Report to Civic Works Committee

To: **Chair and Members**
Civic Works Committee
From: **Kelly Scherr, P.Eng., MBA, FEC**
Deputy City Manager, Environment & Infrastructure
Subject: **Outcome of Climate Lens Process Applied to Waste Management Programs and Projects**
Date: **August 31, 2021**

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure the following report **BE RECEIVED** for information on how the Climate Lens Process has been applied to a broad range of plans, programs and projects in Waste Management.

Executive Summary

Greenhouse gas (GHG) increases and decreases, climate change and lifecycle of materials and processes have been considered a part of Waste Management services since 1995. Major city-wide waste management planning engagements that have included climate change considerations have occurred in 1997, 2007, 2013 and 2018. Now in 2020/2021, the application of the current Climate Lens Process includes the following five streams of activities:

1. Master Plans, Guidelines and Strategies
2. Existing and New Projects/Programs
3. Quick Assessment of Existing Operations
4. Annual Budget Updates & Multi-year Budgets
5. Building Climate Change Capacity

The implementation of the Climate Lens Process in Waste Management was a joint effort between the City's Climate Emergency Resource Team (CERT) and several representatives from Waste Management. The identification of target areas for climate emergency screening within the service, customization of the generic process to apply to those areas and the specifics related to the administrative implementation of process use in existing workflows were collaboratively created through workshops followed by document drafting and review. The customized Climate Emergency Screening Tool (CEST) for Waste Management was used in the joint effort.

Waste Management also served as a test group for the Corporation by addressing all five activity streams using the Climate Lens Process including developing a list of items to be incorporated immediately and next steps for action in a number of areas.

One of the first steps in the process was the creation of a Climate Emergency Issues Table (Table 1) focusing on the key areas of collection, waste reduction, diversion and resource recovery services and disposal (active and closed landfills). Review, discussion, use of the customized CEST and a review of the status of climate change being applied to waste management in other jurisdictions and past experience in London resulted in the following:

- Master Plans, Guidelines and Strategies - seven master plans, guidelines and strategies reviewed and next steps identified with respect to the Climate Lens Process (Table 2). In many cases, very thorough consideration of GHG generation, impacts and mitigative measures are evident.

- Existing and New Projects/Programs – six existing projects (Table 3) and 4 new projects (Table 4) will undergo further evaluation of climate change matters in the next three years based on a priority basis. The continuation of the W12A Landfill gas capture, flare and recovery is one of the highest priorities.

- Quick Assessment of Existing Operations – six areas of climate change mitigation and adaptation aspects related to day-to-day operations within Waste Management were identified.

- Annual Budget Updates & Multi-year Budgets - as part of enterprise-wide efforts to incorporate climate change considerations, annual budget amendment requests require the application of a climate lens to highlight potential opportunities and risks. Currently one 2022 Budget Amendment is being considered by Waste Management for the Annual Budget Update process. Once finalized, these details will be part of the 2022 budget process.

- Building Climate Change Capacity - the design and implementation of the Climate Lens Process provides an opportunity to increase the knowledge and understanding of climate emergency issues within staff and normalize the conversation about climate change. This stream focused on building climate change capacity within Waste Management staff and identified actions in the following areas: trainings, team meetings, professional development and networking, and internal coordination on shared objectives.

All five activity streams of the Climate Lens Process have been applied in Waste Management. The process has worked well. It has highlighted many positive aspects that are currently underway and has developed a path for existing projects and programs as well as new ones. Waste Management staff will be available to assist other Service Areas (and divisions within) of the Corporation as they are reviewed to both meet their own needs and overall Municipal Council direction with respect to the climate emergency.

