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City of Stratford
Transportation Master Plan

Appendix 2
Phase 2: Network and Strategy Development

Final Report
March 2023

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1 Introduction

The City of Stratford is updating its Transportation Master Plan (TMP), a long-term strategy that outlines transportation policy directions and identifies transportation infrastructure investment needed to help meet the City's community-building objectives and to support growth through 2041. The TMP is an opportunity to align transportation policy and investment directions to best meet the transportation needs of the City's residents, businesses and visitors while considering all modes of travel.

This report documents the second phase of a multi-phase study process, with the objective of identifying the recommended transportation solutions. The recommended solutions respond to the needs and opportunities identified in the first phase of the study and documented in the Needs and Opportunities report.

1.1 Study Overview

1.1.1 What is the Stratford Transportation Master Plan?

A Transportation Master Plan is a forward-looking document developed to guide the planning, expansion, and management of a multi-modal transportation system—the infrastructure and services that move people and goods. The transportation system comprises roads, public transit services, goods movement systems, and cycling and walking networks.

The TMP will replace the 2010 Master Transportation Plan and update the 2014 Bike and Pedestrian Master Plan with a new, comprehensive document that identifies recommended improvements for multi-modal transportation, and will provide strategies and policies that will support the City of Stratford vision for the future.

1.1.2 Study Process

The TMP study commenced in December 2021 and is anticipated to conclude in 2023. The study includes three phases, each with customized communication and

engagement activities to allow for inputs and feedback from the public and stakeholders:

- Phase 1: Assess Existing and Future Transportation Needs;
- Phase 2: Develop Networks and Strategy Recommendations[1]; and
- Phase 3: Prepare Transportation Master Plan.

This report documents Phase 2 of the study, culminating in the identification of infrastructure and strategy recommendations.

1.1.3 Municipal Class Environmental Assessment Process Compliance

The TMP follows the Municipal Class Environmental Assessment (MCEA) planning process for Master Plans under the Province of Ontario's Environmental Assessment Act. The MCEA planning process provides a transparent approach to planning and building municipal infrastructure[2].

The TMP follows the Master Plan Approach, which requires fulfilling the requirements of the first two phases of the MCEA planning process:

- **MCEA Phase 1:** Identify the problem or opportunity statement (corresponding to Phase 1 of the TMP study); and
- **MCEA Phase 2:** Identify and evaluate alternative solutions to address the problem and establish a preferred solution (corresponding to the Phase 2 of the TMP study).

At the end of MCEA Phase 2, a TMP document can be prepared where the level of investigation, consultation and documentation can be used in support of future analysis for specific Schedule B and C projects identified within it.

1.1.4 Public and Stakeholder Consultation

As part of the second round of engagement, a public opinion survey was developed as the primary tool to assess input on the proposed transportation solutions. The survey solicited input about the preliminary street network, draft

[1] Referred to in the Phase 1 report as "Phase 2: Identify and Evaluate Alternative Solutions".

[2] Transportation projects and activities are categorized into Schedules A, A+, B and C based on the magnitude of their anticipated environmental impact, with A/A+ having the lowest anticipated impact and C having the highest anticipated impact.

cycling network, draft pedestrian network, and draft transit strategies. Participants demonstrated overall support for the draft transportation solutions, agreeing with efforts to support street network efficiency, improve pedestrian and cyclist safety, and support transit into the future.

It should be noted that the survey responses must be taken as indicative only, as no attempt has been made to adjust for sample size or for any biases. Responses provide important insight and help inform the TMP study process but will not provide definitive study direction. Comprehensive input regarding feedback from both members of the public as well as stakeholders is detailed in the Engagement Summary report.

1.2 Report Purpose and Outline

The purpose of this Phase 2 report is to identify the preferred transportation infrastructure, policy and strategy solutions that best address the transportation issues and needs identified as part of Phase 1 of the TMP study.

Following this introductory section, this report is structured as follows:

- Section 2 explains the alternative solutions process and provides context for this report, reiterating the study's vision, objectives and goals, and the needs and opportunities identified in the first phase of the study;
- Section 3 outlines the development of the transportation networks and recommended infrastructure projects for the street network, cycling network and pedestrian network;
- Section 4 outlines supporting strategies and policy recommendations of the TMP; and
- Section 5 summarizes the report and outlines the next steps in the TMP study.

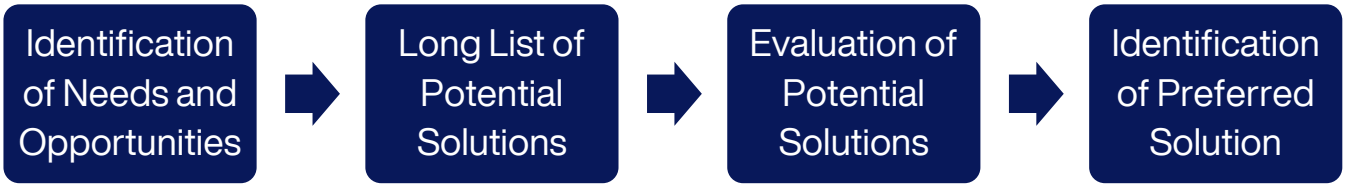
2 Context

2.1 Alternative Solutions Process

The alternative solutions process is a standard part of any Environmental Assessment, including Municipal Class EA Master Plans like the City of Stratford Transportation Master Plan Update. The main objective of the alternative solutions process is to consider as many ways as possible to address the needs and opportunities identified in Phase 1 of the study and evaluate these possible solutions against the study's vision and objectives. Ultimately, the evaluation leads to a set of recommended projects and strategies. This process is summarized, at a high level, in Exhibit 2.1, and detailed below.

It is important to note, however, that this process is applied differently depending on the circumstances. In the case of the TMP, the application varies by mode of travel and whether the need or opportunity is best addressed with an infrastructure response or a policy or strategy approach. These different approaches are detailed in Section 2.1.1.

Exhibit 2.1: Alternative Solutions Process



- **Identification of Needs and Opportunities:** Through technical analysis of existing and future conditions, the development of a study vision and objectives, and input from members of the public and stakeholders, needs and opportunities are identified. Collectively, these form the "problem statement" that the TMP must address. This step was documented as the Phase 1: Needs and Opportunities report and is summarized in Sections 2.2 and 2.3 in this report.
- **Long List of Potential Solutions:** At this stage, as many possible solutions as can be imagined are identified to address the needs and opportunities. In the case of the TMP, this list included possible

responses to each of the road network needs and opportunities identified (e.g. to widen a road, to widen a parallel corridor, to improve intersection operations, etc.) and it included all candidate cycling routes and candidate pedestrian crossover locations. The long list also included a number of policy and strategy areas that are not suitable to be addressed with infrastructure responses. Each of these areas are detailed in Sections 3 (Network Development) and Section 4 (Supporting Strategies).

- **Evaluation of Potential Solutions:** Each of the potential solutions undergoes an evaluation to determine the best possible solution. In the case of the TMP, the evaluation measured how well each possible solution helped move the City of Stratford and its transportation system towards the vision and objectives of the TMP.
- **Identification of Preferred Solution:** Based on the evaluation, the preferred solution is identified. For the TMP, this represents the project or strategy that best responds to each need or opportunity within the constraints of the study's vision and objectives. This results in a number of recommended infrastructure projects, policy directions, and supporting strategies. These are outlined within the remaining sections of this document.

2.1.1 Applying the Alternative Solutions Process to the TMP

The process of developing solutions is different depending on the type of need or opportunity, though they all follow a similar process as outlined above. These processes are outlined as follows:

- **Street Network:** Several key areas (e.g. corridors, intersections, secondary plan areas) were identified where infrastructure improvements should be considered as a response. The process outlined above was then applied to each of these key areas individually (see Section 3.1). For each key area, the top possible responses were identified as potential solutions to addressing the corresponding needs and opportunities unique to each key area. An evaluation framework was prepared that scores each potential solution against the study's vision and objectives. The potential solution that scored the highest

became the preferred solution and was carried forward as a TMP recommendation.

- **Cycling Network:** The approach for the cycling network was markedly different than that for the road network. A network-wide approach was undertaken in developing the cycling network. Prospective cycling routes were assessed against alternatives (e.g. parallel corridors, alternative implementations) through a detailed feasibility review consisting of an analysis of existing and future conditions (e.g. traffic volumes and speeds), as well as ease and cost of implementation. Through this iterative process, the preferred cycling network was identified.
- **Pedestrian Network:** A gap analysis was undertaken to identify areas in Stratford where pedestrian crossings are needed to respond to safety concerns and network connectivity needs. Alternative approaches based on network spacing (i.e. the desired distance between safe pedestrian crossings) were considered and assessed against the study's vision and goals, and the competing needs of other road users. Ultimately, the preferred alternative approach was selected, and pedestrian crossover locations identified based on the preferred network spacing and feasibility. The provision of sidewalks and infilling sidewalk gaps was addressed by supporting strategies, rather than an infrastructure-level approach.
- **Supporting Strategies:** While the three items above respond to specific needs and opportunities with infrastructure responses, other needs and opportunities are better solved by policy or strategy responses. These strategies were developed in adherence to the TMP's stated goals and objectives. In these cases, the "alternative" is to omit the policy or strategy response entirely. However, as these were developed to help move the City towards its objectives, they become the preferred solutions for these needs and opportunities.

2.2 Strategic Framework

Phase 1 of the TMP study developed a strategic framework comprising of three policy components: values, vision, and objectives. The values are at the core of the

TMP and shape how the study is being undertaken. The vision and objectives were presented in draft form as part of the first round of public and stakeholder consultation. They are used to evaluate potential solutions as part of this phase of the TMP study.

2.2.1 Vision

The transportation vision shapes decision-making and helps direct the City to where it wants to be at the end of the TMP planning horizon. All recommendations will work towards realizing the vision.

Stratford's transportation system will facilitate a safe, vibrant, prosperous, and complete community while reflecting the principles of equity, accessibility, inclusivity, and environmental sustainability.

2.2.2 Objectives and Goals

Four objectives were developed for the TMP that reflect a set of desired outcomes for the City of Stratford, and each are supported by a number of more specific goals. The objectives and goals were modified slightly based on input received from public and stakeholder consultation, as follows:

1. Support Healthy, Safe, and Complete Community

- Provide safe and inclusive transportation facilities that enable complete, vibrant communities.
- Improve safety for all road users to work toward Vision Zero.
- Develop a safe and connected active transportation network.
- Increase mode share for walking, cycling and transit.

2. Improve Connectivity to Support Economic Prosperity

- Increase access to opportunity for residents and businesses by ensuring efficient and accessible multi-modal transportation options.
- Protect and enhance Stratford's distinct character, charm, cultural heritage, and tourist appeal.
- Enable the efficient and safe movement of goods.

3. Reduce Environmental Impacts

- Build resiliency to severe weather events and other impacts from climate change and mitigate impacts to the transportation system.
- Reduce greenhouse gas emissions and other factors contributing to climate change.
- Protect the City's natural environment, heritage, and open space system.

4. Be an Outcome of Fiscal Responsibility

- Ensure the continued maintenance and operation of existing infrastructure.
- Invest in new infrastructure and consider alternatives responsibly, with an eye toward full life-cycle costs as well as environmental costs.
- Enable transportation infrastructure that responds to changing demands and new technologies.

2.3 Needs and Opportunities

Transportation needs and opportunities were identified through technical analysis, as well as stakeholder and public input throughout Phase 1 of the TMP study and are documented in the Phase 1: Needs and Opportunities report. These needs and opportunities serve as the launch pad for the identification of potential infrastructure solutions and other strategies for the City of Stratford transportation system.

The following problem or opportunity statements summarize, broadly, the needs of the different components of the transportation system. The needs and opportunities are presented in more detail in Exhibit 2.2.

- Implement a Complete Streets approach to transportation planning to meet the needs of a growing city and destination.
- Expand active transportation connections to support Stratford as a complete community.
- Improve transit service and operations to increase convenience, equity and accessibility, and sustainability.

- Develop policies and strategies to support Stratford's safe, connected, and reliable transportation system.

More specific needs and opportunities corresponding to each of the four statements were identified as part of Phase 1 of the TMP study, and potential solutions that respond to needs and opportunities are developed throughout this report. These solutions can take the form of infrastructure projects, policy recommendations, or other supporting strategies. Exhibit 2.2 outlines each of these needs, whether an infrastructure or strategic approach is appropriate, and where further analysis can be found within this report.

Throughout the following sections of this report, solutions are identified that best meet the objectives and goals of the Transportation Master Plan.

