



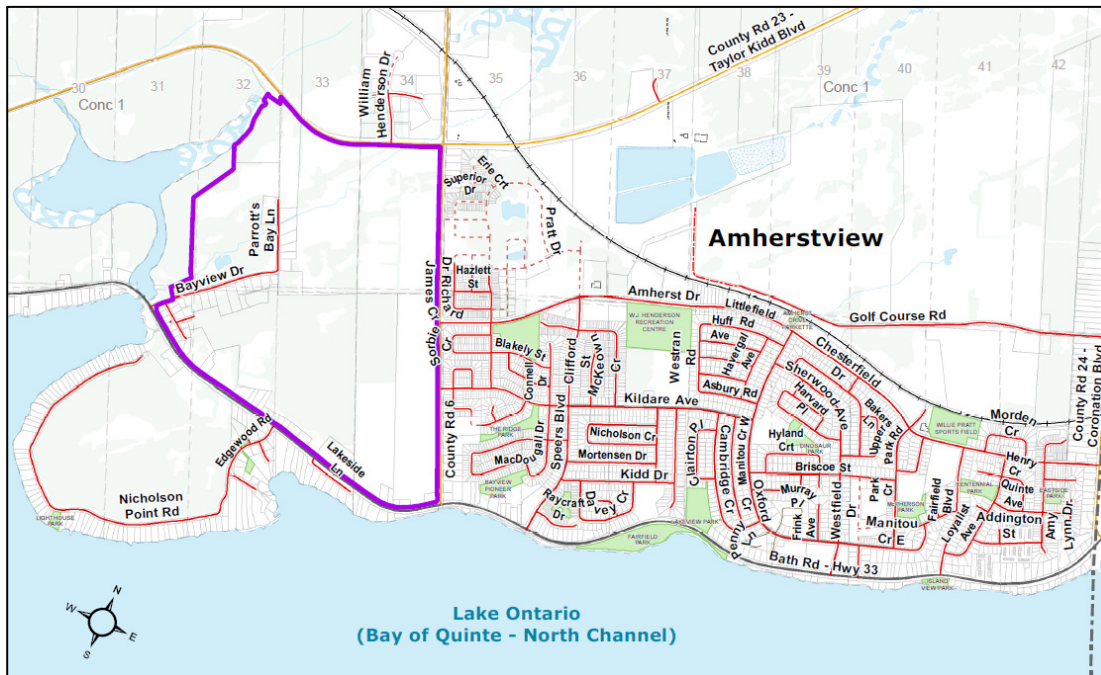
Amherstview West Secondary Plan

Climate Change Assessment

Background Report

MARCH 11, 2022

FINAL





Amherstview West Secondary Plan Climate Change Assessment Background Report

Loyalist Township

FINAL

PROJECT NO.: 211-01353-00
DATE: FEBRUARY 16, 2022

WSP
2611 QUEENSVIEW DRIVE
SUITE 300
OTTAWA, ON, CANADA K2B 8K2

T: +1 613 829-2800
F: +1 613 829-8299
WSP.COM

Revision History

First issue

February 16, 2022	DRAFT BACKGROUND REPORT			
Prepared and Reviewed By	Reviewed By			
Michael Flowers, P.Eng., LEED Green Associate	Meghan MacMillan, MCIP, RPP			
Final issue				
March 11, 2022	BACKGROUND REPORT			
Prepared and Reviewed By	Reviewed By			
Michael Flowers, P.Eng., LEED Green Associate	Meghan MacMillan, MCIP, RPP			

Signatures

PREPARED AND REVIEWED BY



March 11, 2022

Michael Flowers, P.Eng., LEED Green
Associate
Municipal Engineer

Date

This report was completed with insights provided from the WSP Climate Change, Resilience, and Sustainability Team.

WSP Canada Inc. prepared this report solely for the use of the intended recipient, Loyalist Township, in accordance with the professional services agreement. The intended recipient is solely responsible for the disclosure of any information contained in this report. The content and opinions contained in the present report are based on the observations and/or information available to WSP Canada Inc at the time of preparation. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP Canada Inc does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report. This limitations statement is considered an integral part of this report.

The original of this digital file will be conserved by WSP Canada Inc for a period of not less than 10 years. As the digital file transmitted to the intended recipient is no longer under the control of WSP Canada Inc, its integrity cannot be assured. As such, WSP Canada Inc does not guarantee any modifications made to this digital file subsequent to its transmission to the intended recipient.



