

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 Screening Applied to Major
Transportation Projects

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions **BE TAKEN** with respect to the initial Climate Emergency screening of current major transportation projects:

- a) The Civic Administration **BE DIRECTED** to implement the project specific recommendations contained herein that includes:
 - i. Proceeding with the implementation of a number of transportation projects with consideration of the outcomes of the review as identified in this report;
 - ii. Suspending the Discover Wonderland Environmental Assessment noting that the role and function of this corridor will be considered as part of the future Mobility Master Plan;
 - iii. Suspending the corridor widening on Adelaide Street North noting that the Environmental Assessment for the Adelaide Street North should be finalized to inform complete streets intersection improvements at Sunningdale Road planned for 2025 and the remainder of the corridor improvements will be subject to further assessment under the future Mobility Master Plan;
- b) That, subject to Municipal Council approval of recommendation a), Civic Administration **BE DIRECTED** to adjust the Multi-Year Budget during the next appropriate update cycle; and
- c) The Civic Administration **BE DIRECTED** to review ongoing transportation projects to consider climate change mitigation and adaptation to ensure resiliency of critical transportation infrastructure.

Executive Summary

On April 23, 2019, Council approved a declaration of a climate emergency and requested Civic Administration to report back on tangible actions that the municipality can undertake. A report to the Strategic Priorities and Policy Committee on November 25, 2019 identified the next steps and highlighted the interrelationship between programs, projects and strategies designed to reduce energy use and increase climate change mitigation and adaptation. A subsequent report on April 27, 2021 provided an update regarding the status on actions, including the rollout and evolution of the awareness and screening process, community engagement and actions underway.

One of the action items identified in the initial report was for staff to complete an initial screening of current and planned major transportation projects using the interim Climate Emergency Screening Tool (CEST). This report provides the results of the review of current major transportation projects using the CEST. The reviewed projects include a variety of initiatives that represent the current diversified approach to sustainable transportation outlined in the Transportation Master Plan.

Projects that optimize and support sustainable mobility modes are recommended to proceed with consideration of the climate lens outcomes. The recommendations also

endorse a complete streets approach. In general, reconstruction of strategic streets in growing areas that are missing components of pedestrian, cycling and transit amenities are recommended for construction to a four-lane Civic Boulevard Complete Street standard as a cost-effective approach to enable sustainable mobility choices, support growth and accommodate municipal and emergency services. The widening of streets, particularly to six lanes, where the corridors are already relatively complete is recommended for further consideration under the future Mobility Master Plan. Of the 12 projects assessed, the review identified two initiatives that comprised capacity increases on relatively complete streets that are recommended to not proceed further at this time and be subject to further review in the upcoming Mobility Master Plan in case there are additional active transportation or transit needs that might influence their geometry:

- Suspending the Discover Wonderland Environmental Assessment that considers a six-lane widening of the Wonderland Road corridor; and,
- Suspending the corridor widening component of the Adelaide Street North Environmental Assessment between Fanshawe Park Road and Sunningdale Road.

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. London's efforts in transportation and climate change mitigation and adaptation contribute to the five Areas of Focus:

- Strengthening Our Community
- Building a Sustainable City
- Growing our Economy
- Creating a Safe London for Women and Girls
- Leading in Public Service

Analysis

1.0 Background Information

In December 2019, Council directed staff to complete an initial screen of current major transportation projects using the interim screening Climate Emergency Evaluation Tool (CEET, which was subsequently changed to Climate Emergency Screening Tool – CEST during its evolution).

1.1 Previous Reports Related to this Matter

- June 19, 2012, Civic Works Committee, London 2030 Transportation Master Plan
- March 3, 2014, Civic Works Committee, London Road Safety Strategy
- September 7, 2016, Civic Works Committee, London ON Bikes Cycling Master Plan
- May 28, 2018, Civic Works Committee, Smart Moves Transportation Master Plan Accomplishments
- August 13, 2018, Civic Works Committee, Complete Streets Design Manual
- May 6, 2019, Strategic Priorities and Policy Committee, Approval of 2019 Development Charges By-Law and DC Background Study
- April 23, 2019, Climate Emergency Declared at Municipal Council
- November 25, 2019, Strategic Priorities and Policy Committee, Climate Change Emergency – Update
- August 11, 2020, Strategic Priorities and Policy Committee, Climate Emergency Action Plan Update
- April 27, 2021, Strategic Priorities and Policy Committee, Development of the Climate Emergency Action Plan Update

1.2 Overview of Climate Lens Process

The Climate Lens Process was designed to ensure climate emergency issues are incorporated into decision-making throughout the corporation in a consistent manner. 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 is intended to assist staff and inform decision-making on project development with respect to climate change considerations.

The Climate Lens Process addresses the following five streams of activities, which together are meant to implement the process effectively across all Service Areas of the Corporation:

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

The work presented in this report focuses on the results of the second stream of the Climate Lens Process for the Transportation Services, which focuses on the review of 12 existing and planned projects.

1.3 Customized Screening Tool for Transportation Projects

The Climate Lens Process applied to existing and new projects and/or programs is defined by the implementation of a customized Climate Emergency Screening Tool (CEST) for transportation capital projects. 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 greenhouse gasses emitted) and adaptation (reduction of risks and improvement of resilience to climate change impacts) are provided to direct the assessment in several key areas.

The customized Transportation Capital Project CEST template is included in Appendix A.

2.0 Discussion and Considerations

The City’s last comprehensive household travel survey, conducted in the fall of 2016, identified that Londoners make 1.63 million trips in a typical day. This equates to an average of 3.4 trips per day per person. More recently during the COVID-19 pandemic, traffic volumes on city streets have been highly variable. Traffic volumes on city streets declined significantly during the early stages of the pandemic and to a lesser extent in subsequent lockdowns. Recent data indicates that traffic volumes have rebounded to levels that are close to that in 2019. Trends in London and other Canadian cities also suggest increased pedestrian and cycling activities with a reduction in transit use. Prior to the pandemic the average trip length which varies by purpose and mode was 5.8 km within the census metropolitan area and 5.2 km within the city. Work trips are the longest with an average trip length of 9.1 km while school trips are the shortest with an average trip length of 4.2 km.

The Covid-19 pandemic has changed the way many people travel in London and across the country. It is expected that some of the changes will be temporary in nature while others will have permanent, lasting effects on traffic volumes, travel behavior and mode choice. Recognizing that travel behaviour and volumes continue to be influenced by constantly changing restrictions related to the pandemic, it is not possible to predict what a new baseline will look like and it may take some time to determine the ongoing impacts. Those changes will be assessed further as part of the new Mobility Master Plan, which is currently in the scoping stage.