Linkage to the Corporate Strategic Plan

Municipal Council continues to recognize the importance of climate change mitigation, climate change adaptation, sustainable energy use, related environmental issues and the need for a more sustainable and resilient city in the development of its 2019-2023 Strategic Plan for the City of London. Specifically, London's efforts in waste management and climate change mitigation and adaptation contributes to four out of five Areas of Focus:

- Strengthening Our Community
- Building a Sustainable City
- Growing our Economy
- Leading in Public Service

Analysis

1. Background Information

1.1 Previous Reports Related to this Matter

- April 27, 2021, Strategic Priorities and Policy Committee, Development of the Climate Emergency Action Plan Update
- August 11, 2020, Strategic Priorities and Policy Committee, Climate Emergency Action Plan Update
- November 25, 2019, Strategic Priorities and Policy Committee, Climate Change Emergency – Update
- April 23, 2019, Climate Emergency Declared at Municipal Council

1.2 Overview of Previous Climate Change Actions in Waste Management Planning

Greenhouse gas increases and decreases, climate change and lifecycle of materials and processes have been considered a part of Waste Management services since 1995. Since the mid-1990s, the City's Waste Management System has been based on

a Continuous Improvement Strategy (management philosophy) and Sustainable Waste Management. This strategy, which was approved by Municipal Council in 1997, has been a successful foundation for the program. In 2001, the City of London was featured alongside communities from around the world in a book titled *Integrated Solid Waste Management: A Lifecycle Inventory Approach* (Second Edition, McDougall, White, Franke and Hindle, 2001).

Major city-wide waste management planning engagements that have occurred in the last 25 years include:

1997 - Continuous Improvement System and Sustainable Waste Management
2007 - A Road Map to Maximize Waste Diversion in London
2013 - Road Map 2.0 – The Road to Increased Resource Recovery and Zero Waste
2018 - 60% Waste Diversion Action Plan

Additional overview details can be found in Appendix A.

1.3 Overview of Climate Lens Process and Application in Waste Management

Objectives

The Climate Lens Process was designed to ensure that climate emergency issues are part of the decision-making processes throughout the Corporation. To date, it has been considered in a number of areas of the Corporation. The Climate Lens Process will take this experience and new knowledge to significantly increase climate emergency activities and actions.

It is important to note that the Climate Lens Process itself is not intended to function as a “stop/go” or “yes/no” decision-making tool, rather it will be a process used to assist staff and inform decision-making on project/policy/strategy development with respect to climate change considerations and could result in a modified project or program scope. The objectives associated with the creation and use of the Climate Lens Process are to:

1. Ensure climate emergency issues are included in decision-making and evaluation of existing plans, programs and projects.
2. Establish a clear process for accountability and tracking of climate emergency issues including collection of information on decision outcomes and tracking the progress of projects/programs implemented.
3. Elevate understanding of the importance of climate emergency issues in decision-making across the Corporation.

Climate Lens Process

The Climate Lens Process includes the following five streams of activities:

1. Master Plans, Guidelines and Strategies
2. Existing and New Projects/Programs
3. Quick Assessment of Existing Operations
4. Annual Budget Updates & Multi-year Budgets
5. Building Climate Change Capacity

The Climate Emergency Screening Tool (CEST) can be used in the Climate Lens Process especially when it is customized for an area. The customized CEST is used to guide the screening of projects and programs for key climate emergency issues and opportunities for improvement. Key questions relating to climate change mitigation (reduction of GHG emitted) and adaptation (reduction of risks and improvement of resilience to climate change impacts) are provided to direct the assessment in several key areas.

There are times when the CEST is not required. For example, activity streams #3, #4 and #5 may use other tools and techniques that better meet the needs and levels of review and discussion.

Initial Steps and Preparation - Waste Management

The implementation of the Climate Lens Process in Waste Management was a joint effort between the City's Climate Emergency Resource Team (CERT) and several Waste Management representatives. The identification of target areas for the climate emergency screening within the service, customization of the generic process to apply to those areas and the specifics related to the administrative implementation of process use in existing workflows were collaboratively created through workshops followed by document drafting and review. The customized CEST for Waste Management was used in the joint effort.

Operations within Waste Management touch upon numerous climate emergency issues and aspects, however the following were determined to be most impactful and thus formed the basis for customization of the Climate Lens Process and the creation of a Climate Emergency Issues Tables (Table 1).