Table of Contents

1	Introduction.....	9
1.1	Background	9
1.2	Report Scope	9
2	Climate Action Plan - Summary	10
2.1	ResiLienT Loyalist Township	10
2.2	Local Impacts of Climate Change	11
2.3	Priority Sector Goals.....	12
3	Climate Change Mitigation and Adaptation Recommendations	14
3.1	Mitigation and Adaptation Opportunities	14
3.2	Climate Change Recommendations and Opportunities by Sector	14
3.2.1	Sustainable Land Use	14
3.2.2	Solid Waste	19
3.2.3	Transportation	20
3.2.4	Buildings	23
3.2.5	Water and Wastewater.....	26
3.2.6	Other.....	29



Tables

Table 2-1: Priority Sector Goals Summary	10
Table 2-2: Sustainable Land Use Opportunities	12
Table 3-1: Sustainable Land Use Opportunities and Recommendations	15
Table 3-2: Solid Waste Opportunities and Recommendations	20
Table 3-3: Transportation Opportunities and Recommendations	21
Table 3-4: Buildings Opportunities and Recommendations	23
Table 3-5: Water and Wastewater Opportunities and Recommendations	26
Table 3-6: Other Opportunities and Recommendations	29

Figures

Figure 2-1: Amherstview West Secondary Plan Area	11
--	----



1 Introduction

1.1 Background

Amherstview is experiencing the most rapid growth of Loyalist Township's three urban settlement areas and is anticipated to have a remaining residential land supply of five (5) to ten (10) years. This is due to the housing demand outpacing population growth, resulting in a declining average household size, and the Township's proximity to the City of Kingston. Loyalist Township is seeking to develop a new Secondary Plan for the Amherstview West area to address the ability of Amherstview to accommodate growth and development in the community over the next 25 years. The area of study is located to the west of County Road 6 and the existing built-up area in Amherstview; expansion of the Amherstview settlement area boundary will not be necessary.

Secondary Plans establish policies to guide growth and development within a specific municipality, with engagement and input from the local community. Secondary Plans lay the groundwork necessary for an Official Plan Amendment, so that growth can be achieved while respecting the needs of current residents, ensuring compatibility with the existing community fabric and feel, and promoting progressive planning principals.

1.2 Report Scope

The scope of the Climate Change Assessment Background Report is to identify opportunities and put forth recommendations to support the development of the Secondary Plan in alignment with the ResiLienT Loyalist Township Climate Action Plan (CAP) 2021. This Assessment Background Report is meant to provide insight as to how the goals and actions of CAP might be implemented at the project level. It aims to promote climate change resilience, greenhouse gas (GHG) emissions reductions, energy efficiency and sustainable development through the Amherstview West Secondary Plan. Recommendations were developed based on provincial and national best practices.



2 Climate Action Plan - Summary

2.1 ResiLienT Loyalist Township

The 2021 ResiLienT Loyalist Township CAP was developed by the Climate Action Working Group, consisting of Township staff and Councillors, and with input from community members. The Plan was developed through the Federation of Canadian Municipalities' (FCM) Partners for Climate Protection Program (PCP) and adopted by the Township in 2021. The Climate Action Plan follows a commitment to climate action by setting targets for a variety of initiatives including GHG emissions reductions across various sectors. The goals are to be implemented over a 10-year period and are outlined in **Table 2-1**.

Table 2-1: Priority Sector Goals Summary

Priority Sector	Goals
Sustainable Land Use	Meet the current and future needs of the Loyalist Community while incorporating practices that will protect the environment and support local agriculture.
Waste Reduction	Divert waste away from landfill and promote a circular economy.
Transportation	Provide residents with enhanced transit services and promote the uptake of low-carbon fuels in vehicles, all while maintaining expected levels of service.
Buildings	Increase the energy efficiency of existing residential, commercial, and municipal buildings, and promote the construction of new buildings designed to exceed existing energy standards.
Water and Wastewater	Reduce residential water usage and the amount of energy required to treat, distribute, or collect water and wastewater.
GHG Reduction	GHG emission reduction target of 25% by 2030 compared to 2016 levels with a focus on transportation, buildings, waste and wastewater.
Other	Undertake initiatives which may not have a direct and quantifiable impact on GHG emissions in Loyalist Township, but that will contribute to a culture of climate action while promoting community resiliency and financial sustainability.



2.2 Local Impacts of Climate Change

The Secondary Plan area consists of primarily agricultural or vacant land that is a combination of Township-owned and privately-owned property. Single detached residential land uses are present along Bayview Drive and Parrott’s Bay Lane to the west, as well as to the south fronting onto Bath Road (Highway 33). The study area also includes environmentally sensitive areas such as creeks and wetlands that act as a buffer to stormwater surges during heavy rain events prior to discharge into Parrott’s Bay. A separate Natural Heritage Assessment Report (Draft Report - 2021) was completed by WSP as part of the Secondary Plan study. The Parrott’s Bay Conservation Area is located along the western edge of the Secondary Plan Area. These features create opportunities and constraints to development, including locations for infrastructure needed to support future development (e.g., roadway connectivity to existing road networks). **Figure 2-1** shows the location of the Secondary Plan Area within the context of the Amherstview community.

