercial customers who are able to source separate their organics, and the single unit residents (in that order). Until construction of new Organics Processing Facilities is complete, it is likely that organic material from multi-units will not be processed. Additionally, a new open windrow composting program for leaf and yard waste is being investigated, to serve the needs of both the single unit and multi unit residents for the next number of years.

To close the processing gap in the interim, Administration is taking the following actions:

- Administration has reached out to other jurisdictions in the Edmonton Metropolitan Region to see if there is an opportunity to partner for additional windrow compost capacity in 2020. This partnership could take on any form.
- A Request For Expression of Interest has been released to better understand the available interim sourcing options for organics processing until the Organic Processing Facilities are completed. Engineered fabric and steel remote structures as well as in-vessel composting systems are being explored. In-vessel composting systems can consist of metal or plastic tanks or concrete bunkers in which air flow and temperature can be controlled. The interim solution may be set up at the Edmonton Waste Management Centre or another location as required.
- Other options are being pursued from existing commercial composting in the local area. Access to composting options at a scale to serve the Edmonton residents is very limited. However, a mix of smaller commercial options may provide some viable interim capacity.
- Administration continues to evaluate its participation in the processing and composting of biosolids. This non-regulated line of business utilizes organic waste processing capacity that could otherwise be used for the processing of organic waste. A change in this program could result in additional processing capacity for residential waste.
- To support additional yard waste diversion, this fall, Eco Stations will be open seven days a week from September 29 to November 9, 2019.

Organics Processing Facilities

At the February 1, 2019 Utility Committee, Administration presented a business case with a recommended approach for organics management (CR_6669 Organics Management). The required renewal of the Edmonton Composting Facility prompted the development of a long-term strategy for the facility. The business case outlined four feasible alternatives for renewal. The recommended approach involves demolishing the existing composting facility and constructing a new anaerobic digestion facility on the current site along with new equipment to generate renewable natural gas from biogas.

Administration has completed the initial Public-Private-Partnership (P3) project screening, which supports further evaluation and analysis and a secondary screening for P3 viability. The decision of when the Organics Processing Facilities will be built and if the P3 approach is accepted will impact the Branch's financial position. All facilities are anticipated to be fully operational by 2025.

Planned actions over the next three years include:

- Completion of P3 assessment for the new Organics Processing Facilities. The resulting business case will be presented to Committee and Council in spring 2020 and provide direction for developing long-term strategies for the future Organics Processing Facilities, which includes the Anaerobic Digestion Facility and the compost cure site, to meet the City's existing and future organics processing needs.
- Continued research into updated organic waste processing technologies.
- Design of the new Organics Processing Facilities and related procurement.
- The Remote Cure Site Expansion Project, currently underway, will provide the necessary physical expansion to the current external cure site to reduce bottlenecks under both current and future organic processing facility capacity scenarios.

Environmental Stewardship

In addition, Waste Services supports the City's Environmental Protection and Stewardship programs by reducing Edmonton's carbon footprint and protecting the natural environment through diversion of waste from landfill. This business plan aligns to the City of Edmonton's Waste Management Policy C527, which commits to delivering sustainable waste management service exceeding provincial waste diversion and processing standards.

Landfill Closure

The closure of the Clover Bar Landfill is ongoing. The development of the overall closure plan (including landfill gas, storm water, leachate and groundwater) is making

steady progress. Waste Services is communicating with Alberta Environment and Parks prior to the submission of the final closure plan. Procurement for construction to complete the capping of the landfill will begin once the City receives approval on the proposed plan.

Completion of this work depends on a number of factors, including the effectiveness of leachate removal and slope stability. However, managing landfill closure and executing environmental due diligence is one of the Branch's top priorities. The Branch is also updating the landfill closure liability to ensure closure activities are properly managed. An update of the financial impacts will be provided as part of the 2020 utility rate filing.

Landfill Environmental Impacts

Waste Services has designated expertise and resources to actively identify and manage all landfill-related environmental risks and liabilities. The relationship with Alberta Environment and Parks is strong and has been built on trust, open communication, diligent reporting and follow-through. The elevated groundwater level at the EWMC site, particularly next to the landfill, has been addressed by rebuilding a new diversion system to replace the non-functional old one. Monitoring wells and devices have been added to understand the landfill slope stability impacts due to high leachate levels.