There is a cost for mobility that spans economic, environmental and health realms.

Economic costs include infrastructure construction and maintenance costs for roads and parking, and the personal costs to own and operate a vehicle, risk and liability.

Environmental costs are the cost of pollutants emitted from motorized travel such as air pollution, greenhouse gases, noise emissions, water pollution and land use impacts. Health costs are the value of physical activity in preventing injury and disease as well as the cost of collision damage, injuries and fatalities.

As shown in the City's 2020 Greenhouse Community Energy Use & Greenhouse Gas Emissions Inventory, the impact of the pandemic on transportation energy use was significant. In particular:

- the amount of gasoline and diesel sold at London's gas stations dropped by 21% in 2020 compared with 2019 because of many London workplaces shifting to work from home as well as reduced trips associated with stay-at-home orders and similar restrictions (Source: Kent Marketing, 2020);
- less traffic, the desire for exercise, the desire to be outside, traveling alone, all contributed to the Londoners increasing the estimated total distance of trips taken by bike by 20% in 2020 compared to 2019 (Source: Google's Environmental Insights Explorer, London Transportation emissions, 2020); and,
- The number of vehicles registered in London in 2020 decreased by 6% compared to 2019 (Source: IHS Markit, 2020).

Even with the pandemic impacts, transportation still represented 41% of all greenhouse gas emissions in 2020. Personal vehicles accounted for most of these emissions, at about 740,000 tonnes, or 27% of all emissions. Based on data from Google's Environmental Insights Explorer, about one-third of all transportation GHG emissions are associated with trips that start and end within London. These are the trips that are the easiest to shift towards more sustainable transportation modes such as walking, cycling, and transit.

In recent years, the growth in the number of registered vehicles in London has greatly exceeded London's population growth. In 2010, there were about 203,000 vehicles registered in London. As of 2020, this had grown to over 273,000 vehicles – an increase of 35% in just ten years. Despite there being almost one vehicle for every adult in London (0.86 vehicles per person ages 20-84), the amount of transportation energy use per person is declining, supported primarily by a 24% reduction in fuel use per vehicle compared to 2010 levels.

How the 1.63 million daily trips in London are made is important for climate emergency evaluations. When compared to driving personal vehicles, transit provides a partial emission reduction and walking and bicycling provide a 100% comparative reduction. The benefits of more active transportation also include personal health benefits from physical activity.

The 2016 London household travel survey identified that "Auto Driver" is the dominant travel mode in London with 62.5% of total daily trips, followed by "Auto Passenger" at 14.1%. This share of auto travel is lower than other medium-sized urban areas in southern Ontario, such as Waterloo and Hamilton (72% and 68%, respectively, as recorded in the 2016 GTHA Transportation Tomorrow Survey). The daily share of transit trips is 7.6% among city residents. This level of transit use also compares well among cities of similar size to London, with transit shares in Waterloo and Hamilton at 4% and 7%, respectively, based on 2016 data. Walking represents 11.3% of trips and bicycles are used for 1.4% of trips. Note that this data was collected prior to the pandemic.

Measured trends over the previous 15 years indicate a decrease of 11% in the category of "Auto Driver". Approximately half of these trips have transitioned to "Auto Passenger" with the other half transitioning to walking and bicycling.

As London's population grows and the number of vehicles registered in London increases traffic congestion, there are often requests to meet this demand through road widening. However, the well-documented phenomena known as "induced demand" has shown that adding extra lanes for vehicles encourages more vehicle trips along that

route, eventually leading to a return to traffic congestion. This demonstrates the need to review roadway projects from a complete streets and strategic network perspective which considers future land use and growth while promoting increased use of more sustainable modes of travel.

2.1 Overview of Climate Change Impacts from Transportation Projects

Transportation projects touch upon numerous climate emergency issues and aspects, however the following considerations were determined to be most impactful and thus formed the basis for evaluation of projects with the customized CEST:

Climate Emergency Mitigation Considerations	Climate Emergency Adaptation Considerations
<p>Emissions: Reduce transportation emissions. Personal vehicles accounted for 740,000 tonnes of GHG emissions in 2020 (27% of total community emissions), with about one-third of GHG emissions associated with in-town trips</p> <p>Modal split: Improve mode split. 77% of in-town trips are made by automobile</p> <p>Modal split: Facilitate pedestrian, cyclist, transit, and goods movement within transportation planning and complete streets design</p> <p>Parking: Consider public EV charging & bike parking as part of street design</p> <p>Emissions: Reduce emissions from high-impact construction materials (e.g., concrete, asphalt, steel)</p>	<p>Urban heat island effect: Consider how dark road surfaces (i.e., asphalt) contribute to the urban heat island effect</p> <p>Green infrastructure: Plant street trees to provide shade for pedestrians as well as road surfaces. Street trees should consider the roadside environment</p> <p>Infrastructure resilience: Improve the extreme weather resilience of transportation infrastructure (e.g., intense rainfall events)</p> <p>Infrastructure resilience: Consider material choices that improve the resilience of infrastructure through increased freeze/thaw cycles</p> <p>Stormwater management: Incorporate low-impact development stormwater management improvement in road projects.</p>

2.2 Climate Lens Screening Outcomes

The customized Transportation Capital Projects CEST for projects and programs was applied to 12 current major projects. Findings from the use of the CEST are summarized in this report, focusing on emission reduction and climate adaptation elements already included in each of the projects and on elements or considerations that were identified as opportunities to improve the projects.