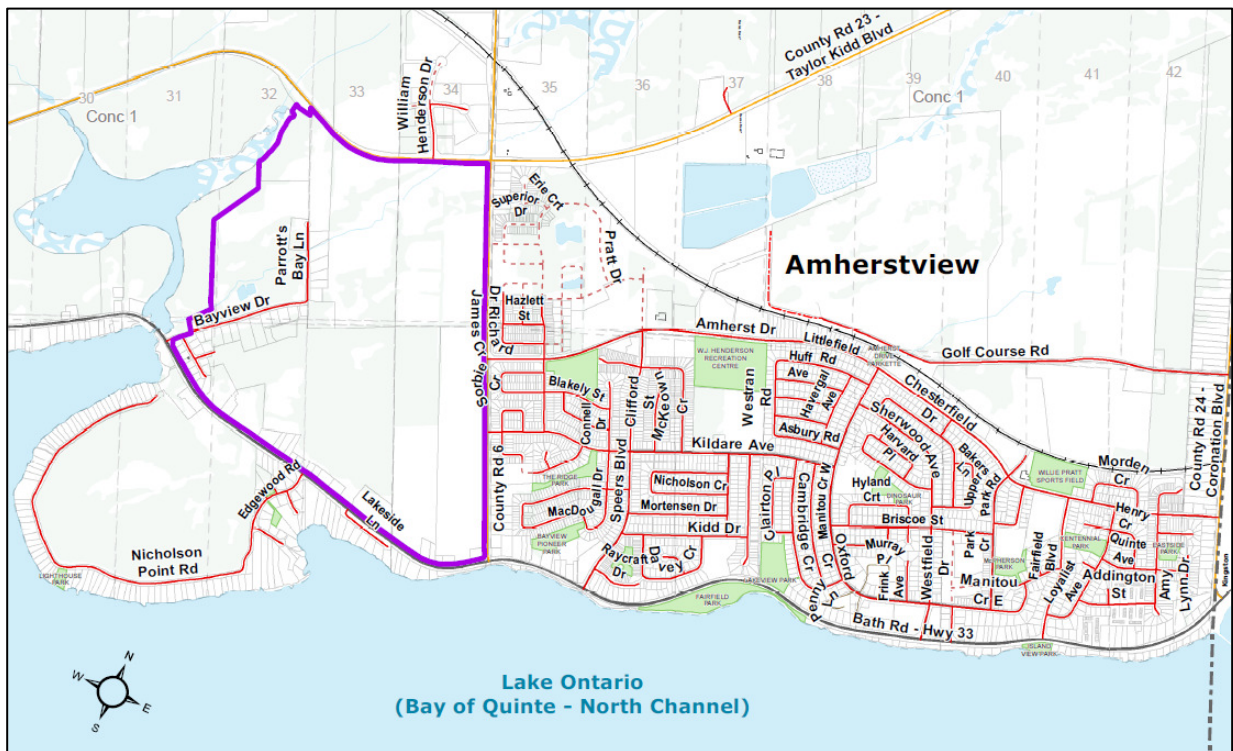


Figure 2-1: Amherstview West Secondary Plan Area

The 2021 ResiLient Loyalist Township CAP summarizes future projections and potential climate change impacts that are most applicable to the Secondary Plan area. Climate change has a complex and interconnected effect on built infrastructure, the natural environment, social systems and the economy in Loyalist Township. The community is already experiencing the impacts of climate change, and these are only anticipated to become more frequent, intense, and disruptive moving into the future.



Some of the climate change impacts the Township is focused on mitigating and understanding how to adapt to include:

- Severe weather events such as heavy rainfall, strong wind or extreme temperatures that can cause damage, disruption or failure of built infrastructure including transportation and communication systems.
- Communities experiencing illness, injuries or health and safety risks due to severe weather (e.g., heat waves). Such events might disrupt access to critical resources such as electricity, water and food supply. Climate change and extreme weather may disproportionately impact people who are more vulnerable, such as children, seniors, racially marginalized groups, and low-income individuals.
- Natural systems can be temporarily or permanently damaged by gradual climatic changes (e.g., slowly increasing temperature) or severe weather events. Invasive species, pests, and disease vectors (e.g., ticks) may spread at an increased rate due to warmer temperatures.
- Changing temperature and precipitation patterns may lead to increased extreme weather events such as drought, heat waves, flooding, or other hazards that can disrupt the local economy and the livelihoods of those living and working locally.

With all this considered, a significant opportunity exists in prioritizing a climate resilient and adaptive development that mitigates and manages future climate change risk.

2.3 Priority Sector Goals

In the Climate Action Plan, the Township’s 33 climate action goals were defined for each sector identified in **Table 2-1**. Each goal was reviewed to support the identification of those most relevant to the Amherstview Secondary Plan, and new opportunities that align with development of the area (see Section 3.3).