Administration has successfully concluded a triple-win solution with Alberta Environment and Parks and EPCOR to have the collected leachate treated at Goldbar Wastewater Treatment Plant. This will ensure that a significant amount of leachate can be collected and treated with minimal cost. Leachate seepage was proactively managed by immediate solutions and a long-term management strategy is being developed.

Planned actions over the next three years include:

- Working on capping and closure of the Clover Bar Landfill.
- Construction and operation of a groundwater diversion system at Edmonton Waste Management Centre.
- Reduction of leachate levels within Clover Bar Landfill and working on all other environmental due diligence.

Building Business Maturity

Performance Management

Waste Services continues to mature its performance management practices and will continue to align with the Corporate Enterprise Performance Measurement program.

In 2018, Waste Services developed a Performance Management Framework that fully enables data-driven decision making. In the framework, a total of 24 Branch measures and 46 service measures were established through a customer-centric approach, focusing on results that matter to residents and City Council. Rigorous measuring, reporting, reviewing and accountability structures have been established to ensure that Waste Services' performance management is sustainable, effective and efficient.

Part of the Performance Management Framework focused on revisiting the relevance and effectiveness of existing performance measures, resetting performance targets to be achievable yet challenging and developing a new set of Key Performance Indicators (Attachment 1) to measure the success of program and service delivery.

Administration also revised the methodology for calculating the residential waste diversion rate. The methodology shows the contribution of each program and included resetting the targets to reflect the various waste initiatives that started in 2018. The single unit residential diversion rate is now accurately allocated across customer types. The multi-unit and non-residential diversion rate calculation methodology will be developed as part of the overall waste strategy.

Planned actions over the next three years include:

- Development of waste diversion rate calculation methodology for the multi-unit and Industrial, Commercial and Institutional sectors.
- Review, refinement and alignment of performance measurement system.

Shared Services Value

The City of Edmonton employs a Shared Services model whereby support services required for the operations of all City businesses are provided through centralized areas of expertise, for example, Employee Services and Corporate Procurement and Supply Services. This approach takes advantage of efficiencies gained through economies of scale and opportunities to provide more robust systems and support. Waste Services is fully expensed for its portion of shared services costs.

As part of the overall strategic review, shared services costs will be reviewed to ensure Waste Services is receiving the indicated services at rates that are appropriate. This will ensure Waste Services continues to provide fair value for customers for these shared services.

Planned actions over the next three years include:

- Work with corporate partners to evaluate service requirements.
- Realize productivity improvements through consolidation processes.
- Identify integration opportunities to increase efficiencies.

Refuse Derived Fuel Enhancement

Waste Services has initiated the refuse derived fuel enhancement project to improve system reliability. Upon completion, the operational performance of the Refuse Derived Fuel Facility will be significantly improved and will also provide the ability to send refuse derived fuel material to alternative markets.

Planned actions over the next three years include:

- Review and implement process improvements and redundancies to ensure continuous availability of equipment.
- Construct an off-take system that will allow refuse derived fuel material to be produced and shipped off or stored, thereby improving the production capacity of the plant.

Sustainable Innovation

Waste Services has partnered with the University of Alberta, Innotech Alberta and CanmetENERGY and successfully secured a \$4 million grant from Alberta Innovates to form the Alberta Clean Energy Technology Accelerator (ACETA). This three-year collaborative research grant will help the Branch develop an innovation and research model to support Smart City's vision and economic development in the clean energy sector. Additionally, this work will promote the use and availability of the Advanced Energy Research Facility. In addition, Waste Services is seeking to boost the potential end markets for refuse derived fuel. This is based on expertise developed at the Edmonton Waste Management Centre and subject to product availability given ongoing commitments to the Waste to Biofuels Facility.

Planned actions over the next three years include:

- Develop an innovation and research model to support economic development in the clean energy sector.
- Seek financial and operational sustainability for the Advanced Energy Research Facility.