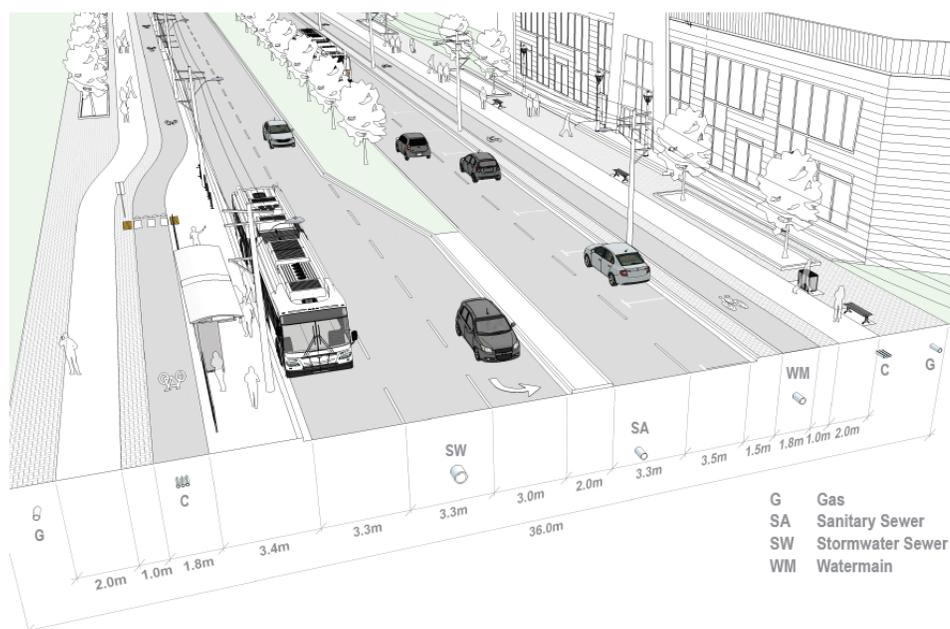
Individual reviews have been completed for a number of upcoming major transportation projects which are at various stages in the planning and design process. These reviews were completed using the current version of the customized Transportation Capital Projects Climate Emergency Screening Tool (CEST) which was developed by the City's Climate Emergency Resource Team with input from Transportation Planning and Design Division staff.

A number of common themes have arisen from the reviews that have been completed including:

- The conventional methods and materials associated with the construction of infrastructure projects involve significant GHG emissions from activities such as aggregate and cement production to the emissions from idling construction equipment.
- Projects that include roadway widening or otherwise increase vehicle throughput result in a net increase in GHG emissions from road use due to more vehicle

emissions. Variability in the predicted magnitude of the increase can be attributed to vehicle technology including the increased use of electrical vehicles. When compared to driving personal vehicles, transit provides partial emission reduction, and walking and bicycling provide a 100% comparative reduction. Creating better infrastructure that facilitates more pedestrian, cyclist, transit, and goods movement opportunities is an important consideration in the development of transportation projects in order to reduce emissions associated with the transportation network.

- Each transportation project is unique and addresses a variety of needs depending on the completeness of a street. Project needs include components such as active transportation, transit, traffic operations, geometrics, road safety, streetlighting, underground servicing, development access, emergency services and drainage. The reviews considered an evaluation of the current needs on each project. Where a two-lane street in an area of growth was deemed incomplete, reconstruction to a four-lane Civic Boulevard Complete Streets standard with walking, cycling and transit amenities and other services will ensure the project meets the long-term needs of the growing community. Construction of the full street cross section using the complete streets approach is a cost-effective way to provide more mobility choices and encourage active and sustainable city streets.
- Using the complete streets and multi-modal level of service approaches ensures that opportunities to improve mobility for all users are considered for each project which results in improvements to active transportation, transit facilities and the incorporation of green infrastructure to compliment roadway widening and provide environmental benefits.
- The approach of strategically considering roadway widening, only in strategic areas to address a range of transportation issues or to support development supports the development of a sustainable network. Roadway widening to solely accommodate general traffic leads to induced travel demand with additional trips, no mode shift incentive and a return to congestion. This approach and will be incorporated as part of the future Mobility Master Plan.



Example Cross Section from the Complete Streets Design Manual
(Civic Boulevard)

- Transportation projects provide an opportunity to construct new infrastructure which meet current design standards, renew assets and often provides improved resiliency to the impacts of climate change.

- As part of the future Mobility Master Plan, there will also be an opportunity to review individual projects to assist in decision making associated with major roadway widenings to ensure that GHG emissions associated with the construction and operation of transportation infrastructure is mitigated to the greatest extent possible and that climate change adaptation and infrastructure resiliency is fully considered.

2.3 Recommendations

The results of the CEST reviews for individual projects have been summarized and provided in Appendix B. The key findings and some of the more significant recommendations from these project reviews include:

1. Discover Wonderland Environmental Assessment Study

The current partially completed environmental assessment that contemplates widening the road to six-lanes to accommodate general traffic is recommended not to proceed. The corridor is relatively complete with transit, sidewalks and cycling facilities. Widening to six lanes to address traffic congestion is predicted to experience a return of congestion due to induced demand while creating accessibility pressures. Additionally, widening to six-lanes would have a negative impact on the streetscape and impact connectivity and accessibility across the corridor. The corridor will be evaluated as part of the upcoming Mobility Master Plan with a focus on transit, high occupancy vehicle use and active transportation.

2. Adelaide Street and Wharncliffe Road Railway Underpass Projects

These projects are recommended to proceed as they improve and optimize existing corridors and provide significant benefits for a large number of residents. The localized improvements address specific traffic operational concerns to improve traffic and transit movement, emergency response and safety while also promoting increased use of sustainable transportation and reduced vehicle idling.

3. Adelaide Street North Widening from Fanshawe Park Road to Sunningdale

The corridor widening was previously deferred to 2029. Based on the relative completeness of this corridor that has curbs, sidewalks and cycling lanes on both sides, widening should remain deferred and be evaluated as part of the upcoming Mobility Master Plan to ensure that any future improvements align with the City's objectives related to land use, transit planning and promoting equity and sustainable transportation options. The nearly complete environmental assessment should proceed to council to inform improvements identified for the Sunningdale Road intersection to address localized safety and operational issues and improve active transportation in conjunction with other Sunningdale Road improvements.

4. Southdale Road West, Sunningdale Road and Dingman Drive

These roads currently exist predominantly at a "rural" standard and are missing components of walking, cycling, transit and other complete streets amenities. Additionally, there are specific needs such as profile adjustments for safety, drainage improvements to accommodate growth, emergency services, streetlighting and traffic signal needs. Based on the relative incompleteness of these existing streets, these reconstruction projects are recommended to proceed. Implementation of a Civic Boulevard Complete Street standard is a cost-effective approach to provide amenities for all modes, accommodate emergency services and support growth in these developing areas.

5. Bradley Avenue Extension

This new corridor has long been identified in area growth plans. It is recommended that detailed design proceeds with continued focus on ensuring transit is supported and more sustainable mobility options are accommodated in this corridor. The completion of Bradley Avenue from Jalna to Wharncliffe will

provide significant transportation networks benefits while supporting and providing access to ongoing development in the area. Construction of this new road to a four-lane corridor, while including all complete streets components, will ensure the project meets the long-term needs of the currently proposed and future developments.

6. Windermere Road

This project is currently being scoped through the environmental assessment and recommended to continue. The project has the potential to improve active transportation and localized operational issues in the area of the hospital and emergency access. This project will improve mobility and access for major destinations while also examining the provision of connectivity to major active transportation corridors.