Table 2-2: Sustainable Land Use Opportunities

Priority Sector Goals

Sustainable Land Use	Goal #1 – Plant 20,000 trees over the next 10 years Goal #2 – Rewild Township-owned lands Goal #3 – Incorporate Low Impact Development into Stormwater Management Practices Goal #4 – Develop a Pollinator Protection Strategy Goal #5 – Promote access to nature Goal #6 – Support local agriculture Goal #7 – Promote Local Foods Goal #8 – Create Resilient, Low-Carbon Communities
-----------------------------	---



<p>Solid Waste</p>	<p>Goal #9 – Divert Residential Waste Away from Landfills Goal #10 – Support Small and Medium Enterprise Waste Reduction Efforts Goal #11 – Divert Residential Waste Away from Landfills Goal #12 – Reduce Methane Emissions</p>
<p>Transportation</p>	<p>Goal #13 – Enhance Transit Services Goal #14 – Increase the Active Transportation Network in Loyalist Township Goal #15 – Facilitate the Adoption of Electric Vehicles in the Community Goal #16 – Optimize Use of Municipal Vehicles Goal #17 – Electrify the Municipal Fleet Goal #18 – Replace Heavy-Duty Vehicles with Zero Emissions Alternatives</p>
<p>Buildings</p>	<p>Goal #19 – Reduce Residential Energy Usage by Retrofitting Existing Homes Goal #20 – Increase Commercial and Institutional Energy Efficiency Goal #21 – Develop Green Building Standards for New Construction Goal #22 – Reduce Energy Usage in Municipal Facilities Goal #23 – Incorporate Renewable Energy Infrastructure in Municipal Facilities</p>
<p>Water and Wastewater</p>	<p>Goal #24 – Reduce Water Losses in the Distribution System Goal #25 – Reduce Inflow and Infiltration in the Collection System Goal #26 – Reduce per Capita Water Usage Goal #27 – Increase the Efficiency of Mechanical Systems Goal #28 – Capture and Reuse Waste Energy</p>
<p>Other</p>	<p>Goal #29 – Incorporate Sustainability into Corporate Procurement Goal #30 – Coordinate the Purchase of Goods and Services with Local Organizations Goal #31 – Incorporate Sustainable Practice into Construction Activities Goal #32 – Partner with Local Industries and Academic Institutions Goal #33 – Strengthen Community Relationships</p>



3 Climate Change Mitigation and Adaptation Recommendations

The following climate change mitigation and adaptation recommendations are to be considered as part of the development of the Secondary Plan. They include recommendations for policy development, urban design, additional studies and/or conditions to be placed on future developments. The opportunities identified are meant to support the translation of the Township's Climate Action Plan overarching goals and actions into project-specific implementation. They are tailored to the Secondary Plan area's unique development opportunities and may require further discussion and analysis to determine feasibility and identify priority items.

It should be noted that certain CAP goals outlined in Section 2.3 have not been included below either because they may be outside of the Secondary Plan scope or study area under the planning process. Should it be realized amongst further investigation or stakeholder and community engagement that an additional goal should be included, this Report should be updated accordingly.

3.1 Mitigation and Adaptation Opportunities

The Ontario Provincial Policy Statement (2020) includes several provisions related to climate change mitigation and adaptation that support the recommendations provided above. For example:

- Development and land use patterns that conserve biodiversity and consider the impacts of a changing climate should be promoted (PPS 2020 – Section 1.1).
- Land use patterns should minimize negative impacts to air quality and climate change, promote energy efficiency; prepare for the impacts of a changing climate (PPS 2020 – Section 1.1.3).

3.2 Climate Change Recommendations and Opportunities by Sector

3.2.1 Sustainable Land Use

There are multiple opportunities to assist the Township in meeting its Sustainable Land Use goals through the new development of the Secondary Plan Area. These opportunities are summarized in **Table 3-1**.



Table 3-1: Sustainable Land Use Opportunities and Recommendations

Priority Sector	Related Goals (from CAP)	Related Targets and Actions (from CAP)	Opportunities and Recommendations for Secondary Plan
Sustainable Land Use	Goal #1 – Plant 20,000 Trees Over the Next 10 Years	<ul style="list-style-type: none"> - Partner with local community organizations and residents to plant one tree per resident based on projected population figures for 2030. - Organize education programs to teach proper planting techniques. 	<ul style="list-style-type: none"> - Require new developments to preserve existing trees and plant new trees. Consider setting a target for minimum number of trees or percentage of canopy cover to support stormwater management, shading, air purification, carbon storage and other ecosystem services. - Restrict tree removal and/or require replacement of all trees removed for development, especially mature large trees. - Prioritize tree planting in areas that currently have few trees or minimal shade (e.g., open spaces and new parks, parking areas, rights-of-way). - Identify Township-owned lands, streets, or areas to be reserved for parks/stormwater management for tree planting. - Require that trees have adequate space and soil quantity/quality, avoid monocultures (e.g., Ash trees that are susceptible to Emerald Ash Borer), and prioritize diverse, native tree species that are resilient to future climate conditions.