Exhibit 2.2: Needs and Opportunities

Need or Opportunity	Approach	Report Section
Implement a Complete Streets approach to transportation planning to meet the needs of a growing city and destination.		
Optimize the existing street network to support current and future traffic growth.	Infrastructure Projects	3.1 Street Network
Improve existing roads, with a focus on road surface maintenance.	Supporting Strategies	4.10 Ongoing Road Maintenance
Respond to road user safety concerns and consider improved traffic control at identified intersections.	Infrastructure Projects	3.1 Street Network
Work towards the elimination of serious injuries and fatalities within the transportation system.	Supporting Strategies	4.1 Street Safety
Respond to driver behaviour concerns (e.g. cut-through traffic, speeding), especially on local roads and in school zones.	Supporting Strategies	4.6 Traffic Calming
Support all modes of travel along the road network in the development of a multi-modal transportation system and increase transit and active transportation mode share among residents and visitors.	Infrastructure Projects and Supporting Strategies	3.1 Street Network, 4.2 Complete Streets and 4.3 Functional Street Classification
Support placemaking opportunities and recognize the value of transportation in improving the public realm.	Supporting Strategies	4.4 Land Use Planning

Need or Opportunity	Approach	Report Section
Plan for complete communities with densities to support transit and active transportation.	Supporting Strategies	4.4 Land Use Planning
Address corridor and intersection capacity constraints.	Infrastructure Projects	3.1 Street Network
Manage the safe and efficient movement of commercial vehicles.	Supporting Strategies	4.9 Goods Movement
Expand active transportation connections to support Stratford as a complete community.		
Progress the cycling network to reflect stronger policy and industry support for All Ages and Abilities (AAA) designs and needs of vulnerable road users and recognize the potential in attracting a large cohort of "interested but concerned" cyclists.	Infrastructure Projects	3.2 Cycling Network
Improve the safety of all vulnerable road users, including pedestrians and cyclists.	Supporting Strategies	4.1 Street Safety
Recognize potential of Stratford as a 15-minute city, where a compact geography and flat topography presents an opportunity to increase walking and cycling mode share for most trips.	Infrastructure Projects and Supporting Strategies	3.2 Cycling Network, 3.3 Pedestrian Network and 4.5 Active Transportation
Connect existing and planned developments and sub-divisions at the periphery of the City to major destinations via safe and direct active transportation routes, with an emphasis on a complete sidewalk network to support walking trips.	Supporting Strategies	4.4 Land Use Planning
Take advantage of placemaking opportunities that support the character and protect the natural heritage of Stratford and recognize the value of cycling and walking tourism potential.	Supporting Strategies	4.5 Active Transportation
Improve transit service and operations to increase convenience, equity and accessibility, and sustainability.		
Improve the convenience of Stratford's transit system.	Supporting Strategies	4.7 Public Transit

Need or Opportunity	Approach	Report Section
Accommodate current and future growth.	Supporting Strategies	4.7 Public Transit
Improve equity and accessibility.	Supporting Strategies	4.7 Public Transit
Recognize the opportunity of Stratford Transit in being a leader in the transition to more sustainable transportation and reduction of greenhouse gases.	Supporting Strategies	4.7 Public Transit
Develop policies and strategies to support Stratford's safe, connected, and reliable transportation system.		
Integrate the planning of the street network to ensure the needs of all street users are considered.	Supporting Strategies	4.2 Complete Streets
Position Stratford to be able to take advantage of new and emerging transportation technologies.	Supporting Strategies	4.8 New and Emerging Technologies
Ensure new innovations provide positive benefits to residents.	Supporting Strategies	4.8 New and Emerging Technologies
Standardize traffic calming process to allow for transparent responses to traffic calming requests.	Supporting Strategies	4.6 Traffic Calming
Manage congestion and operational constraints through alternatives to road widening.	Supporting Strategies	4.2 Complete Streets

3 Network Development

The following sections outline the development of the recommended street network, cycling network, and pedestrian network. The recommended projects that arise from these sections were identified by applying the alternative solutions process as outlined in Section 2.1.

3.1 Street Network

3.1.1 Needs and Opportunities

Street network infrastructure needs and opportunities were identified in Phase 1 of the TMP study under the overarching banner of "Implement a Complete Streets approach to meet the needs of a growing city and destination". This opportunity statement served as the foundation from which more specific needs were identified.

In response to street network needs, focus areas where infrastructure changes may be required are identified, as shown in Exhibit 3.1. Inputs in the identification of these focus areas included public and stakeholder engagement, consultation with City staff, development patterns and anticipated growth trends, and technical analysis of existing and future travel conditions. Each focus area is discussed in detail, including additional considerations and constraints, the identification and evaluation of alternative solutions, and the resulting preferred solution, in Section 3.1.2.

Additional needs and opportunities were also identified under the Complete Streets banner (as outlined in Exhibit 2.2), however they are best addressed through supporting strategies and policies and are discussed in Section 4.

Need: Optimize the existing street network to support current and future traffic growth.

Based on analysis of existing and future travel conditions, two focus areas were identified where mitigating measures are needed by 2041 – either capacity improvements or operational changes, as follows:

- **West Secondary Plan Area:** Tremendous change in this area is expected, hosting over 60% of Stratford's forecasted growth. Capacity constraints are expected to develop along O'Loane Avenue and McCarthy Road as the City grows.
- **Douro Street (East of Romeo Street):** Analysis of existing conditions indicates that Douro Street experiences traffic volumes that exceed the capacity of the road during peak hour, and this is expected to worsen as development within the Stratford East Policy Area progresses.

Need: Address corridor and intersection capacity constraints.

Existing capacity constraints were identified in the following locations:

- **Lorne Avenue:** Lorne Avenue serves as an important arterial route, moving trucks and cars through and around Stratford and provides important connections to the southern part of the City, where future industrial growth is expected. There are capacity constraints with the existing roadway and at the intersections of O'Loane Avenue, Downie Street and Romeo Street. Existing intersection configurations lead to operational inefficiencies caused by left-turning vehicles and are not sufficient to meet traffic demand during peak periods.
- **Downtown Stratford:** Being the hub of the City and the nexus of provincial Highways 7, 8 and 7/8, traffic congestion in the Downtown is a continuing concern. However, it is important to balance the desire for faster-flowing traffic with the TMP's objectives of improving multi-modal travel and the placemaking aspect of Stratford's vibrant downtown.

Need: Respond to road user safety concerns and consider improved traffic control at identified intersections.

One intersection was identified as a focus area where improvements could be made specifically to address the safety needs of all road users as growth in the area contributes to higher volumes of traffic:

- **McCarthy Road and Romeo Street Intersection:** The existing two-way stop on McCarthy Road is insufficient to meet future demand, leading to road user safety concerns, especially for pedestrians and cyclists using

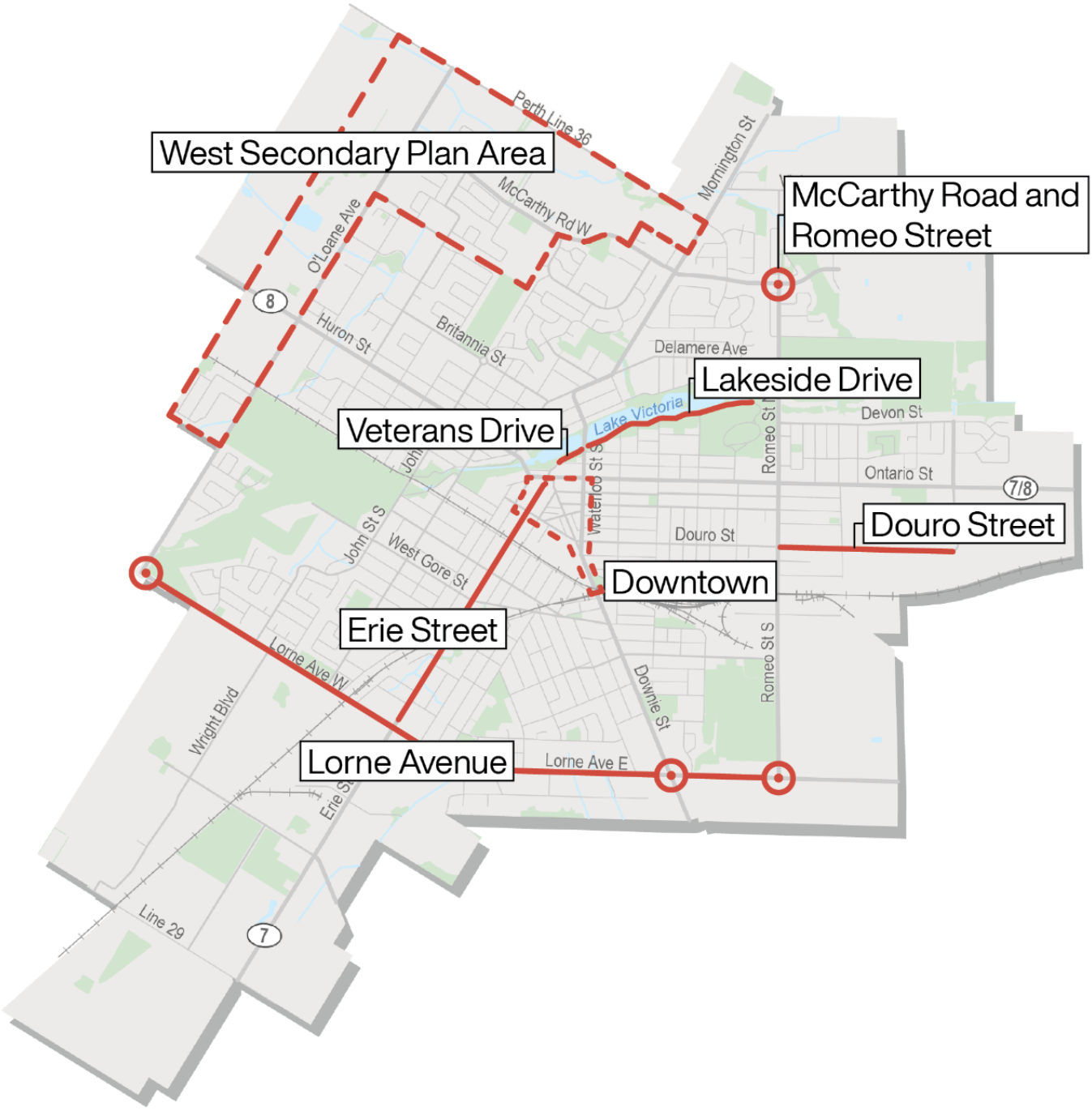
the uncontrolled crossing. Improvements to this intersection will also help accommodate and manage traffic growth expected as the Northeast Secondary Plan Area develops.

Need: Support all modes of travel along the road network in the development of a multi-modal transportation system and increase transit and active transportation mode share among residents and visitors.

A Complete Streets approach to road network planning informs recommended solutions in support of accessible, diverse, and convenient mobility options. This ensures that the transportation network accommodates all mobility users across all modes. The following focus areas were identified for their high potential to be reconfigured to better serve the needs of all road users:

- **Erie Street:** Based on existing and forecasted traffic, Erie Street may be a good candidate for a road diet, affording space to be repurposed for parking, cycling, walking or other public realm improvements. A road diet would upgrade Erie Street to a Complete Street, transforming this important arterial into a multi-modal corridor.
- **Lake Victoria – Lakeside Drive:** Lakeside Drive is a scenic street running along the south shore of Lake Victoria, an important destination for both residents and tourists. There is a need to re-balance existing road space to better accommodate the needs of active transportation users, park visitors, theatre patrons and drivers to this important destination.
- **Lake Victoria – Veterans Drive:** There is an opportunity to re-assess the role of Veterans Drive between Cobourg Street and Waterloo Street. Modifications to this 200-metre stretch of roadway along Lake Victoria can work to improve the public realm, re-connect two sections of parkland, and better serve both residents and visitors.

Exhibit 3.1: Road Network Focus Areas



3.1.2 Network Development

Potential Alternatives

To determine which potential road network solution best aligns with the TMP objectives, an evaluation framework was created to assess each option. The options with the greatest alignment with the TMP objectives become the preferred solution and recommended for implementation in the City of Stratford.

Exhibit 3.2: Alternative Solutions Project Evaluation Framework

Criteria	○ Least Effective	◑ Somewhat Effective	● Most Effective
Objective 1: Support a healthy, safe, and complete community			
Qualitative assessment of safety improvements proposed and qualitative assessment of support for multi-modal transportation.	Does not prioritize safety and least represents a Complete Streets implementation	Somewhat prioritizes safety, but constraints limit Complete Streets implementation	Prioritizes safety of all road users, and most represents a Complete Streets implementation
Objective 2: Improve connectivity to support economic prosperity			
Qualitative assessment of impact to City's character, charm, cultural heritage and tourist appeal and an assessment of impacts on traffic and mobility.	Traffic outcome is least desirable, or significant impacts to surrounding context	Traffic outcome is acceptable, and some impacts to surrounding context	Traffic outcome is most desirable, and least impacts to surrounding context
Objective 3: Reduce environmental impacts			
Qualitative assessment of environ. impacts / GHG emissions, and qualitative assessment relating to the transportation network's climate change resilience.	Performs poorly	Performs acceptably	Performs best
Objective 4: Be an outcome of fiscal responsibility			
Qualitative assessment of the order of magnitude cost of proposed measures (e.g. maintenance, operations / life-cycle costing).	Highest cost option	Middle cost option	Lowest cost option

Focus Areas

Three potential transportation solutions are identified to respond to the needs of each of the previously described focus areas. These potential projects are assessed against the evaluation framework outlined previously in Exhibit 3.2 to ensure optimal alignment with the study's vision and objectives. Projects with the greatest alignment are carried forward and recommended as the preferred solution for the Transportation Master Plan.

These potential transportation solutions were presented to stakeholders and members of the public as part of the second round of engagement. Generally, the preferred solutions presented herein were well received by residents and stakeholders who participated in the study's consultation program. The exceptions are the McCarthy Road and Romeo Street intersection and Lake Victoria – Veterans Drive proposed closure. Further details on these are included in the relevant sections below.

West Secondary Plan Area

To support a growing economy and to meet housing needs, the City of Stratford undertook a series of land annexations at its periphery between 2001 and 2020. Two major annexations designated for residential growth occurred in 2004 and 2015, comprising what is now the West Secondary Plan Area.

More than 60% of future growth in Stratford through 2041 will occur the West Secondary Plan Area, placing pressure on the existing capacity of the road network. McCarthy Road and O'Loane Avenue, as arterial roads, will face the highest new demand. Improved connections are already being planned, as an extension of McCarthy Road to O'Loane Avenue is currently being designed separate to the TMP study.

- **Need:** A comprehensive approach to address existing and future traffic demands and potential capacity constraints.
- **Challenge:** Balancing the needs of traffic with the high financial and environmental costs of road widening, as well as building vibrant, complete communities.

Considerations

As of 2021, the City of Stratford has a population of 33,232 residents and is expected to grow steadily through the 2041 planning horizon to a population of 41,530 residents and 24,300 jobs. A sizable portion of this growth will be directed towards the West Secondary Plan area, and so impacts from increased demand for travel will be disproportionately felt here.