7. Fanshawe Park Road / Richmond Street Intersection Improvements

It is recommended that this project, which is currently in the detailed design phase, proceeds. This project considers and accommodates future growth as part of the Masonville Secondary Plan. This project will reduce cut-through traffic in the surrounding neighbourhoods, improve intersection safety, improve pedestrian and cycling amenities and support transit.

8. The Transportation Intelligent Mobility Management System (TIMMS)

The implementation of this project should continue on a priority basis as it will provide for more efficient traffic signal timing, coordination and incident management capability which will benefit transit and other services. It will also provide environmental benefits through reduced vehicle idling and delays which reduces GHG emissions.

9. Downtown Loop

As one of the rapid transit projects, the Downtown Loop is a key component of the balanced and sustainable approach identified in the Smart Moves Transportation Master Plan. It is recommended that construction and detailed design proceeds with continued focus on ensuring rapid transit is supported and more sustainable mobility options are accommodated in this corridor. It is also recommended that opportunities from the Climate Lens Assessment study are reviewed and incorporated into the design, as appropriate. The Downtown Loop is considered to be representative of the three rapid transit projects and similar review results are expected for the Wellington Gateway and East London Link projects.

3.0 Financial Impact/Considerations

3.1 Key Issues

If approved, the recommendations from the CEST reviews and specifically any project cancellations or deferrals will trigger future capital and/or operating budget updates. Specific budgetary impacts will be assessed subject to council direction on the recommendations outlined in this report. It is anticipated that any required adjustments will be reflected in the 2024-2027 Multi-Year Budget once the Mobility Master Plan has been completed. Additional impacts to the capital plan may also be identified as part of the 2025 Development Charges Background Study.

Conclusion

An efficient, equitable and sustainable transportation system is essential to supporting the City's economy and quality of life for residents. This has never been more important than now considering the impacts associated with the Covid-19 pandemic and climate

change. The City's goal is to provide transportation choices for all residents, which are accessible, convenient, safe, affordable and attractive, including driving, walking, biking and transit. Londoners' travel choices influence the emission of greenhouse gases related to transportation.

The Climate Emergency Screening Tool (CEST) was created in order to provide a consistent approach to incorporate climate change considerations and analysis into project decision-making. The series of questions forming the body of the tool are meant to highlight the potential impacts and effects of the project being evaluated in relation to the climate emergency. The CEST itself is not intended to function as "stop/go" or "yes/no" decision-making tool. It is acknowledged that most activities undertaken by a municipality will have some degree of impact on the natural environment, particularly activities related to essential services like the provision of clean water, waste and resource management, storm water management and mobility. The CEST is meant to inform decision making and is not intended to be a stand-alone decision-making tool.

The intent of the CEST is to require decision-makers to apply a climate change lens to evaluate projects alongside conventional technical and environmental criteria and encourage the investigation and consideration of less-impactful alternatives, wherever feasible, desirable or required.

The recommendations herein endorse a strategic network perspective which considers future land use and growth combined with a complete streets approach for Transportation capital projects. In general, reconstruction of roads in growing areas that are missing components of pedestrian, cycling and transit amenities are recommended for construction to a four-lane Civic Boulevard Complete Street standard as a cost-effective approach to enable sustainable mobility choices and support growth and coordinate a variety of needs such as underground services, drainage, goods movement, green infrastructure and emergency services. The widening of corridors, particularly to six lanes, that are already mostly complete streets is recommended for reconsideration under the Mobility Master Plan development.

The development of the City's next Mobility Master Plan will begin in the near future. This study will provide an opportunity to further review major projects and create new initiatives with a climate change and sustainability perspective. This will combine city building and economic growth objectives with environmental sustainability, equity and accessibility. Recognizing the climate emergency declaration, the plan's targets will need to be firmly founded in, and plan to further enhance, the sustainability of a transportation system that contributes to reducing the impact of climate change.

Prepared by: Michael Fabro P. Eng., MEB
Manager, Climate Change Planning

Prepared by: Garfield Dales, P. Eng.
Division Manager, Transportation Planning & Design

Submitted by: Jay Stanford MA, MPA
Director, Climate Change, Environment & Waste Management

Submitted by: Doug MacRae, P.Eng., MPA
Director, Transportation & Mobility

Recommended by: Kelly Scherr, P.Eng., MBA, FEC, Deputy City Manager,
Environment & Infrastructure

cc: Jennie Dann, Director, Construction & Infrastructure Services

Appendix A Overview of the Climate Lens Process for Transportation Capital Projects

Appendix B Review of Major Transportation Projects

Appendix A: Overview of the Climate Lens Process for Transportation Capital Projects

Climate Emergency Screening Tool

Transportation Capital Projects Implementation Guide

July 2021 (V2)

Abstract: This guide details implementation of the Climate Emergency Screening process for transportation capital projects to ensure positive climate action is considered in relevant decision-making.

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1. Background

1.1. Genesis

The need for climate emergency screening process was identified as a key component of the City's response to the declaration of the climate emergency. The internal development of a generic, interim process was completed by the Climate Emergency Resource Team in Spring 2020 and formed the basis for which customized climate emergency screening processes were later created for each Service Area within the Corporation of the City of London.

1.2. Objectives

The climate emergency screening process was designed to get climate emergency issues into decision-making throughout the corporation. It is important to note that the climate emergency screening process itself is not intended to function as "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 goals associated with the creation and use of the climate emergency screening process are to:

1. Ensure climate emergency issues are included in decision-making and evaluation of existing practices can be robustly conducted.
2. Establish a clear process for accountability and tracking of climate emergency screening process decisions, including collection of information on decision outcomes.
3. Elevate understanding of the importance of climate emergency issues in decision-making across the Corporation.

1.3. Development Process

The implementation of the climate emergency screening process for transportation capital projects was a joint effort between the City's Climate Emergency Resource Team and key representatives from Transportation Planning & Design. The identification of target areas for climate emergency screening process application within the Division, 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.