	<p>Goal #2 – Rewild Township-Owned Lands</p>	<ul style="list-style-type: none"> - Undertake pilot projects to naturalize sections of municipal parks by replacing grass with native plants. - Undertake pilot project to investigate the potential use of alternate seed mixes in the municipal right of way. 	<ul style="list-style-type: none"> - Replace monocultures (e.g., grass) and plant diverse, native vegetation on Township-owned lands that are to be retained for park, open space, stormwater management, streetscapes, etc. - Implement nature-based solutions (such as tree planting, LID, naturalized landscapes and streetscapes etc.) to maximize co-benefits for climate adaptation, biodiversity and decarbonization. - Consider expanding or buffering existing protected, sensitive and/or naturalized areas to better protect ecological systems. - Use the Secondary Plan area to increase connectivity between natural areas and greenspace to allow for wildlife corridors.
	<p>Goal #3 – Incorporate Low Impact Development into Stormwater Management Practices</p>	<ul style="list-style-type: none"> - Incorporate LID concepts into stormwater activities, where appropriate. 	<ul style="list-style-type: none"> - Identify Township-owned lands (parks, open spaces, rights-of-way) with suitable conditions (bedrock, sizing, spacing etc.) for Low Impact Development installations and maintain adequate space for Low Impact Development in Secondary Plan area. - Include requirements for on-site stormwater management using Low Impact Development for new mixed-use and residential developments, schools, parks, open spaces, etc. - Integrate Low Impact Development (such as bioretention swales) for stormwater management into designs for roadways (medians), roundabouts, rights-of-way, traffic bump outs, pedestrian/bike/multi-use paths, parking lots, etc.



		<ul style="list-style-type: none"> - New developments should be encouraged to limit paved surfaces and parking areas, and utilize permeable pavement for large open space areas such as parking lots.
Goal #4 – Develop a Pollinator Protection Strategy	<ul style="list-style-type: none"> - Develop a pollinator protection strategy for the Township and review any by-laws which may be impacted by its implementation. - Partner with community organizations and local schoolboards to provide education sessions. - Create pollinator friendly areas throughout the Township, where appropriate. 	<ul style="list-style-type: none"> - Incorporate pollinator friendly areas into existing and new parks and open space designation areas. - Protect existing pollinators by preserving natural and vegetated areas. Consider establishing no-mow areas to enhance pollinator habitats. - Limit the use of insecticides in landscaping, which can damage pollinator populations over time.
Goal #5 – Promote Access to Nature	<ul style="list-style-type: none"> - Expand the natural trail network in Loyalist Township. 	<ul style="list-style-type: none"> - All new development should increase connectively between existing trail networks and new established trails. - Trail networks may connect to the Parrott’s Bay Conservation Area. - Identify natural areas to retain for protection and conservation. - Utilize the designation of Environmentally Sensitive Areas to restrict development on or near existing wetlands, natural heritage areas, and other green spaces. - Incorporate additional trees, diverse vegetation and low impact development into trail networks.



	<p>Goal #6 – Support Local Agriculture</p>	<ul style="list-style-type: none"> - Encourage and support local farmers to adopt sustainable land use practices. 	<ul style="list-style-type: none"> - Reserve areas for farming operations or permit existing uses to continue operations. - New residential developments should incorporate adequate space and conditions for neighbourhood or community gardens. - Designate and/or allocate new park and open space areas for community gardens.
	<p>Goal #7 – Promote Local Foods</p>	<ul style="list-style-type: none"> - Support local farmers looking to adopt Community Supported Agriculture (CSA) programs. - Encourage the development of community gardens by developing comprehensive policies and applications processes. 	<ul style="list-style-type: none"> - Provide space for farmers markets and food stalls in designated areas such as open spaces, parks, underutilized parking lots, etc. - Identify spaces that allow for all-season farmers markets (e.g., covered spaces). - Space for community gardens should be provided either with open space or transportation corridor land use designations. - Promote new developments with walkable access to food (e.g., grocery stores, farmers markets).
	<p>Goal #8 – Create Resilient, Low-Carbon Communities</p>	<ul style="list-style-type: none"> - Encourage the development of complete communities through mixed land use and a diversity of residential types. - Promote sustainable land use development practices and resilient infrastructure. - Increase intensification and density in urban settlement areas. 	<ul style="list-style-type: none"> - Broadly, the Secondary Plan area should be a transit supportive, mixed-use community that encourages walking and cycling for local trips, and transit for longer trips. - Prioritize the creation of built and social infrastructure that support vulnerable populations (e.g., connected communities, access to affordable housing, access to healthcare/resource/community services, access to free multi-modal transportation options, access to affordable home energy retrofits).