As the area grows, capacity issues are anticipated, As such, additional capacity is warranted. Capacity growth can be realized through a number of approaches, including adding additional lanes of vehicular traffic (both localized and across the larger city), improving traffic flow through operational adjustments (e.g. intersection timing and geometry), improving capacity and attractiveness of alternative modes (e.g. cycling and walking connections, transit), and by diverting demand away from peak periods. These different approaches each have positives and negatives associated with them, further discussed below.

Previous planning work has already identified new connections and capacity needed in the area. An extension of McCarthy Road west to O'Loane Avenue is currently in the planning stages.

Potential Solutions

The following three transportation solutions stem from the approaches to accommodate increased demand for travel discussed above. These are presented as distinct options to respond to the capacity needs of this soon to be booming area of Stratford:

- **Option 1 – Focus on Alternative Modes:** A focus on alternative modes means responding to growth by investing in the cycling and active transportation (AT) networks, as well as improvements to transit.
- **Option 2 – Focus on Intersection Improvements:** A focus on strategic improvements at key intersections aimed at improving efficiency and throughput as a means of adding capacity while avoiding more costly infrastructure projects such as road widenings.
- **Option 3 – Widen McCarthy Road and O'Loane Avenue:** Widening corridors from two lanes to four lanes would increase the road network capacity.

A summary of the advantages and disadvantages of each of the three transportation solutions is included in Exhibit 3.3. Exhibit 3.4 outlines the evaluation of alternative solutions, indicating the degree of alignment of each option with the TMP study objectives.

Exhibit 3.3: Advantages and Disadvantages of West Secondary Plan Area Alternatives

Advantages	Disadvantages
Option 1 – Focus on Alternative Modes	
• Transit and AT can help absorb some new demand otherwise accommodated by private vehicle. • Positive environmental outcomes include reduced congestion and greenhouse gas emissions as a result of increased mode share for active modes and transit. • Typically a lower cost investment that can provide a high return, with improved health, safety, and environmental outcomes, as well as increased tourism appeal.	• May not be as successful relieving demand on the road network as other investments in road infrastructure. • Does not improve status quo for goods movement.
Option 2 – Focus on Intersection improvements	
• A focus on selected intersections carries a lower cost than more extensive road infrastructure projects. • Key improvements at selected intersections can help address road network capacity needs, as well as improve conditions for goods movement.	• Certain intersection reconstructions may require additional land, which increases overall cost. • May not be as effective in accommodating demand as a more comprehensive road capacity improvement, especially if growth accelerates.

Advantages	Disadvantages
Option 3 – Widen McCarthy Rd and O'Loane Ave	
• Widening these corridors increases road network capacity • Improvements to mobility for other modes could be included in new designs. • May improve conditions for goods movement.	• Widening roads would have the worst environmental impacts. • Road expansion projects are expensive and do not typically represent high return investments. • Road widenings likely to induce additional demand from private vehicles, which can have congestion impacts locally and across the city.

Exhibit 3.4: Evaluation of Alternatives – West Secondary Plan Area

Objectives	1. Focus on Alternative Modes	2. Focus on Intersection Improvements	3. Widen McCarthy Rd and O'Loane Ave
Support a healthy, safe, and complete community	●	◕	○
Improve connectivity to support economic prosperity	◔	●	◕
Reduce environmental impacts	◕	◕	○
Be an outcome of fiscal responsibility	●	●	○
Overall Rating	◕	●	◔
		Preferred Solution	

○ → ◔ → ◑ → ◕ → ●
Least effective → Most effective

Preferred Solution

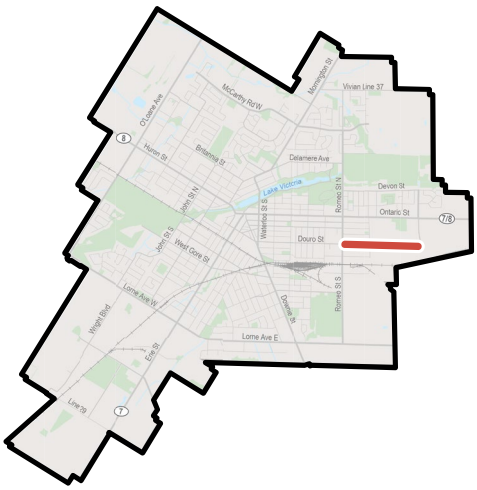
The preferred solution recommended for the West Secondary Plan Area is **Option 2: Focus on Intersection Improvements**. The City of Stratford is recommended to

focus efforts on intersection capacity improvements moving forward as the primary method to manage anticipated growth. Improvements along O'Loane Avenue and McCarthy Road may range from traffic signal timing updates, adding turning lanes, or converting to a roundabout. Additional analysis is needed to identify the specific preferred improvement at the intersection level.

This option best reflects responsible spending that responds to new growth through targeted intersection improvements that will best meet the needs of a growing city while balancing important environmental goals (avoiding costly road widenings that may induce additional driving demand). Key improvements at selected intersections can help address road network capacity needs, as well as improve conditions for goods movement, ensuring a connected and efficient road network into the future.

It should be noted that alternative modes should still be accommodated along the road network. Other planning initiatives identified in the TMP (e.g. new bike lanes along McCarthy Road) represent important components in the development of a safe multi-modal network and the implementation of the complete streets philosophy. Balancing the needs of all road users, including vulnerable road users, will help accommodate future growth and travel demand while ensuring people of all ages and abilities are provided with diverse, safe, convenient, and reliable mobility options.

Douro Street



Traffic data shows that demand has exceeded capacity along Douro Street east of Romeo Street during peak periods. Anticipated commercial and residential development as part of the Stratford East Special Policy Area, which is being planned to accommodate 14% of anticipated growth in the City by 2041, will add to the growing demands of the area.

- **Need:** Address peak period capacity constraints and growing demand for travel east of Romeo Street.
- **Challenge:** Addressing capacity needs is a challenge due to high cost, and negative outcomes to environmental and city-building objectives.

Considerations

Douro Street, east of Romeo Street, has a three-lane cross-section with one travel lane in each direction and a centre two-way left turn lane. It provides access to many high traffic-generating uses including commercial and major industrial uses. This would make the corridor a candidate for capacity improvements (e.g. road widening). Growth in the area will also add travel demand pressures in the future.

In the case of Douro Street, accommodating higher volumes of traffic can be done through widening the road beyond its existing three-lane configuration, improving parallel routes where feasible to help remove cut-through traffic, or by improving alternative modes of travel which would reduce reliance on private vehicles. The latter could reduce demands for street space, providing commercial vehicles destined for the corridor with more capacity.

The City has already begun the process of improving alternative modes in this area. A multi-use trail on the south side of Douro Street is currently in the planning stages. The route spanning from Romeo Street to CH Meier Boulevard and Devon Street will ultimately provide a key connection for existing and future workers and residents in the area.

Potential Solutions

The following three transportation solutions are identified as distinct options to respond to the capacity needs along Douro Street:

- **Option 1 – Focus on Alternative Modes:** A focus on alternative modes means responding to growth by investing in the cycling and active transportation networks, as well as improvements to transit.
- **Option 2 – Re-Route Traffic to Parallel Corridor:** Redistributing demand among the existing road network could help manage congestion along Douro Street.
- **Option 3 – Widen Douro Street:** Widening Douro Street from three lanes to four or five lanes to increase the corridor's capacity.

A summary of the advantages and disadvantages of each of the three transportation solutions is included in Exhibit 3.5. Exhibit 3.6 outlines the evaluation of alternative solutions, indicating the degree of alignment of each option with the TMP study objectives.

Exhibit 3.5: Advantages and Disadvantages of Douro Street Transportation Alternatives

Advantages	Disadvantages
Option 1 – Focus on Alternative Modes	
• Transit and active transportation can help absorb some new demand otherwise destined to become additional vehicular traffic • Positive environmental outcomes include reduced congestion and greenhouse gas emissions as a result of increased mode share for active modes and transit. • A focus on active transportation is a lower cost investment and can provide a high return, with improved health, safety, and environmental outcomes.	• Needs of commercial traffic destined for local businesses may remain unresolved. • Existing peak congestion not likely to be resolved.
Option 2 – Re-Route Traffic to Parallel Corridor	
• Redistributing demand through improvements to parallel corridors can help address capacity constraints along Douro Street. • A focus on optimizing the existing road network represents a lower cost investment than road widening.	• Additional traffic distributed from Douro Street will shift congestion north, as there are no other suitable parallel corridors to absorb traffic. • The only candidate parallel route is Ontario Street, which already faces high volumes of traffic as the connecting link for provincial Highway 7. A road widening is not desired here as it counters environmental and Complete Streets objectives.
Option 3 – Widen Douro Street	
• Widening Douro Street increases road network capacity and improves traffic flow in the short to medium term. • Road widening can support local industry by improving access for goods movement.	• Widening Douro Street is the least environmentally sound option. • Widenings are expensive and do not typically represent high return investments. • Road widenings likely to induce additional demand, which can have congestion impacts locally and across the city.

Exhibit 3.6: Evaluation of Alternatives – Douro Street

Objectives	1. Focus on Alternative Modes	2. Re-Route Traffic to Parallel Corridor	3. Widen Douro Street to Four Lanes
Support a healthy, safe, and complete community	●	◔	○
Improve connectivity to support economic prosperity	◔	◔	◕
Reduce environmental impacts	◕	◔	○
Be an outcome of fiscal responsibility	●	●	○
Overall Rating	◕	◑	◔
	Preferred Solution		

○ → ◔ → ◑ → ◕ → ●
Least effective → Most effective

Preferred Solution

The preferred solution recommended for Douro Street is **Option 1: Focus on Alternative Modes**.

The City of Stratford is recommended to focus efforts on improving non-auto mobility options as a way to manage existing capacity constraints and anticipated growth. Significant AT investment throughout the City is expected as an outcome of this TMP (see Section 3.2 and Section 3.3). In particular, Priority Cycling routes along Albert Street, Brunswick Street, Romeo Street, Douro Street, CH Meier Boulevard and Willow Street will provide key connections for workers and residents in the area to the rest of Stratford.

Strengthening investments in the active transportation and transit networks will manage travel demand and help reduce single-occupancy vehicle use, supporting the development of a healthy, safe, and complete community through convenient and accessible mobility options.

The preferred solution seeks to manage congestion and operational constraints through alternatives to road widening. A focus on absorbing growth through alternative modes represents responsible investment in new infrastructure, avoiding costly street upgrades that may not guarantee a long-term fix to congestion, while also increasing access to opportunity through multi-modal transportation options.

Lorne Avenue

Lorne Avenue serves as an important arterial route, moving trucks and cars through and around Stratford. It provides important connections to the southern part of the City, where future industrial growth is expected. There are capacity constraints at the intersections of Romeo Street, Downie Street and O'Loane Avenue. Existing intersection configurations lead to delays caused by left-turning vehicles and are not sufficient to meet traffic demand during peak periods.

Increasing capacity along the Lorne Avenue corridor and/or at its intersections with other major streets would support the arterial road function of this important bypass route around the Downtown, while providing additional capacity for heavy truck traffic around Stratford and to the growing industrial area.

- **Need:** Capacity improvements are needed along the corridor to reduce delay and improve traffic operations.
- **Challenge:** Constraints include steep grading adjacent to the intersection at O'Loane Avenue, and constricted space due to the hydro corridor at Downie Street.

Considerations

The efficient movement of people and goods is an important objective of the TMP, ensuring the road network remains safe, efficient, and accessible into the future. Lorne Avenue is a two-lane roadway that acts as an important bypass route for goods and people around downtown Stratford, serving residents, visitors and through traffic. Heavy vehicles, in particular, are an important part of the economy,

and ensuring their efficient access, maintaining Lorne Avenue as an attractive truck route, and designing intersections that accommodate heavy vehicles are key considerations.

It should be noted that Erie Street, Huron Street and Ontario Street serve as connecting links for provincial Highways 7, 8 and 7/8, and are part of the backbone of this regional road network. While improvements to Lorne Avenue would support an efficient bypass route and may help encourage through traffic to bypass the Downtown, it is expected that the connecting links will continue to accommodate commercial vehicles, as well as other regional through traffic, into the future.

The following context is important in ensuring that corridor and intersection modifications or interventions, if any, along Lorne Avenue are responsive to the needs and constraints of the roadway:

- **Lorne Avenue and O'Loane Avenue –** This intersection is approaching the volumes needed for enhanced traffic control, such as a 4-way stop. Steep grading at Lorne Avenue and O'Loane Avenue could present a challenge to certain design modifications (e.g. a roundabout).
- **Lorne Avenue and Downie Street –** As the intersection is configured without turning lanes, left-turning vehicles, particularly during peak hours, can create significant delay. Additionally, space is limited due to the existing hydro corridor adjacent to the intersection.
- **Lorne Avenue and Romeo Street –** Traffic surges during peak periods result in delays at this intersection.

Transportation solutions for Lorne Avenue should respond to optimizing the movement of both cars and trucks to allow for economic growth while mitigating negative impacts, including cut-through traffic, noise, and safety issues. Ultimately, supporting the arterial road function of this important bypass route around the City is critical to ensuring road network efficiency.

Potential Solutions

The following three transportation solutions are identified as distinct options to respond to the capacity needs along Lorne Avenue:

- **Option 1 – Focus on Alternative Modes:** A focus on alternative modes means responding to growth by investing in the cycling and active

transportation networks, as well as improvements to transit, as an alternative to investing in road capacity upgrades.

- **Option 2 – Widen Roadway to Three Lanes:** Widening the existing two-lane roadway to include a shared left-turn lane in the centre of the corridor could help alleviate congestion caused by left-turning vehicles at selected intersections.
- **Option 3 – Focus on Intersection Improvements:** A focus on intersection improvements at O'Loane Avenue, Downie Street and Romeo Street, that could include the implementation of roundabouts, turning lanes or traffic control signals.