Table 1 – Climate Emergency Issue Tables

Climate Emergency Mitigation Considerations	Climate Emergency Adaptation Considerations
Collection Services	
Fossil fuel use in waste collection trucks currently emits about 1,800 tonnes GHGs per year (28% of fleet emissions). New compressed natural gas (CNG) trucks reduce emissions and allow for the potential use of renewable natural gas (RNG) as zero-emission fuel. Future changes to waste, recycling and Green Bin collection schedules due to source-separated organics program implementation will influence fuel use (i.e., more service will be provided which means more fuel). Route optimization to reduce fuel use.	Increased need for removal of waste materials due to extreme weather damages (e.g., basement flooding damages to drywall materials and furniture, etc.). Addressing increased heat stress on collection staff.
Waste Reduction, Diversion and Resource Recovery	
Ongoing work as part of the London Waste to Resources Innovation Centre, including work at Western University. Upcoming work to have an increased focus on the circular economy. Utilization of organic waste for additional RNG production; source-separated organics has the potential to supply an additional 70,000 GJ/year of RNG which would reduce GHG emissions by 4,000 tonnes/year. Mixed waste processing has the potential to produce an additional stream of organics for RNG production as well as the production of a refuse derived fuel (RDF) or solid recovered fuel (SRF). Increasing waste diversion and minimization reduces Scope 3 (consumption related) GHG emissions.	Increased need to divert and manage materials generated by extreme weather damages.
Disposal (Landfill) Services (Active and Closed)	
Collection and flaring of landfill methane in 2020 avoided 141,000 tonnes of GHG. Fugitive (not captured) methane emissions at W12A Landfill in 2020 were estimated to be 93,000 tonnes of GHG.	Severe weather impacts on landfill operations (e.g., increased stormwater management, leachate generation, onsite blowing litter, etc.).

Climate Emergency Mitigation Considerations	Climate Emergency Adaptation Considerations
Upgrading landfill gas to RNG; potential to supply over 380,000 GJ/year of RNG which would reduce GHG emissions by 17,000 tonnes/year. Closed landfill site methane emissions in 2020 were estimated to be 33,000 tonnes of GHG; based on waste-in-place models. Utilization of landfill sites for renewable energy projects (e.g., solar PV) or carbon sequestration (e.g., tree planting). Utilization of buffer agricultural lands for renewable energy projects (e.g., solar PV), carbon sequestration (e.g., tree planting), and/or regenerative agriculture.	

2 Discussion and Considerations

This section includes the outcomes of the Climate Lens Process and the next steps to be taken for Waste Management in all five activity streams as follows:

2.1 Master Plans, Guidelines and Strategies
2.2 Existing and New Projects/Programs
2.3 Quick Assessment of Existing Operations
2.4 Annual Budget Updates & Multi-year Budgets
2.5 Building Climate Change Capacity

2.1 Master Plans, Guidelines and Strategies

The following master plans, guidelines and strategies, including status, are the key ones with respect to climate change matters (Table 2).

Table 2 – Review of Plans, Guidelines and Strategies

Master Plan, Guideline, Strategy	Description	Status and Next Steps
Business Plan	Updated as required as part of the Multi-year Budget (MYB) processes	Status – Complete Next Steps - Next major update likely for 2024 – 2027 MYB
Green Fleet Plan as part of the Corporate Energy Management Program (waste collection packers)	In October 2018, Council approved the switch from diesel powered waste collection vehicles to compressed natural gas (CNG) vehicles as packers are replaced. CNG vehicles are significantly cleaner, reducing GHG by about 12% annually, and significantly reducing tailpipe emissions of fine particulate matter (about 50% reduction) and nitrogen oxides (about 90% reduction).	Status – Complete Next Steps - Implementation underway
60% Waste Diversion action Plan (WDAP)	The 60% WDAP included an assessment of the lifecycle greenhouse gas emissions (GHG) impacts of the proposed new waste diversion measures, using Environment Canada's GHG Calculator for Waste Management model and the U.S Environmental	Status - Complete Next Steps - Implementation underway