			<ul style="list-style-type: none"> - Mixed-use residential areas should be designed to promote access to critical infrastructure and services and account for risks of isolation (e.g., blockage of singular access route due to flooding). - Design new developments to allow for intensification and higher densities where possible, including mixed-use design, multi-unit housing, secondary suites, etc. - New developments should provide access to transportation choices that increase the use of active transportation and transit. - Minimize paved surfaces and parking lots in new developments, instead promoting permeable surfaces and design of flexible public spaces that are not vehicle-centric. - All new and existing infrastructure should be designed to account for future climate conditions (e.g., future intensity, duration and frequency of precipitation).
--	--	--	---

3.2.2 Solid Waste

There are opportunities to meet the Township’s Solid Waste goals through the new development of the Secondary Plan Area. The applicable policies and initiatives that may be considered are summarized in **Table 3-2** below.



Table 3-2: Solid Waste Opportunities and Recommendations

Priority Sector	Related Goals (from CAP)	Related Targets and Actions (from CAP)	Opportunities and Recommendations for Secondary Plan
Solid Waste	Goal #9 – Divert Residential Waste Away from Landfills	<ul style="list-style-type: none"> - Develop and implement a suitable, cost-effective residential waste diversion program. - Achieve a 40% residential waste diversion rate by 2030. 	<ul style="list-style-type: none"> - Encourage recycling and salvage plans during the building and demolition permit process. - Implement multi-stream waste disposal options in all multi-unit buildings and businesses. - Implement multi-stream waste receptacles at streetscape waste locations.

3.2.3 Transportation

There are multiple opportunities to align with the Township’s transportation goals through the new development of lands within the Secondary Plan area. These opportunities are most apparent when setting the road network planned for the development area to ensure connectivity to the existing Amherstview road network and to limit the commute time of residents. These opportunities are summarized in **Table 3-3**.



Table 3-3: Transportation Opportunities and Recommendations

Priority Sector	Related Goals (from CAP)	Related Targets and Actions (from CAP)	Opportunities and Recommendations for Secondary Plan
Transportation	Goal #13 – Enhance Transit Services	<ul style="list-style-type: none"> - Engage with residents and stakeholders to develop and implement a transit plan which will meet the needs of urban and rural communities. - Increase the percentage of commuters who use public transit from 3% in 2016 to 5% by 2030. 	<ul style="list-style-type: none"> - Consider requirements for servicing by public transit within the Secondary Plan area in the development of the proposed transportation network. - Expand transit services into the Secondary Plan area to encourage resident participation and reduce car congestion. - Coordinate with developers to include transit stops into large-scale projects, where appropriate. - Promote ridesharing opportunities in the Secondary Plan area and throughout the community. - Consider reducing parking requirements for new development in the Secondary Plan area to encourage alternate modes of transportation. Consider establishing a percentage footprint reduction for parking areas.



	<p>Goal #14 – Increase the Active Transportation Network in Loyalist Township</p>	<ul style="list-style-type: none"> - Incorporate active transportation considerations into capital projects planning with the goal of increasing the active transportation network in Loyalist Township. - Increase the percentage of commuters who use active transportation from 3% in 2016 to over 5% by 2030. 	<ul style="list-style-type: none"> - Enhance the active transportation network within Loyalist Township, including measures that increase convenience, accessibility, and safety for all users (e.g., separated bike lanes, illuminated crosswalks, tactile surfaces). - Strengthen connectivity between existing multi-use trail networks and newly established trails, including linkages to the Parrott’s Bay Conservation Area. - Create an engaging pedestrian realm through the inclusion of public gathering places, benches, weather protection, community art, ample lighting, and trees and plantings.
	<p>Goal #15 – Facilitate the Adoption of Electric Vehicles (EVs) in the Community</p>	<ul style="list-style-type: none"> - Increase the number of publicly available user-pay EV charging stations in Loyalist Township. - Support policy updates to incentivize the installation of EV charging stations in new and existing dwellings. 	<ul style="list-style-type: none"> - Install public, pay-per-use charging infrastructure across at key municipal park and community locations. - Encourage developers to include charging infrastructure at parking stalls through permitting processes, such as the reduction of parking requirements. Consider establishing a minimum percentage of electric vehicle parking spaces. - Explore renewable energy opportunities for charging infrastructure (e.g., solar). - Encourage the use of small-scale electric vehicles (e.g., bikes, scooters) by including secure parking, charging facilities, and safety measures at new developments.



3.2.4 Buildings

With the construction of new buildings there is large opportunity for new development to be tailored to net-zero carbon or low GHG emission practices for construction. The opportunities to meet the Township’s Buildings sector goals through the new development opportunities are summarized in **Table 3-4**.