A summary of the advantages and disadvantages of each of the three transportation solutions is included in Exhibit 3.7. Exhibit 3.8 outlines the evaluation of alternative solutions, indicating the degree of alignment of each option with the TMP study objectives.

Exhibit 3.7: Advantages and Disadvantages of Lorne Avenue Transportation Alternatives

Advantages	Disadvantages
Option 1 – Focus on Alternative Modes	
• Transit and active transportation can help absorb some new demand otherwise accommodated by private vehicles. • Positive environmental outcomes include reduced congestion and greenhouse gas emissions as a result of increased mode share for active modes and transit. • A focus on transit, in particular, could increase access to opportunity for industry workers who cannot or choose not to drive to work.	• A focus on alternative modes on the periphery of Stratford may not be as effective with relieving congestion as other options. As a result, needs of drivers, including commercial traffic, remain unresolved.

Advantages	Disadvantages
Option 2 – Widen Roadway to Three Lanes	
• Widening Lorne Avenue to include a two-way left-turn lane increases road network capacity and improves traffic flow by eliminating delays caused by left-turning vehicles. • Road widening can support local and regional industry by improving access and efficiency for trucks.	• Additional capacity along Lorne Avenue is likely to induce additional demand from private vehicles, which can have congestion impacts locally and across the city. • Widening the entire corridor is the most expensive option.
Option 3 – Focus on Intersection Improvements	
• A focus on selected intersections carries a lower cost than a more extensive road widening along the entire corridor. • Key improvements at selected intersections can still help address road network capacity needs, as well as improve conditions for goods movement.	• A focus at key intersections along Lorne Avenue may not address mid-block capacity constraints.

Exhibit 3.8: Evaluation of Alternatives – Lorne Avenue

Objectives	1. Focus on Alternative Modes	2. Widen Roadway to Three Lanes	3. Focus Intersection Improvements
Support a healthy, safe, and complete community	●	○	◕
Improve connectivity to support economic prosperity	◔	◕	●
Reduce environmental impacts	◕	○	◕
Be an outcome of fiscal responsibility	●	○	●
Overall Rating	◕	◔	●
			Preferred Solution

○ → ◔ → ◑ → ◕ → ●
Least effective → Most effective

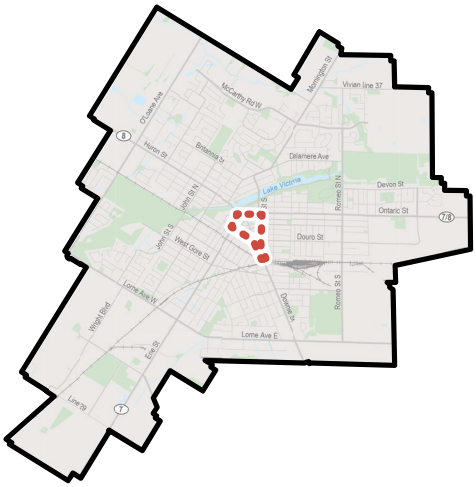
Preferred Solution

The preferred solution recommended for Lorne Avenue is **Option 3: Focus on Intersection Improvements.**

The City of Stratford is recommended to implement intersection upgrades (e.g. conversion to roundabouts or adding turning lanes) at the Lorne Avenue intersections at O'Loane Avenue, Downie Street and Romeo Street. Specific details are to be finalized through detailed design work and/or Environmental Assessment studies, as required, separate to the TMP.

An emphasis on improvements to selected intersections represents responsible spending, balancing the needs of drivers, industry workers and commercial vehicles through focused modifications that support road network efficiency.

Downtown Stratford



The Downtown Traffic Study conducted in 2021 determined it was not possible to widen Ontario Street as a response to congestion and operational concerns. Instead, intersection improvements were recommended and are expected to improve operations along Ontario Street, as well as to improve pedestrian crossing safety.

- **Need:** Balance the transportation needs through the busy downtown core with placemaking and other city-building objectives.
- **Challenge:** Balancing the needs of all road users while improving conditions for walking and cycling within fixed rights of way, with many competing demands.

Considerations

Managing congestion and operational constraints in Stratford can be achieved in ways other than widening a roadway. Congestion along selected corridors of the Downtown is a known concern in Stratford, and as such, the Downtown is an important focus area where measures are needed to mitigate capacity constraints and improve the flow of traffic, particularly along Ontario Street.

Ontario Street, along with Huron Street and Erie Street, are connecting links for provincial Highways 7, 8 and 7/8, and form the backbone of this regional network. As a major route through the Downtown, Ontario Street accommodates traffic converging from all directions, while also acting as the City's main street and in close proximity to major social, civic, commercial, and cultural destinations. Traffic congestion is pronounced during peak periods, especially during the summer tourism season. Operational issues in the Downtown were analysed in part through the Downtown Traffic Study (2021), which concluded that widening is not feasible and localized intersection improvements (i.e. signal timing adjustments) is the preferred approach to optimizing performance.

While right-of-way constraints as well as financial constraints are important factors that make widening roadways in the Downtown not suitable, this would also

counter progress the City is making with its environmental and multi-modal goals. Managing congestion through alternatives to road widening also allows the City to take advantage of placemaking opportunities, as well as balance efforts on improving pedestrian safety. Allocating more space to alternative modes and uses such as walking, cycling, parking and patios, supports the character and cultural heritage of Stratford while recognizing the value of cycling and walking tourism potential.

Preferred Solution

The Downtown Traffic Study recommended the following improvements to improve traffic operations and improve safety for all street users. Improvements include intersection modifications, including improvements to the pedestrian realm and shortening pedestrian crossing distances. These improvements are shown the map shown in Exhibit 3.9:

a) Curb extensions[3] at the southwest and southeast corner of Huron Street and Church Street will decrease crossing pedestrian distances.

b) Reducing the width of the Erie Street approach at Ontario Street will reduce collisions among southbound traffic. Removing the centre median pedestrian barricade at Erie Street will improve visibility and safety. Removing the eastbound right-turn lane at Erie Street will help keep traffic moving and improve pedestrian safety.

c) Upgrading signal timing at Downie Street and Ontario Street, Erie Street and Ontario Street, and Erie Street and St Patrick Street will improve traffic flow along the corridor.

d) Curb extensions at all corners of Erie Street and Downie Street will decrease pedestrian crossing distances.

e) Curb extensions at all corners of Waterloo Street and Ontario Street will decrease distances for pedestrians crossing Ontario Street.

[3] Curb extensions extend the sidewalk or curb line to reduce the width of the travelled portion of the roadway. Curb extensions reduce the distance pedestrians must walk across the street, can provide refuge for pedestrians, and improve the sight distance and sight lines for both pedestrians and motorists (OTM Book 15 – Pedestrian Crossing Treatments, 2016).

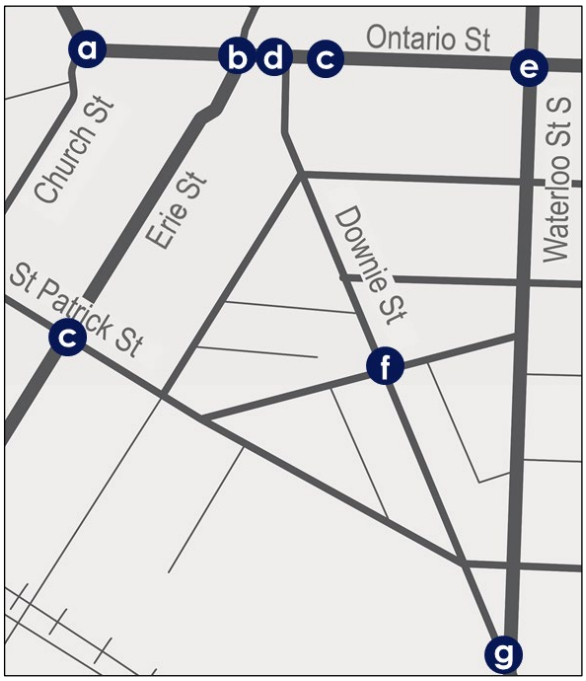
f) A new pedestrian crossover, and curb extensions at all corners, will improve pedestrian safety at Downie Street and George Street.

g) Reconfiguring the intersection of Downie Street and Waterloo Street will improve visibility and safety for all road users.

These recommendations align with the TMP objectives, balancing the needs and priorities of all road users. The improvements work to optimize traffic efficiency and prioritize the safety of pedestrians while supporting the character of the Downtown.

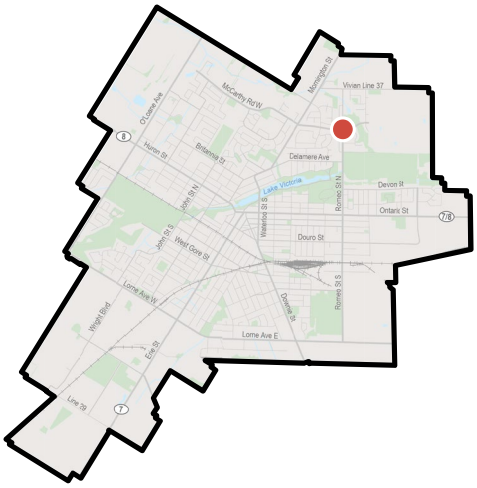
It should be noted that no cycling facilities were included in the recommendations. As such, any recommendations for on-street cycling facilities presented in this TMP should be integrated into the designs recommended in the Downtown Traffic Study. Specifically, these locations include the Erie Street road diet, bicycle boulevard along Wellington St, Brunswick St, and Albert St, and protected bike lanes or cycle tracks on Waterloo St. See Section 3.2 for more details on the cycling network recommendations.

Exhibit 3.9: Locations of Recommended Changes Identified by the Downtown Traffic Study (2021)



Note: Letters correspond to the list of recommendations outlined previously.

McCarthy Road and Romeo Street



About 25% of future growth in Stratford will occur in the Northeast Secondary Plan Area. McCarthy Road will eventually be a key connector between two important growth areas for the City. The existing two-way stop at McCarthy Road and Romeo Street intersection is insufficient to meet future demand. There are also safety concerns, especially for pedestrians and cyclists using the uncontrolled crossing.

- **Need:** Modifications are needed to address growing traffic capacity by 2041 with a more immediate need for improved pedestrian crossing.
- **Challenge:** Aligning the timing of the needs of pedestrians with the need for operational improvements for drivers.

Considerations

Growth in Stratford will largely be concentrated at the City's periphery, with a significant share occurring in the Northeast Secondary Plan area. As 25% of future growth is anticipated for this area, new and existing roadways in and around the Northeast Secondary Plan area should be monitored as development proceeds to better evaluate the travel demand impacts and assess the need for additional mitigating measures.

The intersection of McCarthy Road East and Romeo Street is expected to get busier and is identified as a focus area requiring improved traffic control to enhance the safety of existing road users (including both drivers and vulnerable road users), as well as to accommodate and manage traffic growth expected as the Northeast Secondary Plan Area develops. The intersection currently is controlled by a two-way stop from the minor street approach (McCarthy Road East), and a school crossing designates space for pedestrians to cross Romeo Street on the south side of McCarthy Road East only. At this type of crosswalk,

drivers are only required to stop and yield the entire roadway when a school crossing guard is present[4].

Eliminating the risk of potential conflicts between drivers and vulnerable road users is important in road network planning and ensuring the needs of different road users are met. In addition to improved traffic control and safer crossing conditions for pedestrians, McCarthy Road and Romeo Street is also at the intersection of two future important cycling routes serving both east-west and north-south connections (a designated bike lane along McCarthy Road east of Romeo Street is already in place). Ensuring that this intersection accommodates anticipated cycling demand is an important consideration.

Potential Solutions

The following three transportation solutions are identified as distinct options to respond to the safety needs of all road users at the intersection of McCarthy Road and Romeo Street:

- **Option 1 – Install a Pedestrian Crossover:** The implementation of a controlled pedestrian crossing[5] represents a meaningful intervention to enhance the visibility and safety of pedestrians crossing Romeo Street. A pedestrian crossover designates an area where pedestrians can cross the street, and can include flashing lights, pavement markings, signage, and push buttons. Stop sign control would remain on McCarthy Road.
- **Option 2 – Install Traffic Control Signals:** The installation of traffic control signals would be accompanied by intersection pedestrian signals, affording a highly visible and safe dedicated pedestrian crossing in all directions at McCarthy Road and Romeo Street.
- **Option 3 – Install a Roundabout:** The conversion of McCarthy Road and Romeo Street from a conventional intersection to a roundabout

[4] Ministry of Transportation of Ontario (2023). Driving Near Pedestrian Crossovers and School Crossings. <https://www.ontario.ca/page/driving-near-pedestrian-crossovers-and-school-crossings>

[5] Controlled crossings require vehicles to stop or yield to pedestrians, whereas uncontrolled crossings require pedestrians to wait for a safe gap in traffic prior to crossing the roadway, without the aid of traffic control measures (OTM Book 15 – Pedestrian Crossing Treatments, 2016).

would improve the safety of all road users and help facilitate traffic efficiency into the future.

A summary of the advantages and disadvantages of each of the three transportation solutions is included in Exhibit 3.10. Exhibit 3.11 outlines the evaluation of alternative solutions, indicating the degree of alignment of each option with the TMP study objectives.