1.4. Climate Emergency Issues for Transportation Capital Projects

Implementation of transportation capital projects 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 emergency screening process:

Climate Emergency Mitigation	Climate Emergency Adaptation
<ul style="list-style-type: none"> - Emissions: Reduce transportation emissions. Personal vehicles accounted for 740,000 tonnes of GHG emissions in 2020 (27% of total community emissions), with about one-third of GHG emissions associated with in-town trips - Modal split: Improve mode split. 77% of in-town trips are made by automobile - Modal split: Prioritize pedestrian, cyclist, transit, and goods movement within transportation planning and road design - Parking: Consider public EV charging & bike parking as part of street design - Emissions: Reduce emissions from high-impact construction materials (e.g., concrete, asphalt, steel) 	<ul style="list-style-type: none"> - Urban heat island effect: Consider how dark road surfaces (i.e., asphalt) contribute to the urban heat island effect - Green infrastructure: Plant street trees to provide shade for pedestrians as well as road surfaces. Street trees should consider the roadside environment - Infrastructure resilience: Improve the extreme weather resilience of transportation infrastructure (e.g., intense rainfall events) - Infrastructure resilience: Consider material choices that improve the resilience of infrastructure through increased freeze/thaw cycles - Stormwater management: Incorporate low-impact development stormwater management improvement in road projects

2. Climate Emergency Awareness and Screening Process

The climate emergency screening 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. Multi-year Budgets & Annual Budget Updates
5. Building Climate Change Capacity within the Service Area

2.1. Master Plans, Guidelines and Strategies

Master plans, guidelines and strategies that direct project work are key places where climate change considerations should be included. Should any such foundational documents be up for renewal, or if any new such foundational documents are in the works, this is an ideal time to ensure that climate change mitigation and adaptation aspects noted in section 1.4 above are incorporated.

If staff are involved in the creation or revision of master plans, guidelines or strategies, the Climate Emergency Resource Team can be available to discuss and/or assist with the incorporation of climate emergency considerations. It is recommended that a member of the Climate Emergency Resource Team be contacted to participate in early foundational document scoping or review planning (e.g. creating terms of reference) efforts, whenever possible.

In discussions with Transportation Planning & Design staff, it was noted that a new Mobility Master Plan is to be developed to supersede the existing Smart Moves London 2030 Transportation Master Plan and the Cycling Master Plan. The Climate Emergency Resource Team is available to assist with the development of the terms of reference for the new Mobility Master Plan.

The existing Complete Streets Design Manual is a relatively new document (2018) that incorporates most of the climate change mitigation and adaptation aspects noted in section 1.4 above, specifically:

- Walking
- Cycling
- Transit
- Through-Movement (Vehicles and Freight)
- Parking
- Green Infrastructure (e.g., street trees and low-impact development)
- Utilities

Some climate emergency aspects that are missing from the Complete Streets Design Manual include provisions for curbside electric vehicles charging in designated curbside parking in Main Street and Civic Boulevard street typologies.

New transportation projects undertaken by staff should incorporate the design considerations of the Complete Streets Design Manual to the greatest extent possible. Additional discussion is provided in section 2.2 below.

These existing plan documents will also be reviewed by the Climate Emergency Resource Team to identify opportunities to improve these plans when these are updated in the future:

- Complete Streets Design Manual (2018)
- Downtown Parking Strategy (2017)
- Neighbourhood Bike Parking Guidelines (2021)

- City of London Design Specifications and Requirements Manual (2021)

2.2. Existing and New Projects/Programs

To ensure that the full lifecycle of projects and programs incorporates climate emergency considerations, the following process will be followed. The process involves the use of a customized Climate Emergency Screening Tool (Appendix I).

2.2.1. New Project Initiation and Start-up

A Climate Lens Assessment is required for any project receiving Federal Government funding through the Investing in Canada Infrastructure Program or the Disaster Mitigation and Adaptation Fund. The scope of work to undertake such Climate Lens Assessments for projects should incorporate the London-specific climate change mitigation and adaptation aspects noted in section 1.4 above. In order to meet federal funding requirements, detailed analysis of project greenhouse gas emissions and potential climate change related impacts assessments are required (evergreen requirements: <https://www.infrastructure.gc.ca/pub/other-autre/cl-occ-eng.html>). These requirements go beyond the depth and intent of the Climate Emergency Screening Tool but are considered in the process as “Further Analysis”, which is detailed in Section 4 of this guide.

For projects not subject to the Federal Climate Lens Assessments but that require an Environmental Assessment (EA) or Municipal Class Environmental Assessment (MCEA), the identification of climate mitigation and adaptation aspects needs to be included within the Terms of Reference, as has recently been reiterated in responses received from the Ministry of Environment Conservation and Parks (MECP) on notices of commencement for wastewater projects requiring assessment approval. The Climate Emergency Screening Tool has been developed to assist with the identification of climate mitigation and adaptation aspects and is meant to supplement the content of the recently updated [“Considering Climate Change in the Environmental Assessment Process”](#) guide from the Ontario MECP.

If any projects or programs are being initiated that do not require either the Federal Climate Lens Assessment or any type of EA, the Climate Emergency Screening Tool can be applied early in the process to identify any opportunities for improvement.

2.2.2. New Project Detailed Design and Engineering

As noted above, the Complete Streets Design Manual incorporates most of the climate change mitigation and adaptation aspects relevant for transportation capital projects and, as such, these design considerations should be incorporated to the greatest extent possible for the street typology of the project. If a design consideration cannot be incorporated into the project, the rationale for its exclusion needs to be documented and alternative solutions evaluated to determine whether the relevant climate aspect can be addressed by other means. The Climate Emergency Screening Tool can be used to review and document deviations from the design manual at this stage. It is recommended that during detailed design start-up, any previously completed Climate

Emergency Screening Tool be reviewed and if no Climate Emergency Screening Tool had been applied to the project that one be used at this time.

2.2.3. Review of Existing Projects

Depending upon the stage at which an existing transportation capital project is, there will 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 projects and programs (e.g. annual sidewalk program) can be reviewed with the Climate Emergency Screening Tool to identify opportunities for improved climate action outcomes for consideration as part of continuous improvement efforts.

For example, a project that is currently undergoing the Environmental Assessment process can have climate change mitigation and adaptation aspects added to the scope of work being undertaken, recognizing that there may be additional costs associated with a change to the scope of work for the consultant undertaking this work. However, a project that has already entered the construction phase will have few opportunities to modify.

2.3. Quick Assessment of Existing Operations

Climate change mitigation and adaptation aspects related to day-to-day operations within transportation include:

- Employee commuting
- Fleet vehicle procurement (e.g., right-sizing, shared vehicles, electric vehicles)
- Fleet vehicle operation (e.g., anti-idling, eco-driving techniques)
- Work-related travel (in town and out-of-town)
- Material (e.g., paper) and energy (e.g., lighting) use minimization

An evaluation of potential opportunities to reduce GHG emissions from operational activities within the service area should be conducted and revisited annually. An enterprise-wide, operational issues screening resource is under development to satisfy this requirement in a consistent, streamlined manner.