Table 3-4: Buildings Opportunities and Recommendations

Priority Sector	Related Goals (from CAP)	Related Targets and Actions (from CAP)	Opportunities and Recommendations for Secondary Plan
	Goal #20 – Increase Commercial and Institutional Energy Efficiency	<ul style="list-style-type: none"> - Promote existing energy incentives to local businesses and provide assistance with the application process. - Reduce commercial and institutional emissions by 25% below 2017 levels by 2031. 	<ul style="list-style-type: none"> - Consider establishing minimum energy and GHG performance targets for new developments to achieve while allowing them to demonstrate innovation and have flexibility. Consider using existing energy/GHG modelling guidelines (e.g., Toronto Green Standard) that developers will use to demonstrate compliance with targets and includes post-occupancy verification. - Consider establishing minimum envelope performance targets. For example, >30% better than latest National Energy Code of Canada for Buildings (NECB) or established Thermal Energy Demand Intensity targets. - Encourage integrated design process, fundamental and enhanced commissioning as per Leadership, Energy and Environmental Design (LEED) and post-occupancy energy performance verification. - Incentivize developers to play a role in the building energy use and GHG emissions post occupancy and verifying performance compared to As-Designed and As-Constructed energy models. - Explore the feasibility of a low-carbon thermal energy network or district energy system. Examples include but not limited to geothermal district heating plant, cold lake water, sewer heat and solar thermal.



	<p>Goal #21 – Develop Green Building Standards for New Construction</p>	<ul style="list-style-type: none"> - Work with local developers to develop green building standards for new construction. - Incentivize net-zero, or high energy efficiency, developments. 	<ul style="list-style-type: none"> - Encourage or mandate developers to meet existing green building certifications (e.g., CaGBC Zero Carbon Building Standard, LEED, Toronto Green Standards). - Provide education and coaching on new development standards for developers, contractors, and realtors.
	<p>Goal #22 – Reduce Energy Usage in Municipal Facilities</p>	<ul style="list-style-type: none"> - Monitor energy and water usage in individual municipal facilities. - Optimize operations and develop energy intensity targets. - Capture and re-use waste energy where possible. 	<ul style="list-style-type: none"> - See above Goal #20 for new developments. - Design municipal facilities and municipal owned/operated facilities (e.g., pumping stations and community park facilities) to have high performing envelopes that minimize thermal bridging and promotes continuous insulation. - Encourage proper metering strategy for each facility to identify areas of improvement and to validate energy performance against CAP goals. - Conduct a feasibility study for waste energy capture, at the site-wide scale for new developments and for individual municipal facilities.



	<p>Goal #23 – Incorporate Renewable Energy Infrastructure in Municipal Facilities</p>	<ul style="list-style-type: none">- Develop and inventory of facilities which could accommodate renewable energy infrastructure.- Incorporate the installation of renewable energy systems into the lifecycle activities of facilities.	<ul style="list-style-type: none">- Apply a life-cycle costing approach to evaluate opportunities and feasibility of using renewable energy throughout existing and new facilities. Determine renewable energy potential and identify optimal approach, systems, cost and design. Consider making facilities Photovoltaic Panel (PV) ready should full PV install not be feasible at the time.- Explore the feasibility of a low-carbon thermal energy network or district energy system for primary and/or back up power. Examples include but not limited to geothermal district heating plant, cold lake water, sewer heat and solar thermal storage.
--	---	--	---



3.2.5 Water and Wastewater

The provision of water and wastewater servicing will be required to support future residential, commercial and institutional development. There is a large opportunity for new development to be tailored to net-zero carbon or low GHG emission practices for construction. The opportunities to meet the Townships Water and Wastewater sector goals through the new development opportunities are summarized in **Table 3-5**.

Table 3-5: Water and Wastewater Opportunities and Recommendations

Priority Sector (from CAP)	Related Goals	Related Targets and Actions (from CAP)	Opportunities and Recommendations for Secondary Plan
Water and Wastewater	Goal #24 – Reduce Water Losses in the Distribution System	<ul style="list-style-type: none"> - Reduce the apparent water losses in the Fairfield water distribution system to 25% or lower by 2031. - Reduce the apparent water losses in the Bath water distribution system to 10% or lower by 2031. 	<ul style="list-style-type: none"> - New property development, which includes pipe network installation, may be outfitted with water monitoring devices to track water losses. - Increase utilization of natural based solutions, open spaces and systems for water retention, infiltration, and storage onsite (e.g. bioswales and cisterns).
	Goal #25 – Reduce Inflow and Infiltration in the Collection System	<ul style="list-style-type: none"> - Identify and address areas in the Loyalist East and Bath sewage collection systems that are prone to inflow and infiltration. - Develop and implement an inflow and infiltration monitoring program. 	<ul style="list-style-type: none"> - New property development, which includes pipe network installation, may be outfitted with water monitor devices to track quantities and support proper source separation. - Reduce hardscaped areas and maximize permeable surfaces to decrease runoff into storm drains. - Increase utilization of natural based solutions, open spaces and systems for water retention, infiltration, and storage onsite (e.g. bioswales and cisterns).