Exhibit 3.10: Advantages and Disadvantages of McCarthy Road / Romeo Street Alternatives

Advantages	Disadvantages
Option 1 – Install a Pedestrian Crossover	
• Minimal disruption to traffic along Romeo Street, as cars are only required to yield when pedestrians are present • Enhances safety, visibility, and status of pedestrian crossings. • Does not prohibit future intersection modifications, when and if warranted (e.g. roundabouts, traffic control signals). • Lower cost investment that can provide a high return, with improved health and safety outcomes.	• Does not manage traffic growth and address operational concerns into the future as traffic demand increases. • Does not consider safety of cyclists as well as other options.
Option 2 – Install Traffic Control Signals	
• Traffic control signals could improve traffic safety and flow from both approaches – Romeo Street and McCarthy Road. • Improves pedestrian safety when crossing in each direction. • Increases safety of cyclists crossing Romeo Street, especially as demand grows in the future. • Lower capital cost that the construction of a roundabout.	• Ongoing operation and maintenance costs are higher than other options. • Increased wait times for pedestrians compared to on-demand pedestrian crossover.

Advantages	Disadvantages
Option 3 – Install a Roundabout	
• Roundabouts reduce the severity of collisions compared to conventional intersections with more standard traffic control devices. • Reduced delay, improved traffic flow and increased traffic capacity. • Reduced long-term and operation costs compared to conventional intersections with traffic control signals and equipment to maintain. • Reduced emissions as a result of lessened vehicle idling and stopping.	• Most expensive option to design and implement, as additional land and a full reconstruction is required. • Pedestrian crossing distances may be increased.

Exhibit 3.11: Evaluation of Alternatives – McCarthy Road / Romeo Street

Objectives	1. Install a Pedestrian Crossover	2. Install Traffic Control Signals	3. Install a Roundabout
Support a healthy, safe, and complete community	●	●	●
Improve connectivity to support economic prosperity	●	●	●
Reduce environmental impacts	◕	◑	◕
Be an outcome of fiscal responsibility	●	◑	◑
Overall Rating	●	◕	◕
	Preferred Solution		

○ → ◔ → ◑ → ◕ → ●
Least effective → Most effective

Preferred Solution

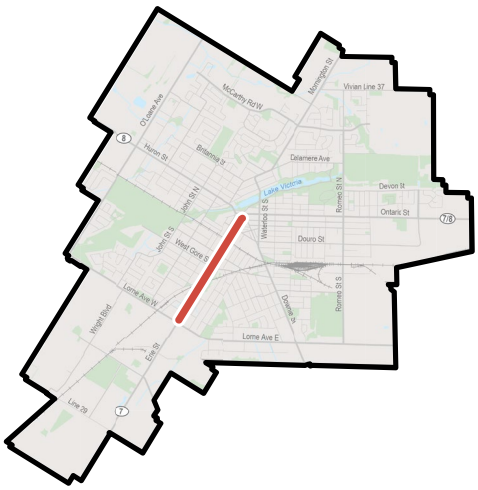
The preferred solution recommended for McCarthy Road and Romeo Street is **Option 1: Install a Pedestrian Crossover** in the short-term and consider the implementation of a roundabout or traffic signals in the longer-term as growth occurs in the area.

The installation of a pedestrian crossover across Romeo Street represents A cost-effective option that prioritizes the needs and safety of pedestrians while also ensuring maintained traffic efficiency. Cyclists, too, will benefit from the installation of a pedestrian crossover, and are able to utilise the infrastructure to safely cross Romeo Street. Enhanced visibility for active transportation users supports the development of a healthy, safe, and complete community, and ensures that those who choose to walk to work, to school, or for leisure are well-connected and prioritized as this area of Stratford grows.

It is also recommended that the City of Stratford monitor the intersection in the longer term as growth in the Northeast Secondary Plan Area occurs and travel demand increases. As dedicated cycling routes along both McCarthy and Romeo Street are planned as part of the TMP's cycling network, provisions for safe cycling should be included in any future intersection re-construction or upgrade.

Erie Street

There is an opportunity to improve Erie Street between Ontario Street and Lorne Avenue by implementing a Complete Street design. Based on existing and forecasted traffic, Erie Street is a good candidate for a road diet. A similar implementation is currently under construction along Huron Street.



A road diet would allow space to be repurposed for parking, cycling, walking or other public realm improvements.

- **Opportunity:** Implement a road diet to better reflect the different needs of the community, using the reclaimed space for alternative modes.

- **Challenge:** Balancing the diverse needs of road users, including drivers, cyclists, and pedestrians, within this arterial corridor.

Considerations

A Complete Streets approach to road network planning ensures the provision of balanced and convenient mobility options among diverse road users. In general, increasing mode share among alternatives to the private vehicle can also help replace or delay more expensive capital projects such as corridor widenings by optimizing the existing transportation network.

A lane reassignment, or road diet, is one such technique in transportation planning that reduces the number of travel lanes, or the width of the road itself is reduced, to achieve other improvements. This approach maintains the primary function of the corridor as a transportation link for cars and trucks, but reclaimed space is then used for improved pedestrian amenities, expanded sidewalks, parking, bike lanes, etc. Adopting the view that streets are public spaces means re-organizing strategic streets and utilizing the reclaimed space to create vibrant destinations where people would like to be rather than simply pass through. While a drawback of a road diet may include the potential for increased travel delays during peak periods, many benefits follow the implementation of a road diet, including the following:

- Improved safety for all road users;
- Shorter pedestrian crossings / more boulevard space;
- Traffic calming and reduced vehicle speeds;
- Reduction in conflict points between vehicles;
- More consistent traffic flow;
- Improved operations from updated traffic signals; and
- Less congestion caused by left-turning vehicles.

Erie Street is an important arterial in Stratford and plays a key regional role as a connecting link for Highway 7. Maintaining the street's function of efficient traffic flow is central to a Complete Streets makeover. Similar efforts by the City are currently underway, as Huron Street is undergoing a road diet that will see its four travel lanes replaced by a single lane of traffic in each direction and a bi-directional centre left-turn lane. Reclaimed space along Huron Street will be used to improve

boulevard space and sidewalks, and the two-way left-turn lane will help improve traffic flow by reducing delays caused by left-turning vehicles.

Applying this logic to Erie Street between Ontario Street and Lorne Avenue represents an opportunity to progress toward important TMP objectives, including the development of a healthy and complete community and an increase in more diverse travel modes. Excess capacity is available along the four-lane corridor, and future vehicle volumes are not expected to exceed roadway capacity, a point especially important in minimizing vehicle re-routing. Streets with an average daily traffic (ADT) of less than 20,000 vehicles are considered good candidates for road diets[6]. More specifically, streets at or below 750 vehicles per hour per direction during peak travel are generally considered feasible candidates for the implementation of a road diet. Peak hour travel on Erie Street varies between approximately 500 and 600 vehicles, depending on location (2016 to 2022 analysis of p.m. peak hour travel counts for both directions).

Potential Solutions

The following three transportation solutions are identified as distinct options to respond to the mobility needs of all road users along Erie Street between Ontario Street and Lorne Avenue:

- **Option 1 – Do Nothing:** Maintaining the status quo along Erie Street would see no changes to the existing configuration of the roadway, as well as no changes to capacity for vehicles.
- **Option 2 – Narrow to Two Travel Lanes:** A lane reassignment of the existing four travel lanes to two travel lanes with reclaimed space being rededicated to walking, cycling or other uses.
- **Option 3 – Narrow to Two Travel Lanes and a Shared-Centre Turn Lane:** A lane reassignment of the existing four travel lanes to two travel lanes and a continuous bi-directional left-turn lane with reclaimed space being rededicated to walking, cycling or other uses.

A summary of the advantages and disadvantages of each of the three transportation solutions is included in Exhibit 3.12. Exhibit 3.13 outlines the

[6] US Department of Transportation, Federal Highway Administration (2014). Road Diet Informational Guide, FHWA Safety Program.

evaluation of alternative solutions, indicating the degree of alignment of each option with the TMP study objectives.

Exhibit 3.12: Advantages and Disadvantages of Erie Street Transportation Alternatives

Advantages	Disadvantages
Option 1 – Do Nothing	
• Maintains existing configuration and capacity for vehicles. • No new capital costs.	• Does not address the needs of all road users and continues to prioritize private auto vehicular movement over other forms of mobility. • Maintaining excess vehicle capacity along Erie Street may attract additional traffic over time, which could increase congestion on other streets.
Option 2 – Narrow to Two Travel Lanes	
• Addresses the needs of all street users, providing the most amount of space that can be reclaimed for parking, cycling, walking and other public realm and mobility improvements. • Lane reassignment may be implemented on existing pavement within the existing right-of-way, thus requiring a low level of investment for a significant change to the usage of the street. • Reflects policy support for mobility infrastructure that accommodates All Ages and Abilities.	• Two-lane cross-section can inhibit traffic flow and increase delays caused by reduced vehicle capacity and left-turning vehicles. • Potential negative impacts to emergency response vehicles.

Advantages	Disadvantages
Option 3 – Narrow to Two Travel Lanes and Centre Turn Lane	
• Provides space that can be reclaimed for parking, cycling, walking and other public realm and mobility improvements. • Bi-directional left-turn lane at the centre of the roadway would help minimize congestion and delays caused by left-turning vehicles. • Lane reassignment may be installed on existing pavement within the existing right-of-way, thus requiring a low level of investment for a significant change to the usage of the street. • Reflects policy and support for mobility infrastructure that accommodates All Ages and Abilities.	• Potential for increased delay for motor vehicles during peak travel periods.

Exhibit 3.13: Evaluation of Alternatives – Erie Street

Objectives	1. Do Nothing	2. Narrow to Two Travel Lanes	3. Narrow to Two Travel Lanes and Centre Turn Lane
Support a healthy, safe, and complete community	○	●	●
Improve connectivity to support economic prosperity	◑	◕	●
Reduce environmental impacts	○	◕	◕
Be an outcome of fiscal responsibility	◑	◕	◕
Overall Rating	◔	◕	●
			Preferred Solution

○ → ◔ → ◑ → ◕ → ●
Least effective → Most effective

Preferred Solution

The preferred solution recommended for Erie Street is **Option 3: Narrow to Two Travel Lanes and Shared Centre Turn Lane**. This option best balances traffic needs of the City's main north-south arterial, while providing enough space for a major cycling spine route, best meeting the needs of a growing city. Consultation and agreement with the MTO will be required to undergo modifications to the roadway, as Erie Street is part of the Province's connecting links program.

A rendering of what a lane reassignment along Erie Street could look like is shown in Exhibit 3.14. The four-travel lane cross-section has been reimagined as two through lanes with a bi-directional left-turn lane at the centre of the street. A separated cycling facility is also included in both directions on either side of the street. As shown in the rendering, the road diet can be installed on the existing pavement width, thus requiring a low level of investment for a significant change.

Exhibit 3.14: Rendering of Option 3 Lane Reassignment along Erie Street

Note: Artist rendering, indicative of what a road diet along Erie Street could potentially look like.

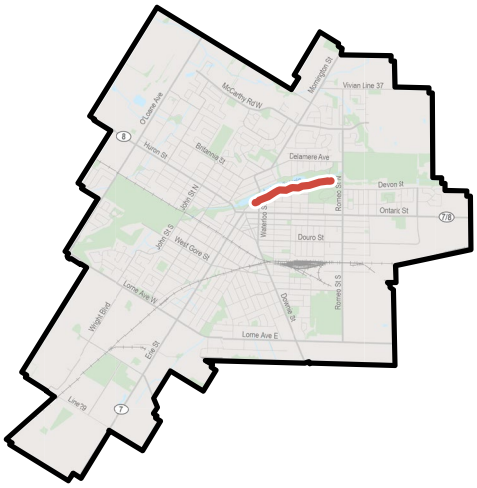
This option will help meet existing and future mobility needs in Stratford through retrofitting the existing corridor to increase multi-modality and decrease single-occupancy vehicle use. This represents an important step in reducing the City's impact on the environment, helping to prioritize vehicle efficiency alongside the needs of other road users. The preferred solution also helps recognize the potential of Stratford as a 15-Minute City[7], connecting existing and planned communities to destinations via safe and direct active transportation routes. A Complete Street makeover to Erie Street via a road diet would ultimately help support an uptake in mode share among cyclists and pedestrians and help the City work toward its Vision Zero goal.

From a traffic operations perspective, reallocating a part of the roadway width currently used for vehicular travel to bike lanes and other uses is not expected to create undue delay, maintaining the primary function of the corridor as an efficient

[7] The 15-Minute City is a recent trend in urban and transportation planning and an important consideration for the City of Stratford. The 15-Minute City describes an urban geography where most daily activities are located within a travel time of 15-minutes by walking or cycling. Targeted improvements to cyclist and pedestrian infrastructure can help progress the City to embody a true 15-Minute City for all.

and reliable transportation link for cars and trucks. Negative impacts to emergency services are not anticipated as the three-lane cross section provides additional space for emergency vehicles to pass general traffic safely, often leading to a reduction in response times[8].

Lake Victoria – Lakeside Drive



Lake Victoria is an important destination for both residents and tourists. There is a need to re-balance existing road space to better balance the needs of recreation and active transportation users, other park users, theatre patrons, and other visitors to this beautiful attraction.

- **Need:** The existing lake trail is insufficient to accommodate pedestrian and cyclist demand, and Lakeside Drive only provides space for vehicles.
- **Challenge:** A limited road width to host both two-way traffic and cyclists. Any changes must maintain access to key destinations and parking and mitigate impacts to the surrounding road network.

Considerations

Lakeside Drive, between Waterloo Street and Lakeside Drive North, is a scenic two-lane bi-directional street running along the south shore of Lake Victoria. Its importance lies in its proximity to recreation, parkland, parking, and Stratford Festival venues, and so maintaining vehicular access while accommodating other modes is central to any roadway modifications.

However, there is a significant demand for space from park users across all modes of travel, both for recreation and for transportation. Currently, a narrow path lines the water, but does not provide enough space for both pedestrians and cyclists, and the volumes of both are too high for safe mixing of the two modes.