2.4. Multi-year Budgets & Annual Budget Updates

As part of enterprise-wide efforts to incorporate climate change considerations, annual budget amendment requests will 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 will be provided in the guidance documentation issued by Finance as part of initiation of the annual budget amendment process.

Given the 2021 announcement of Federal Government funding for active transportation infrastructure, there may be an opportunity to leverage senior government funding

programs to implement cycling projects currently identified in the Cycling Master Plan within the Multi-Year Budget.

Project budget estimates for upcoming projects being included within the Multi-Year Budget should incorporate the lifecycle capital and operating costs for the relevant design considerations from the Complete Streets Design Manual to the greatest extent possible.

2.5. Building Climate Change Capacity

The design and implementation of the climate emergency screening and awareness 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.

The stream of activities focused on building climate change capacity within each Service Area includes:

Training

New staff should be provided with a clear understanding of climate emergency issues related to the Service Area they are joining as part of the on-boarding process. The training and presentation materials created by the Climate Emergency Resource Team should be adapted for on-boarding training in concert with Human Resources.

Professional Development & Networking

Continuing participation in professional development and peer networks is encouraged to increase staff understanding of climate change mitigation and adaptation aspects of transportation 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.

Internal Coordination on Shared Objectives

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 with lowered embedded GHG emissions).

3. Administrative Requirements

3.1. Review and Sign-Off

The climate emergency screening lead is the Division Manager. All questions regarding the use and tracking of the climate emergency awareness and screening process for decision-making support should be directed here. The review and approval of climate

emergency awareness and screening process tools should be completed by the Manager responsible for the activity being reviewed.

3.2. Record-keeping & Communication

Once a Climate Emergency Screening Tool has been utilized to inform decision-making for a project or program, a copy should be forward to the climate emergency screening lead for filing. If any standing committee report is produced relating to the activity reviewed, the report author is encouraged to reference the Climate Emergency Screening Tool findings within the report for improved decision-making transparency.

4. Further Analysis

If the screening of any activity identified significant climate change mitigation and/or adaptation concerns (identified issues) or significant uncertainty due to lack of available data and/or understanding (uncertainty of issues), additional steps can be taken to provide clarity and/or alternative options analysis.

The Climate Emergency Resource Team is available to help, if required, 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 within the Division can often be completed with minimal additional effort and may provide sufficient clarity to appropriately inform decision-making.

If issues remain following engagement of internal experts on identified issues and/or uncertainties, or if aspects are more complex than can be managed with existing tools and competencies, move on to Step 2 (or Step 3, if the need for targeted external expertise is flagged right away).

For example, staff from Environmental Programs, Facilities, Fleet and/or City Planning may have relevant expertise that can be utilized to perform the required additional analysis (e.g., 2020 Electric Zamboni \$/GHG Emissions reduction analysis to support recommendations).

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 (e.g., 60% Waste Diversion Action Plan, need to reduce idling [report](#)).

If further issues remain, or if aspects are still complicated beyond the capabilities of internal staff, move on to Step 3 (or Step 4, if aspects are extremely complicated).

Step 3 – Engage External Qualified Specialists for Specific Aspect

For circumstances where decision-making needs require the assessment of a project

aspect that is outside the areas of expertise of internal staff, the need to engage an external qualified specialist may be identified. 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. Such external assistance in this step would be limited to the analysis of one or more specific aspects, but not a fulsome review of the entire project (e.g., engage a consultant for traffic emission models that would then go in to a staff report – i.e., \$10,000-\$25,000 level of effort).

Step 4 – Consultant-Driven Comprehensive Climate Lens Assessment

Recognizing that internal specialists may not be able to dedicate the amount of time required to fully assess all aspects of a very large and complex project (or may not have extensive enough expertise), a consultant-driven detailed climate lens assessment may be warranted. Such projects are likely to be those significantly 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](#)). These assessments are anticipated to require significant investment from the City and involve detailed and extensive modeling, data analysis and comparative evaluation of feasible options.

Appendix I – Climate Emergency Screening Tool for Projects and Programs

Climate Emergency Screening Tool

Incorporating Climate Considerations into Decision-making for Projects

Transportation Capital Projects

Draft Version 8.1

May 2021

City of London

Project Title

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

Project Description

Provide a brief project description that describes the type of project (street and intersection designs involved, etc.), physical elements (location, materials, etc.), service(s) involved and any implementation specifics.

Project Status

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

- | | |
|---|---|
| <input type="checkbox"/> Annual Program | <input type="checkbox"/> Pre-Construction |
| <input type="checkbox"/> Environmental Assessment | <input type="checkbox"/> Construction |
| <input type="checkbox"/> Design | <input type="checkbox"/> Operations |

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 or data that are relevant to the project.

Climate Emergency Screening – Aspect Analysis

A. Mitigation

1. *Will this project help to reduce the number of trips taken by single-occupant vehicles in London?*

Yes No Uncertain Not Applicable

Comments/Notes

2. *Will this project help to improve pedestrian safety, connectivity, and provide accessibility?*

Yes No Uncertain Not Applicable

Comments/Notes

3. *Will this project provide cycling infrastructure that increases connectivity within the cycling network and is considered safe to use for cyclists of all ages and abilities?*

Yes No Uncertain Not Applicable

Comments/Notes

4. *Will this project help to improve the level of service for public transportation?*

Example: reduces delays for transit service, supports more frequent service, provides improved shelter and other amenities for transit users

Yes No Uncertain Not Applicable

Comments/Notes:

5. *Will this project help to improve the movement of goods within London?*

- Yes No Uncertain Not Applicable

Comments/Notes

6. *Are there elements of this project to help reduce fossil fuel use by other means?*

Example: reduces idling, provides bike parking, provides electric vehicle charging

- Yes No Uncertain Not Applicable

Comments/Notes

7. *Are there strategies that can be implemented to minimize the need for the removal of mature and healthy trees?*

- Yes No Uncertain Not Applicable

Comments/Notes

8. *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 help to reduce the demand on stormwater facilities/sewer infrastructures and/or improve quality of the stormwater?*

Example: low-impact development measures as per Complete Streets Design Manual, permeable pavement

Yes No Uncertain Not Applicable

Comments/Notes

2. *Has consideration been given to incorporate additional risk management measures to improve resilience to water course flooding or intense rainfall?*

i.e. does the project area have high risk for flooding or poor drainage (due to cumulative effects of surrounding development on stormwater control or otherwise, or any other conditions that may warrant designing above existing stormwater management standards)

Yes No Uncertain Not Applicable

Comments/Notes

3. *Will this project preserve and/or increase the number of street trees planted to provide shade for pedestrians and reduce the urban heat island effect?*

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 such as along streambanks near the project area

Yes No Uncertain Not Applicable

Comments/Notes

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Opportunities

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

Recommended Changes

Have any recommendations surfaced that should be carried forward for this work? Is further analysis recommended? 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 often be completed with minimal additional effort and may provide sufficient clarity to appropriately inform decision-making.