Master Plan, Guideline, Strategy	Description	Status and Next Steps
	Protection Agency's Waste Reduction Model (WARM, version 14 released March 2016). The proposed waste diversion measures are estimated to reduce GHG emissions by 17,000 to 27,000 tonnes annually.	
Long-term Resource Recovery Plan (Strategy)	This project involves the development of a plan to maximize waste reduction, reuse, recycling, resource recovery, energy recovery and/or waste conversion in an economically viable and environmentally responsible manner. The 60% Waste Diversion Action Plan is a major step for the long-term Resource Recovery Strategy.	Status - In progress Next Steps – Climate Lens Process to be applied
W12A Design & Operations Plan	This document, approved by the Ministry of the Environment Conservation & Parks (MECP), governs the operations of the W12A Landfill as part of the current Waste Environmental Compliance Approval (ECA).	Status - Complete. Next Steps - the current version is required to be followed until a new Design & Operations Plan is produced
Environmental Assessment (EA) Act, Environmental Protection Act (EPA) and Ontario Water Resources Act (OWRA)	The City is undertaking an EA for the Expansion of the W12A Landfill. One of the required technical studies looks at incorporating measures in the landfill expansion design that reduce both the potential impact of climate change on the landfill (i.e., climate change adaptation) and its potential impact on climate change (i.e., climate change mitigation). Following the EA, additional technical studies are required for the ECAs under the EPA (Waste and Air) and the OWRA that become part of the new Design & Operations Plan.	Status - In progress Next Steps – Climate change considerations included
Residual Waste Disposal Plan (Strategy)	Parallel to the EA and as part of the Residual Waste Disposal Plan, the City is developing municipal policies, procedures and practices with respect to the operations of the W12A Landfill site that will not likely be covered by the new ECA.	Status - In progress Next Steps - Climate Lens Process will be applied

2.2 Existing and New Projects/Programs

To ensure that the full lifecycle of major projects and programs within Waste Management purview incorporates climate emergency considerations, the following process was followed.

Review of Existing Projects/Programs

Depending upon the stage at which an existing project is, there should still be opportunities to adjust the project to address climate change mitigation and adaptation aspects. However, these opportunities will decrease the further along the project is within its implementation stage. Ongoing programs can be reviewed with the Climate

Lens Process to identify opportunities for improved climate action outcomes for consideration as part of continuous improvement efforts. The following existing programs will be reviewed over the next three years (Table 3).

Table 3 – Review of Existing Projects and Programs

Existing Project/Program	Review Period
Landfill gas capture, flare and recovery. This is a priority project that has been delayed during the pandemic and several adjusted policies in British Columbia and Ontario have occurred with respect to purchasing RNG.	Ongoing - 2022
Curbside waste collection including Green Bin implementation & processing	2021 – 2022
Curbside yard materials collection & processing	2021 - 2022
Multi-family building waste collection	2022 - 2023
EnviroDepot-based programs and operation	2022 - 2023
Closed landfill site management	2022 - 2023

New Project Initiation

As noted above, the 60% Waste Diversion Action Plan incorporates the climate change mitigation aspects for new projects associated with diverting materials from the landfill as well as recycled materials displacing raw materials. The Climate Lens Process will be used to review and document other climate change mitigation and adaptation aspects that may lead to opportunities for improvement in upcoming new projects (Table 4).

Table 4 – Review of New Projects

New Project Initiation	Review Period
Future restrictions and/or bans of materials collected garbage (e.g., ceramics, wooden furniture, carpet, mattresses)	2021 - 2022
EnviroDepots expansions/ upgrades	2022 - 2023
Use Environment Canada's GHG Calculator for Waste Management model and the U.S Environmental Protection Agency's Waste Reduction Model (WARM) across the revised City of London Waste Management system.	2022 - 2023
W12A Landfill operation (as part of the development of the work being completed as part of the EA, EPA and OWRA approvals processes and subject to future direction from MECP and Council)	Ongoing to 2023

2.3 Quick Assessment of Existing Operations

Climate change mitigation and adaptation aspects related to day-to-day operations within Waste Management have been identified as:

- Employee commuting
- Fleet vehicle (e.g., pickup trucks, packers, flusher, frontend loader, etc.) procurement (e.g., right-sizing, shared vehicles, electric vehicles)
- Fleet vehicle (e.g., pickup trucks, packers, flusher, frontend loader, etc.) operation (e.g., anti-idling, eco-driving techniques)
- Work-related travel (in town and out-of-town)
- Continued use of Teams/Zoom for as many in-town/out-of-town meetings as possible
- Contracts and contractor actions
- Material (e.g., paper) and energy (e.g., lighting) use minimization and reducing other non-essential inputs

These aspects will be addressed as part of Building Climate Change Capacity (Activity Stream #5) and participation in Waste Management projects.