	<p>Goal #26 – Reduce per Capita Water Usage</p>	<ul style="list-style-type: none"> - Implement community-wide incentive and education programs to promote water conservation in households. - Decrease average daily residential water use by 27% to below 200 liters per day per capita by 2030. 	<ul style="list-style-type: none"> - New development including municipal buildings, may adopt a higher standard for installing low-water usage fixtures in accordance with guidelines detailed under existing green building standards such as LEED to reduce per capita water usage. - Develop incentives or mandates for residential and business developments that utilize native and drought-tolerant species instead of traditional lawns. - New developments, parks, open spaces etc. should prioritize xeriscaping strategies to minimize water usage for irrigation. (i.e vegetation strategies which aim to reduce the requirement for irrigation and watering). Consider whether permanent irrigation systems are required based on landscaping plans and plant lists. Should rainwater capture and re-use not be feasible on-site, consider impacts of mandating a no permanent irrigation systems policy. - Consider conducting a site wide grey water/rainwater capture and re-use feasibility study and partner with developers and other stakeholders to investigate a unified approach for irrigation if permanent irrigation is required.
--	---	---	--



	<p>Goal #27 – Increase the Efficiency of Mechanical Systems</p>	<ul style="list-style-type: none">- Replace mechanical systems, such as pumps or blowers, with more energy efficient models as part of lifecycle activities.- Decrease GHG emissions associated with potable water treatment/distribution by 10% and sewage collection/treatment by 20% below 2016 levels by 2030.	<ul style="list-style-type: none">- Municipal facilities to be developed to service the area should be designed with energy efficiency in mind for the lifecycle of the facility which includes the installation of efficient mechanical systems, such as pumps equipped with Variable-Frequency-Drives (VFDs).- Conduct feasibility study on the electrification of mechanical systems to decrease GHG emissions with potable water treatment/distribution and sewage collection/treatment.
--	---	---	---



3.2.6 Other

Other sector goals outlined in the ResiLienT Loyalist Plan may be supported through the Secondary Plan. These opportunities are summarized in **Table 3-6**.

Table 3-6: Other Opportunities and Recommendations

Priority Sector	Related Goals (from CAP)	Related Targets and Actions (from CAP)	Opportunities and Recommendations for Secondary Plan
Other	Goal #29 – Incorporate Sustainability into Corporate Procurement	Include lifecycle assessments as part of the evaluation criteria for the procurement of goods and services. Incorporate environmental impact considerations into procurement competitions.	<ul style="list-style-type: none"> - Procurement of goods and services for maintenance of municipal parks, facilities, and roadways within the Secondary Plan should align with principles of climate change resilience and sustainability (e.g., low carbon materials, minimal disruption to the environment and biodiversity). - Work with municipal staff to ensure that development approvals align with the goals and actions in the Climate Action Plan. - Review and strengthen sustainable purchasing and procurement guidelines for suppliers and vendors related to development. - Include requirements for service providers to assess emissions and climate risks and develop mitigation measures (i.e., a “climate lens”).



	<p>Goal #30 – Coordinate the Purchase of Goods and Services with Local Organizations</p>	<p>Leverage Township knowledge and buying power to provide local organizations with better pricing for goods and services that will contribute to climate action in the community.</p>	<ul style="list-style-type: none"> - Partner with local utilities and developers to coordinate purchase of goods and services for the area development, including the early identification of energy savings and locally sourced low carbon materials, technologies, and processes. - Coordinated purchase of energy efficient systems and technology for residential development should be considered for the Secondary Plan area in partnership with local organizations and/or developers.
	<p>Goal #31 – Incorporate Sustainable Practice into Construction Activities</p>	<p>Update the Township construction design guidelines to promote sustainable construction practices.</p> <p>Prioritize the re-use of materials, such as asphalt or excess soils generated on a project site, where possible.</p> <p>Develop performance-based standards for infrastructure design which account for the entire lifecycle of an asset.</p>	<ul style="list-style-type: none"> - Identify opportunities to consider lifecycle impacts of materials and improve circularity (e.g., reusing or retrofitting existing materials, treating non-recyclable waste and using it as aggregate for construction).
	<p>Goal #32 – Partner with Local Industries and Academic Institutions</p>	<p>Continue to support local academic institutions and contribute to scientific advances.</p> <p>Partner with local industries to undertake pilot or demonstration projects for emerging technologies.</p>	<ul style="list-style-type: none"> - Develop partnerships early-on with Institutional, Commercial and Residential developers to identify opportunities for new developments to be more energy efficient and climate resilient.



	<p>Goal #33 – Strengthen Community Relationships</p>	<p>Host education sessions covering a variety of topics in partnership with community groups.</p> <p>Promote local businesses that have adopted sustainable practices.</p>	<ul style="list-style-type: none">- Establish partnerships with local developers and utilities to ensure that new developments are aligned with the goals and actions of the CAP. Identify co-benefits and incentives for partners and the community.
--	--	--	---