Environmental Commitment

A branchwide Envisio implementation gap analysis was recently completed and an action plan for all levels of leadership, supervisors and front line employees has been developed. Administration is committed to the City's Envisio policy, continually improving operations, compliance with environmental regulations and preventing pollution. Envisio is an environmental management system that provides a way for the City to both manage and improve environmental performance.

Planned actions over the next three years include:

- Include Enviso requirement in Branchwide strategy/planning development and consciously making decisions with environmental impact considerations.
- Designate resources as appropriate to fulfill Enviso requirements in all business areas.
- Review and update all existing operational procedures, ensure staff are aware of their environmental responsibilities and follow procedures.

Fiscal Accountability

Waste Services continues to strive towards achieving the financial indicators as set out in Waste Management Utility Fiscal Policy C558A. The Branch focuses on providing stable and consistent rate increases of 2.5 percent while achieving cash targets and working to achieve debt to net asset targets to ensure the Utility is financially sustainable over the long-term.

Waste Services' financial indicators incorporate the implementation of Branch initiatives in the 2020 to 2022 business planning period. Initiatives include increasing residential and non-residential waste diversion, citywide implementation of the Source Separated Organics Program for single unit residential households, enhancements to the Refuse Derived Fuel Facility and continuously improving the business in a fiscally responsible manner.

Net income and rate increases are required on a go-forward basis to manage the Utility's long-term financial sustainability, ensure sufficient funding for operations and provide funding for capital initiatives such as the rehabilitation or replacement of the composting facility and the rollout of strategic program changes. To provide stable rate increases as reflected in this Business Plan, the Branch has focused on operational efficiencies and managing within existing staff complements. Attachment 2 details the programs and services that are provided to single unit residents based on the monthly rate (as of 2019).

Key to Waste Services overall financial success is the management of non-rate and commercial revenues as several programs including Construction and Demolition Recycling (C&D), Commercial Collections and Biosolids undergo substantial programmatic changes. Also facing pressure is revenue from the Materials Recovery Facility as the industry responds to global economic forces. Waste Services' ongoing focus on expense management will help mitigate the impact of these revenue risks.

Risks and Mitigations

Several emerging risks have been identified for the 2020 to 2022 timeframe. Waste Services has conducted a thorough risk assessment for each of these risk areas, accounting for both short-term and long-term operational, capital and financial

impacts that may occur. Mitigation strategies have been developed for each area to minimize risk to the Utility and to the rate-payer. An overview of the identified high-level risks is included in Attachment 3.

Next Steps

Over the next three years, Administration will begin to implement components of the 25-year Waste Strategy. The focus on a new collection model, additional waste diversion and waste reduction in the residential sector will move Edmonton toward Council’s goal of 90 percent residential diversion from landfill. In addition, refined non-regulated programs will launch and be managed. Waste Services will also ensure fiscal accountability with minimal stable rate increases, continuous business improvements and a renewed focus on safety, employees and customers.

The next three years will be a period of significant transition for Waste Services. Many program and service changes are planned as a result of the 25-year Waste Strategy. Waste Services is well equipped to move forward with these changes and is also well positioned to deal with identified risks to ensure the success of the new strategy.

Corporate Outcomes and Performance Management

Corporate Outcome(s): Edmonton is an environmentally sustainable and resilient city						
Outcome(s)	Measure(s)	2018 Result(s)	Target(s)			
			2019	2020	2021	2022
Edmonton is an environmentally sustainable and resilient city	Single Unit Residential Waste Diversion Rate	36%	41%*	50%	64%	66%

*Due to the closure of the Edmonton Composting Facility, this target is not anticipated to be met. A full list of Waste Services Key Performance Indicators are available in Attachment 1.

Attachments

1. Waste Services Key Performance Indicators
2. Value for Money Infographic
3. Risk Overview

Others Reviewing this Report

- A. Laughlin, Acting Deputy City Manager, Financial and Corporate Services
- C. Owen, Deputy City Manager, Communications and Engagement
- J. Meliefste, Acting Deputy City Manager, Integrated Infrastructure Services
- S. McCabe, Deputy City Manager, Urban Form and Corporate Strategic Development
- B. Andriachuk, City Solicitor