[8] U.S. Department of Transportation Federal Highway Administration: 'Road Diets and Emergency Response: Friends, Not Foes' Retried March 10, 2023 from https://safety.fhwa.dot.gov/road_diets/resources/pdf/fhwasa17020.pdf

Renewing Lakeside Drive can represent important City-building opportunities, including improved access for active transportation users, as well as an enhanced waterfront destination for residents and tourists. Ensuring negative impacts are mitigated on adjacent streets, including capacity and safety issues, is also an important consideration in transforming Lakeside Drive.

Potential Solutions

The following three transportation solutions are identified as distinct options to respond to the mobility needs of all road users along Lakeside Drive:

- **Option 1 – Do Nothing:** Maintaining the status quo along Lakeside Drive would see no changes to the existing configuration of the roadway, as well as no changes to capacity for vehicles.
- **Option 2 – Convert to One-Way with Bike Lanes:** Converting Lakeside Drive to a one-way street for cars allows remaining space to be reallocated to bi-directional designated bike lanes.
- **Option 3 – Build Multi-Use Path Beside Street:** The construction of a new multi-use path would accommodate active transportation users while maintaining existing vehicle access along Lakeside Drive.

A summary of the advantages and disadvantages of each of the three transportation solutions is included in Exhibit 3.15. Exhibit 3.16 outlines the evaluation of alternative solutions, indicating the degree of alignment of each option with the TMP study objectives.

Exhibit 3.15: Advantages and Disadvantages of Lakeside Drive Transportation Alternatives

Advantages	Disadvantages
Option 1 – Do Nothing	
• Maintains existing configuration and capacity for vehicles. • No new capital costs.	• Does not address the needs of all road users and continues to prioritize private vehicle movement over other forms of mobility. • Active transportation trails around Lake Victoria continue to have capacity issues.

Advantages	Disadvantages
Option 2 – Convert to One-Way with Bike Lanes	
• Maintains vehicular access to parking and amenities, including parkland, Stratford Festival venues, William Allman Memorial Arena, and other amenities. • Provides designated on-road space for cyclists, helping to accommodate demand and support future growth, while opening additional space for pedestrians and runners along the existing pathway. • Improved safety for cyclists, which could lead to an uptake in local cycling trips. • Retrofit option is relatively inexpensive, as cycling lanes can be implemented within the existing pavement width, thus requiring a low level of investment for a significant change to the usage of the street.	• One-way configuration for cars may result in some backtracking vehicle trips to access destinations. • Reduced vehicle capacity could result in an increase in traffic along neighbouring streets.
Option 3 – Build Multi-Use Path Beside Street	
• Provides space for all active transportation users including pedestrians, runners, and cyclists. • Expanded capacity for active users would improve Lake Victoria as a destination for both residents and tourists. • Dedicated space for vulnerable road users could lead to an uptake in local walking and cycling trips.	• Most expensive option. • New multi-use path would take away space from existing parkland.

Exhibit 3.16: Evaluation of Alternatives – Lakeside Drive

Objectives	1. Do Nothing	2. Convert to One-Way with Bike Lanes	3. Build Multi-Use Path Beside Street
Support a healthy, safe, and complete community	○	●	●
Improve connectivity to support economic prosperity	○	◕	●
Reduce environmental impacts	○	◕	◑
Be an outcome of fiscal responsibility	◕	●	◑
Overall Rating	◔	●	◕
		Preferred Solution	

○ → ◔ → ◑ → ◕ → ●
Least effective → Most effective

Preferred Solution

The preferred solution recommended for Lakeside Drive between Waterloo Street and Lakeside Drive North is **Option 2: Convert to One-Way With Bike Lanes**. A rendering of what a lane reassignment along Lakeside Drive could look like is shown in Exhibit 3.17. The existing two-travel lane cross-section has been reimagined as one through lane and designated bi-directional bike lanes on the north side of the street. As shown in the rendering, the bike lanes can be installed on the existing pavement width, thus requiring a low level of investment for a significant change to the usage of the street.

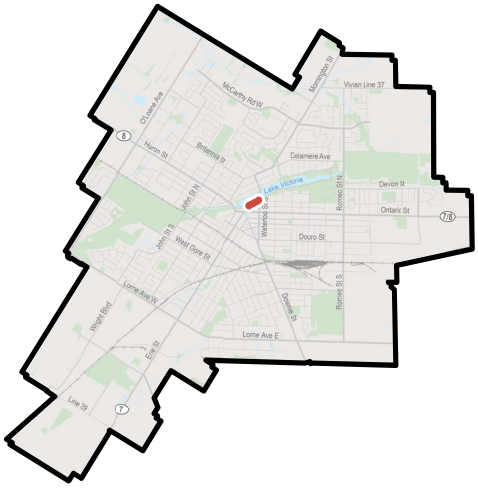
This option will help meet existing and future local mobility needs in Stratford through retrofitting the existing corridor to increase multi-modality, an important competent in support of a healthy, safe, and complete community. This option will also help encourage active uses along Lake Victoria, aiding to the charm and improving access to this important destination.

The direction of the one-way is to be determined by further study and will be based on ensuring the road network for drivers remains efficient. An assessment of potential impacts, including safety, cut-through traffic, and emergency response times, to Lakeside Drive and nearby streets will be undertaken. Analysis of existing and future traffic indicates there is sufficient capacity for adjacent streets to absorb additional volumes, if needed, without adverse impacts. Additionally, vehicle access is preserved along Lakeside Drive, ensuring connections for both residents and businesses is maintained.

Exhibit 3.17: Rendering of Option 2 Lane Reassignment Along Lakeside Drive

Note: Artist rendering, indicative of what a lane reassignment along Lakeside Drive could potentially look like.

Lake Victoria – Veterans Drive



Repurposing the function of streets for pedestrians and cultural events is a growing trend across Canadian municipalities. Veterans Drive represents an important opportunity to re-assess the role of the street along Lake Victoria, to improve the public realm, re-connect two sections of parkland, and better serve both residents and visitors.

- **Opportunity:** Re-imagine the function and role Veterans Drive to re-connect the parks on either side, unlock year-round event space, and improve safety for vulnerable road users within the parks.
- **Challenge:** Ensure potential road closure does not have negative impacts to surrounding roads.

Considerations

Veterans Drive, which runs in its entirety from Cobourg Street to Waterloo Street, is a scenic two-lane bi-directional street running along the south shore of Lake Victoria. The 200-metre roadway turns into Lakeside Drive east of Waterloo Street.

Transforming Veterans Drive for purposes other than vehicular traffic represents an opportunity to better serve residents and visitors and help align the street with nearby uses. Veterans Drive divides important parkland adjacent to Lake Victoria and is near other significant cultural and recreational destinations including Stratford Festival venues, William Allman Memorial Area, and the Downtown.

Repurposing Veterans Drive will improve access for park visitors and recreational users, as well provide as an enhanced waterfront destination for cultural programming.

Ensuring negative impacts are mitigated on adjacent streets, including capacity and safety issues, is also an important consideration when implementing any changes to Veterans Drive.

Potential Solutions

The following three transportation solutions are identified as distinct options to respond to the mobility needs of all road users along Veterans Drive:

- **Option 1 – Do Nothing:** Maintaining the status quo along Veterans Drive would see no changes to the existing configuration of the roadway, as well as no changes to capacity or access for vehicles.
- **Option 2 – Design a Flex Street for Special Closures:** Converting Veterans Drive to a "flex street" – a street designed in a way that is flexible in its use – allows the roadway to be temporarily closed to cars for special events or seasonal programming.
- **Option 3 – Close Street Permanently to Cars:** The permanent closure of Veterans Drive would open space up for recreational and active uses, as well as cultural programming.

A summary of the advantages and disadvantages of each of the three transportation solutions is included in Exhibit 3.18. Exhibit 3.19 outlines the evaluation of alternative solutions, indicating the degree of alignment of each option with the TMP study objectives.

Exhibit 3.18: Advantages and Disadvantages of Veterans Drive Transportation Alternatives

Advantages	Disadvantages
Option 1 – Do Nothing	
• Maintains existing configuration and capacity for vehicles. • No new capital costs.	• Does not address the needs of parks users and continues to prioritize private auto vehicular movement over other forms of mobility. • High potential of Veterans Drive areas as a destination not realized.

Advantages	Disadvantages
Option 2 – Design a Flex Street for Special Closures	
• Disruption to vehicular access seasonally or during special events, maintaining access and connection to Lakeside Drive, including parkland, Stratford Festival venues, William Allman Memorial Arena, and other amenities. • Retrofit option to convert existing corridor to a flex street is relatively inexpensive.	• Minimal disruption to local traffic expected. • Active programming needed to ensure corridor is known as a destination.
Option 3 – Close Street Permanently to Cars	
• Provides space for special events and cultural programming throughout all seasons near important commercial and culturally significant destinations. • Permanent solution to accommodating park users and prioritizing recreation and active transportation. • Linking parkland and expanding capacity for pedestrians and recreations users would improve Lake Victoria as a destination for both residents and tourists.	• Some disruption to local traffic expected.

Exhibit 3.19: Evaluation of Alternatives – Veterans Drive

Objectives	1. Do Nothing	2. Design a Flex Street for Special Closures	3. Close Street Permanently to Cars
Support a healthy, safe, and complete community	○	◕	●
Improve connectivity to support economic prosperity	◔	◑	◔
Reduce environmental impacts	○	◔	◕
Be an outcome of fiscal responsibility	◕	◕	◕
Overall Rating	◔	◑	◕
			Preferred Solution

○ → ◔ → ◑ → ◕ → ●
Least effective → Most effective

Preferred Solution

The preferred solution recommended for Veterans Drive between Cobourg Street and Waterloo Street is **Option 3: Close Street Permanently to Cars**.

This option will help support and take advantage of placemaking opportunities that protect the cultural and natural heritage of Stratford. Transforming this 200-metre street will also support cycling and walking tourism and encourage active uses along Lake Victoria, especially as Lakeside Drive becomes an important cycling destination. A multi-use path would be provided to ensure continued connectivity for people walking or rolling.

Although some disruption to local traffic can be expected, this is anticipated to be minor. Closing streets permanently to vehicular traffic is a growing trend in transportation and public space planning, and Veterans Drive is a suitable candidate to help Stratford grow its inventory of community space and destination space. However, the City may wish to experiment with part-time closures and assess impacts prior to fully implementing a permanent closure of the street.

3.1.3 Recommended Actions

1. Implement the recommended projects as outlined in Exhibit 3.20.

Exhibit 3.20: Summary of Road Network Recommendations

Focus Area	Preferred Solution
West Secondary Plan Area	Focus on intersection improvements, where identified through further analysis, along O'Loane Avenue and McCarthy Road.
Douro Street	Focus on alternative modes, including the planned installation of the multi-use trail on this corridor to enhance multi-mobility access to existing jobs and planned growth.
Lorne Avenue	Focus on intersection improvements at the intersections with O'Loane Avenue, Downie Street and Romeo Street.
Downtown Stratford	Continue with the implementation of the recommendations in the Downtown Traffic Study where not contradicted by road or cycling projects identified in this TMP.
McCarthy Road and Romeo Street	Install a pedestrian crossover in the short-term. Monitor the intersection as the City grows and consider further intersection upgrades (e.g. roundabout or traffic signals) as needed in the long-term.
Erie Street	Implement a lane reassignment that converts Erie Street to a three-lane cross-section (2 vehicle travel lanes and centre left turn lane) and provide protected bike lanes as identified in the cycling network plan.
Lake Victoria – Lakeside Drive	Convert to one-way operation (direction to be determined through further study) and implement bi-directional designated bike lanes on the existing pavement.
Lake Victoria – Veterans Drive	Close the street permanently to cars to allow for better park access and active transportation opportunities.

Note: Additional context on prioritization, timing/phasing, and costing will be provided in the final TMP report.

3.2 Cycling Network

3.2.1 Needs and Opportunities

Cycling network needs and opportunities were identified in Phase 1 of the TMP study. These needs and opportunities were reflected throughout the cycling network development process.

Need: Progress the cycling network to reflect stronger policy and industry support for All Ages and Abilities (AAA) designs and needs of vulnerable road users and recognize the potential in attracting a large cohort of "interested but concerned" cyclists.