2.4 Annual Budget Updates and Multi-year Budgets

As part of enterprise-wide efforts to incorporate climate change considerations, annual budget amendment requests require the application of a climate lens to highlight potential opportunities and risks. This process will be led by Finance, supported by the Climate Emergency Resource Team, but require that each Service Area understand and be able to apply the climate lens to their parts of the budget process. At this stage of development, additional direction on satisfying this requirement has been provided in the guidance documentation issued by Finance as part of initiation of the annual budget amendment process.

Currently one 2022 Budget Amendment is being considered by Waste Management for the Annual Budget Update process. Once finalized, these details will be part of the 2022 budget process.

2.5 Building Climate Change Capacity

The design and implementation of the Climate Lens Process provides an opportunity to increase the knowledge and understanding of climate emergency issues within staff and normalize the conversation about climate change. This is viewed as a key outcome of the work to date and will contribute to an enterprise-wide culture shift towards more sustainable development.

This stream focused on building climate change capacity within Waste Management and identified the following:

1. Training – New City staff will be provided with a clear understanding of climate emergency issues as part of the on-boarding process. The training and presentation materials created by the Climate Emergency Resource Team can be adapted for on-boarding training in discussion with People Services.

2. Team Meetings – Climate emergency issues will become part of regular team meetings in Waste Management. Training materials for new staff will also be used to update existing staff.

3. Professional Development and Networking - For Waste Management, continuing participation in professional development and peer networks is encouraged to increase staff understanding of climate change mitigation and adaptation aspects of waste management infrastructure as well as solutions to address these aspects. Managers are encouraged to note this objective as part of staff professional development and review processes.

4. Internal Coordination on Shared Objectives - Waste Management staff will also work with other Service Areas and the Climate Emergency Resource Team to advance cross-Service Area initiatives to address emissions reduction through procurement, fleet, finance, and other relevant functions (e.g., assessing opportunities to procure commonly used construction materials, supplies and services with lowered embedded, operation and/or transport GHG emissions).

Administrative Requirements – Waste Management

The Climate Lens Process lead within Waste Management will be a combination of the Manager, Waste Diversion and Division Manager, Waste Management. An annual update will be provided to the Deputy City Manager, Environment & Infrastructure with copies provided to the Climate Emergency Resource Team.

Further reporting will be discussed to ensure Municipal Council objectives are being met including the implementation of the Climate Emergency Action Plan (currently in development).

3.0 Financial Impact/Considerations

There are no specific financial implications associated with this information report. Budget and financing are in place for the current programs and projects. Where it is not in place, the required processes are being followed through Finance Supports.

Conclusion

All five activity streams of the Climate Lens Process have been applied in Waste Management. The process has worked well. It has highlighted many positive aspects that are currently underway and has developed a path for existing projects and programs as well as new ones.

Waste Management also served as a test group for the Corporation by addressing all five activity streams the Climate Lens Process including developing a list of items to be incorporated immediately and next steps for action in a number of areas.

Waste Management staff will be available to assist other Service Areas (and divisions within) of the Corporation as they are reviewed to both meet their own needs and overall Council direction with respect to the climate emergency.

Prepared by:	**Michael Fabro P. Eng., MEB** **Manager, Climate Change Planning**
Prepared by:	**Jessica Favalaro, B.Sc.** **Manager, Waste Diversion**
Prepared by:	**Mike Losee, B.Sc.** **Division Manager, Waste Management**
Prepared and Submitted by:	**Jay Stanford MA, MPA** **Director, Climate Change, Environment & Waste Management**
Recommended by:	**Kelly Scherr, P.Eng., MBA, FEC, Deputy City Manager, Environment & Infrastructure**

Appendix A Overview of Previous Climate Change Actions in Waste Management Planning

Appendix B Climate Emergency Screening Tool Customized for Waste Management

Appendix A
Overview of Previous Climate Change Actions in Waste Management Planning

This appendix contains a brief overview of 4 major city-wide waste management planning engagements that have occurred in the last 25 years and the one under development.

1997 Continuous Improvement System and Sustainable Waste Management

Since the mid-1990s, the City's Waste Management System has been based on a Continuous Improvement Strategy (management philosophy) and Sustainable Waste Management. This strategy, which was approved by Municipal Council in 1997, has been the foundation for going forward. It uses an active framework that recognizes integrated waste management as an important environmental service in the community. Greenhouse gas increases and decreases, climate change and lifecycle of materials and processes have been considered a part of Waste Management services since 1995.