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](#)).

Appendix B

Review of Major Transportation Projects

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
<p>1. Southdale Road West Improvements, Pine Valley Boulevard to Bostwick Road: An Environmental Assessment (EA) Study has been completed which recommends widening from 2 to 4 lanes as well as new cycling lanes and sidewalks.</p>	<p>New sidewalks on both sides of street, connected to bus stops and community destinations such as the new Bostwick Community Center.</p> <p>New bike paths in each boulevard; connected to major destinations; design considers cyclist safety through intersections.</p>	<p>Low impact development (LID) measures are included to improve stormwater conditions.</p> <p>New street trees will be planted which will support a healthy tree canopy along the corridor.</p>	<p>This project is recommended to proceed as it will focus on ensuring transit and emergency service mobility is supported. More sustainable mobility options are accommodated in this corridor which will support ongoing intensification which is occurring along this corridor. Construction of the new street cross section allows the City to introduce complete streets infrastructure into the design such as sidewalks, bike paths, street trees, vegetated medians, and LID storm water management features. This approach is the ideal way to provide more mobility choices and encourage active and sustainable city streets particularly where it is being coordinated with intensification and linking to major community destinations.</p>
<p>2. Discover Wonderland, Southdale to Sarnia Road: An EA Study has been initiated to identify long term corridor improvements and to review potential widening to six lanes.</p>	<p>The EA Study will assess opportunities for improved active transportation network and transit.</p> <p>Operation of a widened facility for use by transit or high occupancy vehicles would reduce the GHG footprint as compared to traditional roadway widening.</p>	<p>An improved corridor would provide new opportunities for active transportation, improved infrastructure resiliency and environmental measures. LID measures will be reviewed for feasibility during detailed design.</p>	<p>Widening of this corridor will have significant impacts to the environment and climate change associated with increased GHG emissions. Current project recommended to not proceed. Further assessment of the corridor is required in a master planning context. The upcoming Mobility Master Plan will provide an opportunity for further review of this project which would include the role and function of this corridor within the network with consideration of increased transit and high occupancy vehicle use and active transportation improvements. The current EA study is to be suspended until after completion of the upcoming Mobility Master Plan.</p>

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
<p>3. Dingman Drive, Hwy. 401 to Wellington Road and Dingman Drive /White Oak Road intersection: An EA Study has been completed which recommends corridor improvements to support development including active transportation. Improvements include widening of Dingman Drive from 2 to 4 lanes as well as new multi-use paths and sidewalks. A new roundabout is also proposed at the Dingman Drive /White Oak Road intersection. Design is underway for the corridor improvements.</p>	<p>New active transportation facilities will improve mobility to planned major destinations.</p> <p>A proposed roundabout at the White Oak Road intersection will provide safety and environmental benefits.</p>	<p>An improved corridor would provide new opportunities for improved infrastructure resiliency and environmental features, LID's and tree planting.</p>	<p>It is recommended that this project proceeds through design and construction. Construction of the full street cross section allows the City to introduce new complete streets infrastructure into the design such as sidewalks, bike paths, street trees, vegetated medians, and LID storm water management features. This rural road needs a variety of improvements to support upcoming development and provides for improved mobility for cyclists and pedestrians while also supporting the integrity of the adjacent provincial freeway system. Construction of this localized section of road to a four-lane corridor, while addressing the complete streets needs will create minor incremental impacts but will ensure the project will support and be compatible with currently proposed and future developments.</p> <p>The proposed roundabout will also provide environmental and safety benefits.</p>
<p>4. Adelaide Street North, Fanshawe Park Road to Sunningdale Road: An EA Study is being finalized which recommends corridor improvements. Improvements include widening of Adelaide from 2 to 4 lanes. Intersection improvements are also</p>	<p>Improved separated bike paths in each boulevard; connected to major destinations.</p> <p>Operation of a widened facility for use by transit or higher occupancy vehicles would reduce the footprint as compared to traditional roadway widening.</p>	<p>An improved corridor would provide opportunities for improved infrastructure resiliency and environmental features such as LIDs and landscaping.</p>	<p>The study and consultation for the EA is predominantly complete and pending Council approval and issuance of the completion notice, accordingly it is recommended for completion. Phasing of the EA recommendations should be reviewed with prioritization of the Sunningdale intersection to address short term safety and operational issues in coordination with Sunningdale corridor improvements. The remainder of the corridor improvements have been previously deferred and should be reconsidered as part of the upcoming transportation mobility plan as widening of this corridor will</p>

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
recommended at Fanshawe Park and Sunningdale Roads to improve traffic operations, safety and active transportation.			<p>have impacts to the environment and climate change associated with increased GHG emissions without complete streets benefits. Further assessment of either potential mitigation and/or adaptation issues should be undertaken.</p> <p>The upcoming Mobility Master Plan will provide an opportunity for further review of this corridor including the future role with focus on increased transit and high occupancy vehicle use and active transportation improvements.</p>
<p>5. Bradley Avenue Extension, Jalna Blvd to Wharncliffe: An EA Study has been completed which recommends an alignment for a new 4 lane urban roadway including sidewalks and new boulevard cycling lanes. Design and property acquisition are currently underway.</p>	<p>New sidewalks and new bike paths in each boulevard; connected to major destinations.</p>	<p>A new corridor would provide opportunities for improved infrastructure resiliency and environmental features. Low impact development (LID) measures will be reviewed for feasibility during detailed design.</p>	<p>It is recommended that detailed design proceeds with continued focus on ensuring transit is supported and more sustainable mobility options are accommodated in this corridor. The completion of Bradley Avenue from Jalna to Wharncliffe will provide significant transportation networks benefits while supporting and providing access to ongoing development in the area. Construction of this new road to a four-lane corridor, while including all complete streets components will ensure the project will meet the long-term needs of the currently proposed and future developments. Construction of the full street cross section using the complete streets approach is the ideal way to provide more mobility choices and encourage active and sustainable city streets.</p>
<p>6. Fanshawe Park Road/Richmond Street Intersection: An EA Study has been completed which recommends intersection improvements which will improve traffic operations</p>	<p>Active transportation will be improved with new sidewalks meeting current accessibility requirements and new in-boulevard cycling lanes.</p>	<p>An improved intersection would provide opportunities for improved infrastructure resiliency and environmental features. While the corridor is constrained, opportunities for landscaping, street trees,</p>	<p>It is recommended that detailed design proceeds. This project considers and accommodates future growth as part of the Masonville Secondary Plan. This project will reduce cut-through traffic in the surrounding neighbourhoods, improve intersection safety, improve walking and cycling and support transit.</p>