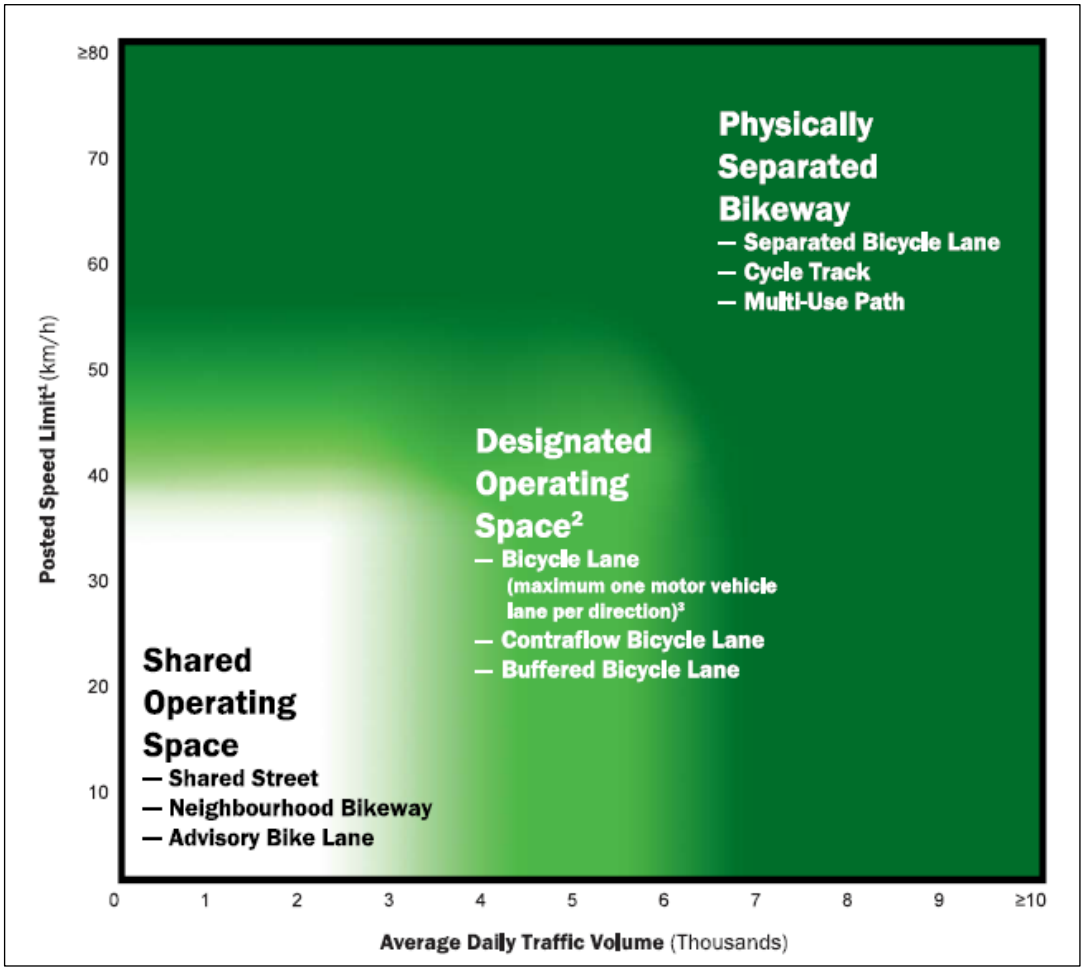
The Ontario Traffic Manual (OTM) Book 18 – Cycling Facilities[9] is the primary resource guiding the selection of appropriate cycling facility types and design along all potential routes within the City of Stratford. The manual highlights the "interested but concerned" group as the design cyclist, the user category that practitioners should seek to accommodate. Comprising 51% to 56% of the population, this category of cyclist may vary in experience and age but are typically uncomfortable when interacting with moderate speed traffic. These riders prefer a lower-stress riding environment that can be provided through separated facilities, or low-traffic and low-speed shared-use streets (also known as AAA facilities).

A cycling facility pre-selection assessment was conducted on all candidate cycling corridors in Stratford. The assessment uses one of two facility selection nomographs based on road and land use typologies to identify the preferred level of separation ("facility type") along the corridor. The updated OTM Book 18 provides strengthened warrants for facility types – shared, designated or separated facilities – recommending a lower threshold for traffic volume and speed for the implementation of higher-order facilities such as protected bike lanes and cycle tracks.

[9] Ontario Traffic Manual Book 18 – Cycling Facilities was developed in association with the Ontario Traffic Council and provides guidance to Ontario municipalities on the uniformity and treatment of cycling design facilities and is consistent with the Highway Traffic Act regarding municipal roads and infrastructure. A 2021 update provided up-to-date guidance on determining appropriate facility types and design for various roadway context, with a focus on designing for all ages and abilities.

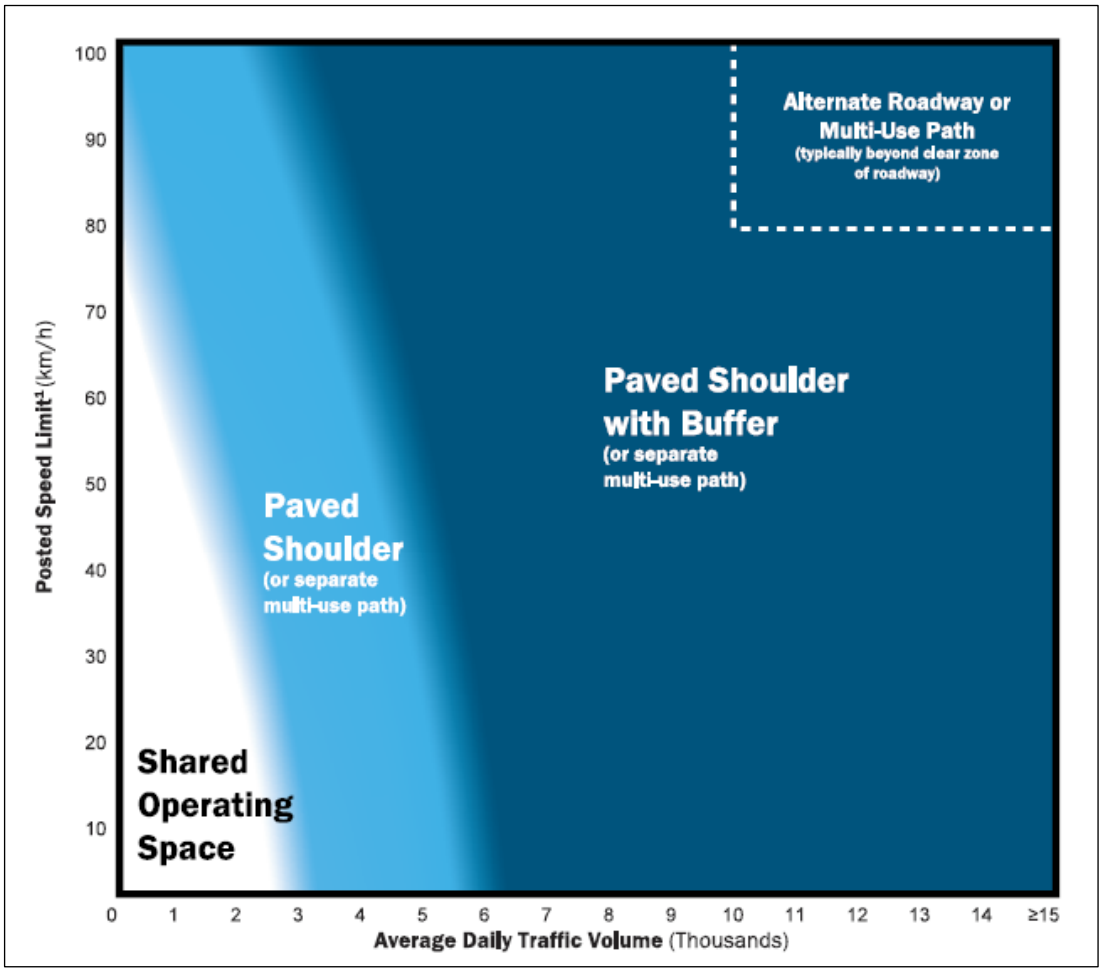
The urban/suburban and rural facility selection nomographs are shown in Exhibit 3.21 and Exhibit 3.22. These figures illustrate the mechanism used to select the class of cycling facility appropriate for a given corridor. Applying these tools involves implicitly targeting an All Ages and Abilities (AAA) network approach based on OTM Book 18 policy.

Exhibit 3.21: OTM Book 18 – Urban/Suburban Nomograph



Source: Ontario Traffic Manual Book 18 – Cycling Facilities (MTO, 2021), Figure 5.5

Exhibit 3.22: OTM Book 18 – Rural Nomograph



Source: Ontario Traffic Manual Book 18 – Cycling Facilities (MTO, 2021), Figure 5.6

Opportunity: Recognize potential of Stratford as a 15-Minute City, where a compact geography and flat topography presents an opportunity to increase walking and cycling mode share for most trips.

The unique built environment of Stratford, being a relatively compact and dense community, highlights its potential to progress toward the 15-Minute City, where most daily activities can be accessed within a 15-minute travel time via active modes. Targeted improvements to cyclist and pedestrian infrastructure will help support active transportation uptake.

To specifically support the 15-minute City approach, a Priority Cycling Network was developed to provide a spine network throughout Stratford. The purpose of the Priority Cycling Network is to:

- Identify key routes that address gaps in the existing network and provide city-wide coverage, supporting the 15-minute City;
- Prioritize investment over the short-term and medium-term to accelerate connectivity and therefore maximize the cycling potential throughout the City; and
- Serve cycling trips for transportation and recreation or tourism purposes by linking surrounding neighbourhoods to the Downtown.

Once fully implemented, the Priority Cycling Network will be comprised of an interconnected collection of routes based on a "wheel and spoke" system, serving connections throughout Stratford. The spoke routes connect the periphery of Stratford into Downtown, while the wheel routes provide connections to neighbourhoods surrounding the Downtown in a loop. The development of the Priority Cycling Network over the shorter term will help lead the City towards the Ultimate Cycling Network over the longer term, which addresses key gaps between priority routes. The development of the cycling network is further discussed in Section 3.2.2.

Need: Consider Stratford-specific cycling design strategies to mitigate potential constraints in historic districts and along narrow roadways where the removal of vehicular lanes or on-street parking is a challenge.

The City of Stratford consists of many narrow and established corridors that may limit opportunities to add cycling infrastructure. Through the cycling network development, new facility types were evaluated and introduced into the network in response to the key challenges of these historic areas.

For example, the proposed network includes many bicycle boulevards. A bicycle boulevard is a type of shared facility not currently used along any roadway in Stratford. Similar to a signed route, a bicycle boulevard features roadside signage and may have sharrows[10] marked on the roadway surface. The main point of distinction from a signed route is that along bicycle boulevards, vehicular traffic is discouraged from using the corridor through a series of traffic calming measures, including a recommended reduction of the posted speed to 30-40 km/hr. Visual

[10] Sharrows, or Shared Use Lane Symbols, are pavement markings indicating the shared use of the travel lane between vehicles and cyclists. Sharrows consist of two white chevron markings with a bicycle symbol.

and physical cues are used to encourage drivers to drive slowly, such as chicanes, speed humps, curb extensions, narrow lanes, and reduced curb radii at intersections (further described in Section 4.6. Turning and through restrictions can also be implemented to help reduce vehicular traffic volumes where volumes exceed established thresholds (refer to Exhibit 3.23).

Exhibit 3.23: Traffic Diverter along a Bicycle Boulevard (Vancouver)

On busier roads, a lane reconfiguration (or road diet) may also be an option, should traffic volumes fulfill established criteria. By reducing a four-lane roadway to two-lanes plus a two-way left turn lane, for example, cycling facilities may be included within the existing road structure, with minimal disruption to the flow of traffic. This option reduces the financial impact of adding protected cycle lanes, as the roadway construction is limited to line painting, precast curb and/or bollards.

Need: Understand and address challenges with the implementation of the Bike and Pedestrian Master Plan (2014) priority projects to inform network development and prioritization.

A major hurdle that arose from the previous Bike and Pedestrian Master Plan (2014) was the difficulty implementing the planned routes, due to physical and financial constraints. A main focus of the development of the cycling networks for this TMP is ensuring the feasibility of implementation of the recommendations. The TMP aims to develop a comprehensive system that is realistic and attainable. The recommended cycling network has been developed in two components:

- The Priority Cycling Network is for shorter-term implementation and recognized as achievable over a 10-year period. Completion of this network will support the provision of active transportation uptake for both pedestrians and cyclists, which in turn will push for the completion of the Ultimate Cycling Network over the longer-term.
- The Ultimate Cycling Network will guide long-term investment and will be routinely reviewed to reflecting changing opportunities and land use context.

To help focus the City's efforts, five key routes were identified within the Priority Cycling Network to be completed within five years. Various facilities are proposed for the five priority routes, showcasing the breadth of implementation strategies identified for Stratford. These "quick-start" projects were developed in consultation with key stakeholders, and considered roadways slated for capital improvements for coordination, as well as routes that respond to critical infrastructure gaps. The five priority routes are discussed in detail in Section 3.2.2.

3.2.2 Network Development

Network Development Process

The development of the cycling network follows a multi-step process, as shown in Exhibit 3.24.

Exhibit 3.24: Network Development Process

Throughout TMP study process, outreach was conducted with key stakeholders including the Active Transportation Advisory Committee and Cycle Stratford, as well as input from members of the public, to inform the development of the cycling network. Recurring themes included the need for more cycling facilities, connections to commercial districts, and improved safety for vulnerable road users. These themes were a focus throughout the process:

- **Establish Needs and Opportunities:** Identifying cycling needs and opportunities through technical analysis, a review of existing network conditions, consultation with City staff, and outreach among members of the public and key stakeholders. This was undertaken as part of Phase 1 of the TMP, and further information can be found in the Phase 1: Needs and Opportunities report.
- **Identify Candidate Network:** Develop the candidate cycling network responding to those needs and based on several considerations:
  - **Existing Network:** The existing cycling network, as well as proposed routes from the 2014 Bike and Pedestrian Master Plan, served as a launch pad for the identification of candidate routes.
  - **Cycle Stratford Consultation:** Local stakeholders help identify key routes to be considered based on their experiences.

  - **Upcoming Opportunities:** Routes that were not previously considered as part of the cycling network but are up for reconstruction are worth considering as part of the candidate network since they provide a coordination opportunity.

- **Class and Facility Selection Review:** A facility selection review is undertaken to identify the infrastructure that would be appropriate along candidate routes. Where a candidate route does not appear to be "implementable", alternative routes and options are explored. The following considerations inform the facility selection review and subsequent selection of routes as part of the proposed network:
  - **Serve Recreational and Commuter Needs:** The development of the cycling network followed a wheel and spoke system, with the goal being to accommodate both recreational and commuter cyclists. A highlight of the system was facilitating access to key destinations such as the Downtown, Stratford Festival venues, schools, grocery stores, commercial destinations, the Stratford General Hospital, Lake Victoria, and parklands.
  - **Minimizing Parking Loss:** The need to retain parking within the City has been highlighted throughout the TMP study and represents a key consideration throughout the network design process. For instance, the implementation of bicycle boulevards can help maintain existing on-street parking, where the roadway context is appropriate.
  - **Ease of Delivery:** By focusing on opportunities to retrofit existing roads, cycling network delivery can be accelerated. For instance, bicycle boulevards can be implemented with location-specific traffic calming measures, designated routes can be applied through line painting, and separated facilities can either utilize the existing street cross-section or be constructed in the boulevard. For this reason, retrofit projects are attractive methods to ensure the network is implementable over a reasonable time frame.
- **Develop Proposed Network:** Working iteratively through the facility selection review, network phasing and costing, the proposed Priority and Ultimate Cycling Networks are developed from the candidate

network, intended to direct the provision of cycling infrastructure over the short- and long-term horizons.