By effectively allocating financial and human resources, this environmental service contributes to the protection of human health and the environment. By supporting an integrated system of waste reduction (i.e., not producing waste in the first place), recovery of materials that can be recycled and composted, and ensuring that what remains is handled in an environmentally responsible manner, this strategy provides the mechanism for continuous improvement of the waste management system. Since this strategy was approved over twenty years ago, London has steadily increased its performance to the current level of 45% waste diversion of residential waste while having one of the lowest total waste management costs in Ontario for urban centres (based on statistics compiled by the Municipal Benchmarking Network Canada).

2007 A Road Map to Maximize Waste Diversion in London

A Road Map to Maximize Waste Diversion in London (2007) outlined a number of options to achieve higher diversion rates and asked for feedback from the public.

Diversion measures implemented as a result of this process included new materials added to the Blue Box program (e.g., milk and juice cartons, drinking boxes, mixed plastics, steel paint cans, aerosol cans and cardboard cans), new materials added to the EnviroDepots (e.g., tires, appliances, fluorescent tubes and bulbs), second Blue Box provided to single family homes, reusable blue bags provided to apartment units, more blue carts supplied to apartment buildings, expansion of the Oxford EnviroDepot, increased days open at the Household Special Waste depot from one to five days and completion of a Green Bin pilot study.

2013 Road Map 2.0 – The Road to Increased Resource Recovery and Zero Waste

Road Map 2.0 The Road to Increased Resource Recovery and Zero Waste (2013) also outlined a number of options to achieve higher diversion rates and asked for feedback from the public.

Diversion measures implemented as a result of this process included the reduction in the garbage container limit from 4 to 3 containers per collection, construction of a fourth EnviroDepot to serve the north end of the city, new materials added to the Blue Box program (mixed polycoat), completed community composting pilot projects, completed food reduction awareness pilot projects and instituted the curbside collection and composting of Christmas trees.

2018 60% Waste Diversion Action Plan

The development of the 60% Waste Diversion Action Plan drew on a variety of sources of information, experience and insight from other waste management and environmental professionals.

This included a review of other Ontario and Canadian municipalities and the United States; consideration of regional resource recovery opportunities; engagement and feedback from the public; consideration and alignment with provincial strategies, direction and legislation; updating local waste composition data for curbside and multi-residential homes; and gathering information from the waste management and resource recovery industry.

The Action Plan proposes a set of 21 actions to achieve 60% diversion of residential waste by the end of 2022. The budget for the multi-year implementation (2020-2023 Multi-Year Budget Business Case #1) was approved March 2, 2020. Shortly after this date, the COVID-19 state of emergency was declared provincially on March 17, 2020, and locally March 20, 2020. A revised implementation plan and budget was approved by Municipal Council on January 12, 2021 that includes the implementation of a Green Bin program.

Long-term Resource Recovery Plan (in development)

To plan for the future, the City is developing a long-term Resource Recovery Plan. The Resource Recovery Plan involves the development of actions to maximize waste reduction, reuse, recycling and resource recovery in an economically viable and environmentally responsible manner.

The Resource Recovery Plan will identify:

- opportunities for advanced resource recovery and increased waste diversion through new, emerging and next generation technologies and where these technologies may play a role in London and area;
- the understanding of climate change impacts, both mitigation and adaptation;
- areas to reduce or maintain current costs of City programs;
- ways in which to support local job creation efforts;
- ways in which to maximize program convenience to Londoners; and,
- methods to align with Provincial direction and the *Waste Free Ontario Act, 2016.*

The 60% Waste Diversion Action Plan is a major step for the long-term Resource Recovery Strategy.

Appendix B
Climate Emergency Screening Tool Customized for Waste Management

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Climate Emergency Screening Tool

Incorporating Climate Considerations into Decision-making for Projects and Programs

Waste Management

Draft Version 8

June 2021

City of London

Project or Program Title

Provide a brief title that is used to identify the subject of evaluation

Project Description

Provide a brief project description that describes the type of project or program (e.g., new waste diversion program, landfill expansion, etc.), physical elements (location, materials, etc.), service(s) involved and any implementation specifics.