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
<p>and safety in the area while supporting intensification in the area through the ongoing Masonville Secondary plan. Design and property acquisition are currently underway.</p>	<p>The improvements include the addition of new turning lanes which will improve transportation mobility through this area for vehicles, transit and emergency services.</p>	<p>public spaces and improving the pedestrian realm are also being explored as part this project.</p>	
<p>7. Sunningdale Road, Wonderland to Adelaide: An EA Study has been completed which recommends widening of the road from 2 to 4 lanes, improvements to the active transportation network and road safety measures. Design and property acquisition are currently underway.</p>	<p>New sidewalks and new bike paths in each boulevard; connected to major destinations.</p> <p>The intersection improvements will provide safety and environmental benefits.</p>	<p>An improved corridor would provide opportunities for improved infrastructure resiliency and environmental features. Low impact development (LID) measures will be reviewed for feasibility during detailed design.</p>	<p>It is recommended that design and construction of this project proceeds with continued focus on ensuring transit is supported and more sustainable mobility options are accommodated in this corridor. This project will support ongoing development by creating better access, improve safety by addressing non-standard roadway profiles and improving sight lines and will add much needed new active transportation infrastructure.</p>
<p>8. Adelaide Street CPR Grade Separation, Central Avenue to McMahan Street: An EA Study has been completed which recommends lowering Adelaide St. to cross below the CP Rail crossing south of Oxford Street to eliminate the at-grade crossing. Design and</p>	<p>New multi-use paths on both sides of Adelaide Street as well as new cycling lanes on adjoining streets.</p> <p>New grade separation will improve crossing safety for cyclists, pedestrians and vehicles while reducing idling and delays associated with the existing at-grade crossing.</p>	<p>An improved corridor would provide opportunities for improved infrastructure resiliency and environmental features. A new pumping station is included in the project design to manage future intense rainfall events and prevent flooding on the underpass roadway.</p>	<p>Recognizing the benefits associated improved safety and traffic operations as well as improvements to active transportation, it is recommended that this project proceed to finalize the design through to construction. This project will improve rail crossing safety and eliminate delays and idling associated with the current at-grade railway crossing. The amount of cut-through traffic in the surrounding neighbourhoods will also be reduced as well as improved movement for emergency services. The project includes new multi-use paths along Adelaide Street. This project can</p>

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
property acquisition are well advanced.			improve an existing four-lane corridor and support widening avoidance on parallel corridors.
9. Windermere Road, Western Road to Richmond Street: An EA Study is currently underway to review existing traffic operations and safety along this corridor and to identify improvements to the mobility of vehicles, emergency services, transit, cyclists and pedestrians.	While the outcome of the EA study is not known at this time, the expected outcome includes transit infrastructure improvements, active transportation improvements and intersection improvements to reduce vehicle congestion at peak times.	During the remainder of the EA phase greater examination of other GHG mitigation and adaptation measures should also be considered such as LID's, increased tree and vegetation plantings throughout the corridor as well as other measures that may be identified during the course of the study.	This project is currently being scoped through the EA Study and can improve active transportation and localized operational issues in the area of the hospital and emergency access. This project will improve mobility and access for major destinations while also examining the provision of connectivity to major active transportation corridors.
10. Wharnccliffe Road, Becher Street to Commissioners Road: Design is underway for the first phase of improvements which includes intersection improvements at Wharnccliffe and Horton including the replacement of the CN Rail bridge.	Intersection improvements will improve transportation mobility through this area for vehicles, transit and emergency services.	An improved corridor would provide opportunities for active transportation, improved infrastructure resiliency and environmental features.	It is recommended that this project proceeds through design and construction. The grade separation reduces idling and improves operations and safety at the existing intersection, reduces cut-through traffic in adjacent neighbourhoods and provides improved active transportation connectivity across the rail corridor. This project can improve and optimize an existing four-lane corridor and support widening avoidance on parallel corridors.
11. Transportation Intelligent Mobility Management System (TIMMS): The goals of this project are to reduce intersection delays, manage	Cameras will be placed across London on some of the City's busier roads to reduce intersection delays (ie reduce idling), manage incidents and	No impacts to stormwater facilities, trees or the natural heritage system are expected from this project. However, the communication	The implementation of this project should continue on a priority basis as it will provide for more efficient traffic signal timing, coordination and incident management capability which will provide benefits for transit and other services while

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
<p>incidents, ensure shorter travel times for transit users and drivers, and prepare London's transportation network for the future by installing transit signal priority and other traffic signal improvements – such as sensors and video cameras – along major corridors</p>	<p>ensure shorter travel times for transit users and drivers. The City uses LED lighting fixtures in all traffic signals and newer equipment is generally more energy efficient.</p>	<p>network backbone of this project will help in the resiliency of the traffic signal system under poor and extreme weather conditions and provide backbone capacity to other City services in the longer term, which may likely increase resiliency of infrastructure.</p>	<p>providing environmental benefits through reduced vehicle idling and delays which reduces GHG emissions.</p>
<p>12. Rapid Transit Downtown Loop: First phase of London's new rapid transit system including five new rapid transit stops, road construction and boulevard enhancements, three traffic signal upgrades, street lighting upgrades, repair and replacement of aging water main, storm and sanitary sewers and new landscaping along Wellington Street.</p>	<p>A key component of this project includes new curbside bus only lanes with left-turn priority signal to improve traffic capacity and safety.</p> <p>The curbside only bus lanes and five new transit stops will connect directly to the sidewalks and pedestrian network for improved connectivity and accessibility.</p>	<p>A Climate Lens Assessment was completed for this project which assessed climate change hazards and potential impacts on the infrastructure components.</p>	<p>It is recommended that construction and detailed design proceeds with continued focus on ensuring rapid transit is supported and more sustainable mobility options are accommodated in this corridor. It is also recommended that opportunities from the Climate Lens Assessment study are reviewed and incorporated into the design, as appropriate.</p> <p>Construction of the full street cross section allows the City to introduce new complete streets infrastructure into the design such as; sidewalks, bike paths, street trees, vegetated medians, and LID storm water management features.</p> <p>The Downtown Loop is considered to be representative of the three rapid transit projects and similar review results are expected for the Wellington Gateway and East London Link projects.</p>