Project/Program Status

Please indicate the status of the project and add details in the comment area:

- ☐ Concept
- ☐ Proposal
- ☐ Environmental Assessment
- ☐ Design
- ☐ Pre-Construction
- ☐ Construction
- ☐ Operational

Context and Assumptions

Provide a brief description of any important contextual data and assumptions that impact the project design and/or purpose, or a reference to any studies that are relevant to the project.

Climate Emergency Screening – Aspect Analysis

A. Mitigation

1. *Does this project or program help to reduce the amount of organic material going to landfill?*

   ☐ Yes ☐ No ☐ Uncertain ☐ Not Applicable

   Comments/Notes

2. *Does this project or program help to reduce fugitive methane emissions from landfill sites?*

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

3. *Does this project help to reduce fossil fuel use?*

   Example: landfill gas utilization, biogas production & utilization, reduce vehicle trips, route optimization, improved energy/fuel efficiency, recycled content of product

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

4. *Does this project help to reduce the upstream climate and other environmental impacts of producing goods and services?*

   Example: reduces emissions and resource depletion from raw material extraction & processing, extends useful life of a product, increases material recovery at end of product use

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

5. *Does this project help to reduce greenhouse gas emissions by other means?*

   Example: carbon sequestration from trees, regenerative agriculture style land rehabilitation

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

6. *Can this project provide an opportunity to reduce the greenhouse gas emissions intensity of construction materials used?*

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

B. Adaptation

1. *Will this project or program help to reduce the requirements for stormwater management?*

   Example: low-impact development measures, permeable pavement

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

2. *Have future intense rainfall events been taken into consideration for this project or program?*

   Example: increased capacity of stormwater ponds and surface drainage system

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

3. *Have extreme wind events been taken into consideration for this project or program?*

Example: enhanced fencing or more frequent application of fill as cover to minimize blowing of landfill waste from the site

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

4. *Will project landscaping provide for the protection and enhancement of London's Natural Heritage System?*

   Example: using low-maintenance native species in replanted areas, filling vegetation gaps in natural heritage corridors, supporting pollinators, removing invasive species

   □ Yes □ No □ Uncertain □ Not Applicable

   Comments/Notes

5. *Have impacts from increased ambient air temperatures and more frequent extreme heat days during summer months been taken into consideration for this project or program?*

Example: potential cooling requirements for staff, increased frequency of breaks, vulnerabilities in infrastructure or equipment to extreme heat

□ Yes □ No □ Uncertain □ Not Applicable

Comments/Notes

Opportunities

Based on the issues identified above, identify opportunities to revise the project to improve how climate change mitigation and adaptation aspects are addressed.

Recommendations

Have any recommendations surfaced that should be carried forward for this work? Is further analysis required? If so, what would be the desired outcome of the further analysis?

The Climate Emergency Resource Team is available to help with conducting further analysis or identifying the potential need for further analysis.

Step 1 – Internal Review (Internal Specialist Panel)

High-level quantification of climate mitigation aspects and climate adaptation aspects by internal staff can be completed with minimal additional effort and may provide sufficient clarity to inform decision-making. This includes the use of Environment Canada's GHG Calculator for Waste Management model and the US EPA WARM tool to assess the lifecycle impacts of waste diversion options.

Step 2 – Detailed Internal Study (Internal Specialist Panel)

If the issues or uncertainties associated with the project require detailed quantification of climate mitigation aspects and climate adaptation aspects, particularly if new or detailed data analysis beyond the capabilities of existing tools established from previous work is required, a stand-alone report prepared by internal specialists may be required.

Step 3 – Engage External Qualified Specialists for a Specific Aspect

Specific issues or aspects may require external expertise to procure existing relevant data, conduct primary data collection, conduct data analysis and interpretation, prepare detailed modeling and/or assess risk to address specific aspects outside of internal staff expertise.

Step 4 – Consultant-Driven Comprehensive Climate Lens Assessment

A consultant-driven detailed climate lens assessment would be carried out as part of the scope of work for Individual Environmental Assessments, Municipal Class Environmental Assessments, and large infrastructure projects that may also be subject to the Government of Canada requirement to complete a GHG Mitigation Assessment and, in many cases, a Climate Change Resilience Assessment (link).