- **Network Phasing & Costs:** Finally, network phasing and costing is detailed.

Potential Alternatives

The exploration of alternatives within the cycling network development involves reviewing and refining each route in the candidate network. Every candidate route is subject to alternatives evaluation:

- Recommend the candidate route in as a priority network link
- Recommend the candidate route as an ultimate network link
- Remove the candidate route from the cycling network

To inform that decision, the facility class screening and feasibility review involved several components to identify appropriate roadways for inclusion in the cycling network, as follows:

- Conduct facility class screening and feasibility of candidate routes based on posted road speed and traffic volume data;
- Desktop corridor review to evaluate feasibility of facility types that meet or exceed the minimum standard; and
- Consideration for various roadways characteristics, including the number of travel lanes, pavement width, presence of transit, locations of schools, extent of improvement required (i.e. standalone project, retrofit or reconstruction), and the ease of implementation.

The review process was informed by several criteria, summarized in Exhibit 3.25.

Exhibit 3.25: Network Review Process

Criteria	Considerations
Facility Class Selection	• Traffic counts • Current and proposed speed limits • Potential for off-road connections

Criteria	Considerations
Feasibility and Constructability	• Current roadway surface condition • Connections to existing/future facilities • Existing trees and utilities • Existing sidewalk location/condition • Planned capital improvements by the City • Extent of existing street parking • Quantity and type of connecting driveways
Network Spacing	• Residents located within 500m of a priority cycling network route • Typical ultimate network spacing of 250m or less
Anticipated Cycling Demand	• Concentrate routes with higher density in Downtown and ensure access to downtown • Serves a key destination (schools, hospital, community, and tourism destination) • Recreational areas

If the review process deemed a corridor too difficult to achieve in the desired facility class in the short-term, either an alternate route was considered, or the project was moved to the long-term.

The assigned facility class represents the minimum desirable facility class, but higher-order facilities may be implemented if desired. For example, if a designated facility is indicated by the pre-selection process, then an implementation strategy would consider providing designated or separated facilities. A higher-order facility is acceptable should other factors call for enhancing the cycling facility. Instances where the decision may be made to provide a higher-order cycling facility include routes that serve school-aged children or routes that provide access to an important community destination such as a school, hospital, community centre or major retail centre. The cycling facility class may also be upgraded at the time of implementation if the future roadway context has changed significantly from what is currently anticipated in this review process, or if there is a new opportunity to bundle the delivery of the cycling facility with a capital road project.

The different implementation strategies for each facility class are outlined in Exhibit 3.26.

Exhibit 3.26: Summary of Cycling Facility Implementation Strategies

Facility Class	Implementation Strategy	Description
Shared	**Shared Roadways**	
	Quiet street	Sign and mark route
	Bicycle boulevard (Traffic-calmed quiet street)	Sign and mark route with traffic calming devices to increase the comfort of the shared roadway
Designated	**Bike Lanes**	
	Stripe bike lanes on existing road	Sign and mark bike lanes to wide roadway (no changes to other pavement markings / travel lanes)
	Retrofit bike lane to existing travel lane	Provide bike lane through lane reconfiguration
	Retrofit buffered bike lanes to existing road	Narrow travel lanes or remove parking or travel lane to re-stripe roadway with bike lanes
	Paved Shoulder	
	Retrofit paved shoulder to existing rural road	Mill and overlay into existing pavement and provide additional width to accommodate paved shoulder (assumes existing shoulders are sufficiently wide)
	Provide new paved shoulder on rural road	Provide paved shoulder at time of rural road resurfacing / reconstruction
Separated	**Cycle Tracks / Protected Bike Lanes**	
	Retrofit protected bike lane to existing travel lane	Remove travel lane to retrofit with bike lane, buffer, and separators (combination of flexible posts, curbs, and planters)
	Road reconstruction with raised cycle tracks	Implement cycle tracks in concert with road widening project
	Retrofit raised cycle tracks into existing boulevard or within road	Cycle tracks added in roadway boulevard or within road with concrete curbing

Facility Class	Implementation Strategy	Description
	Multi-use Trail	
	Remove existing sidewalk and construct boulevard multi-use trail	Remove existing concrete sidewalk and construct new 3.0 m wide asphalt trail
	Construct boulevard multi-use trail or multi-use trail through open space	Construct new 3.0 m wide asphalt trail through green / open space

Preferred Solution

The recommended Priority Cycling Network is shown in Exhibit 3.27. Facility types for all routes are identified, along with intersection upgrades recommended for various locations. The Ultimate Cycling Network is shown in Exhibit 3.28, representing the City's long-term vision for cycling infrastructure.

Five key routes within the Priority Cycling Network were identified to be completed within a five-year period. These quick-start routes represent marquee projects that will amplify the visibility of cycling infrastructure among residents and visitors and provide critical connections across Stratford. Exhibit 3.29 outlines the five priority routes and summarizes the recommended facility types along with corresponding considerations.

Note that these network recommendations are supplemented by policy and programming recommendations that will help encourage cycling beyond network development (refer to Section 4.5).

Exhibit 3.27: Priority Cycling Network – Facility Type

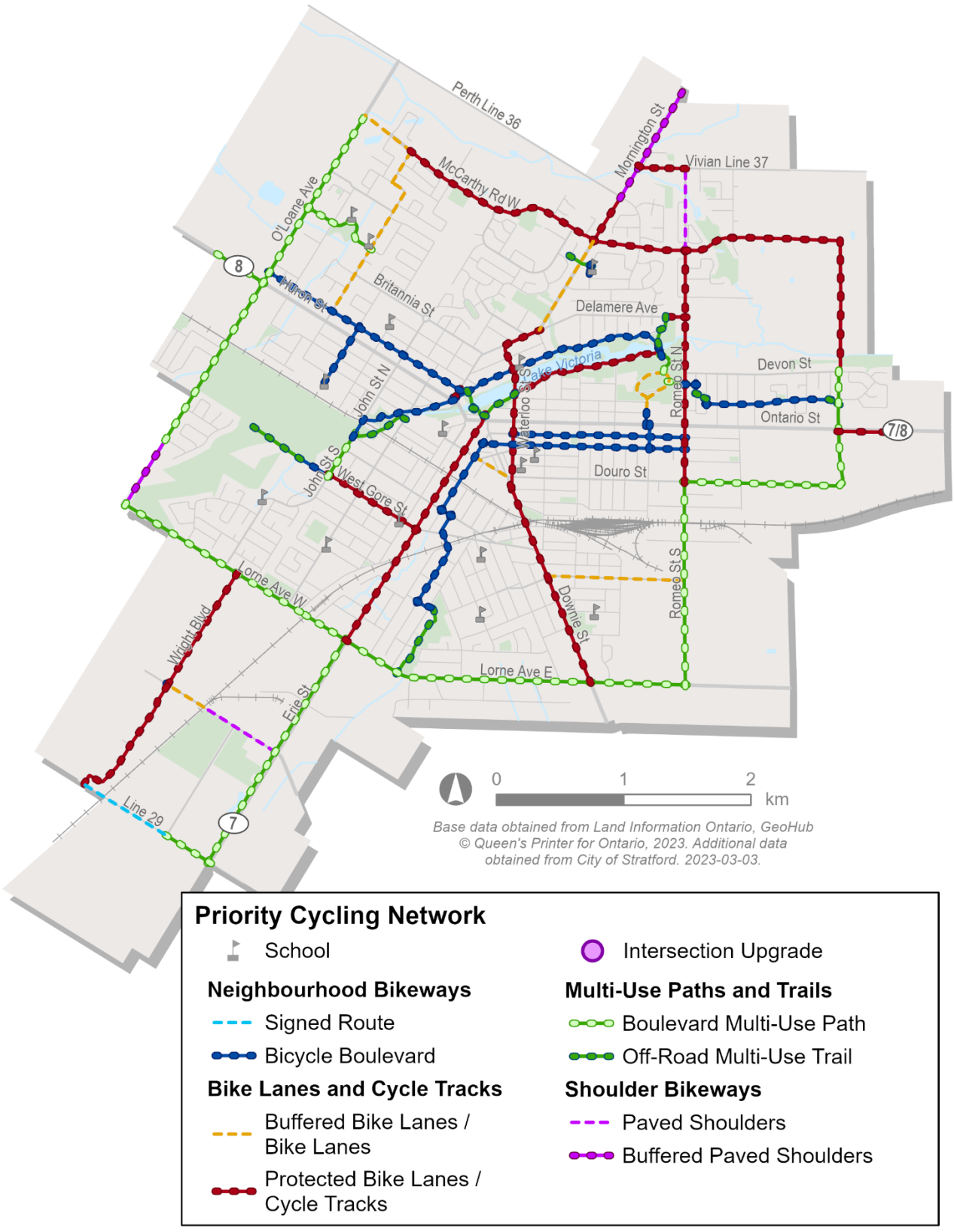


Exhibit 3.28: Ultimate Cycling Network

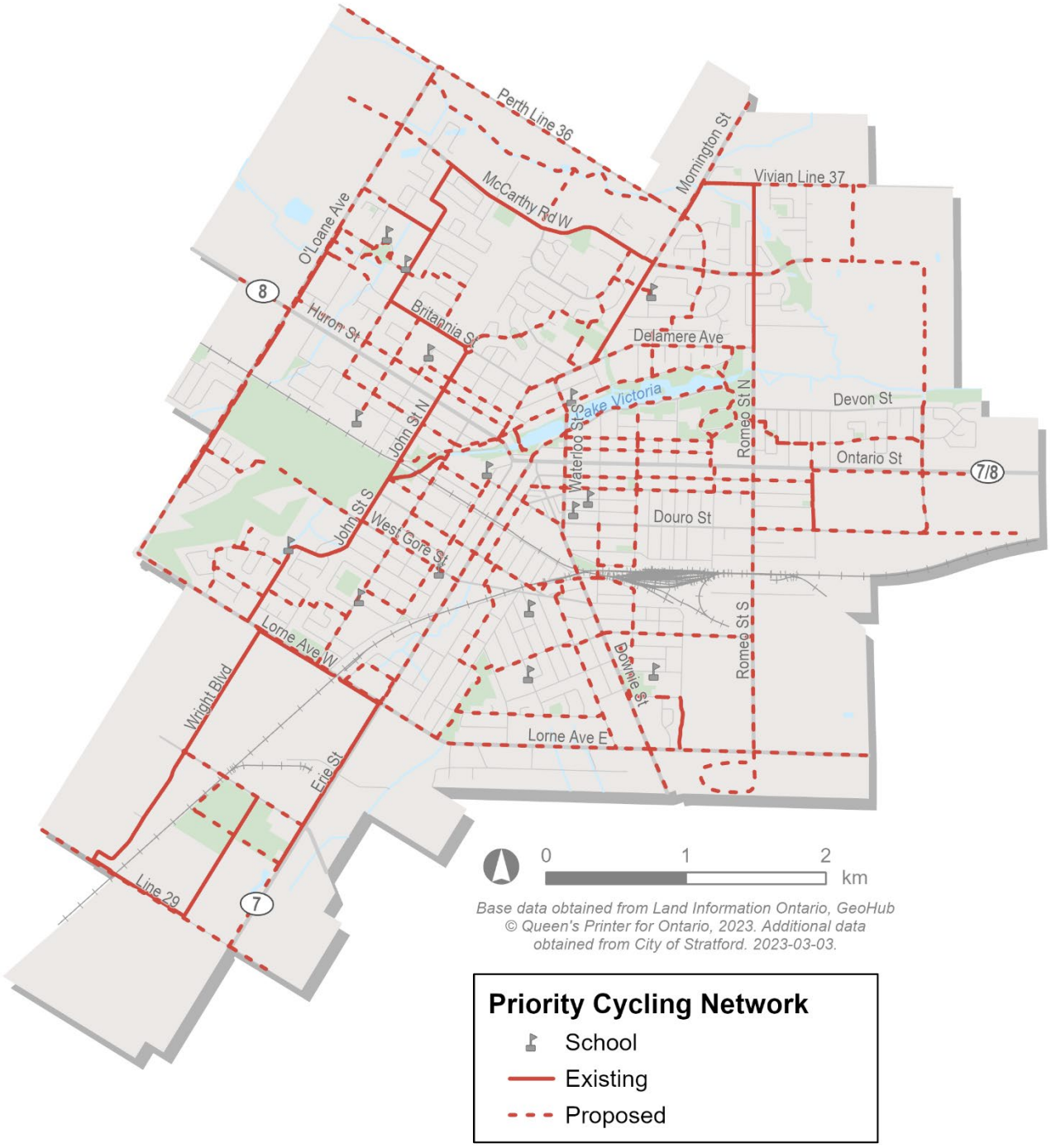


Exhibit 3.29: Quick-Start Priority Routes

Corridor	Facility Type	Selection Consideration
Albert Street from Waterloo to Romeo Street	Bicycle boulevard	• Corridor is already slated for capital reconstruction • Provides critical east-west connection
Erie Street from Ontario Street to West Gore Street	Protected bike lanes	• High-visibility north-south cycling connection helping to elevate cycling as a mode choice • Road diet provides a quick-build option to implement protected cycling infrastructure • Dependent on further traffic analysis and coordination with MTO
Hibernia Avenue from O'Loane Avenue to Mornington Street	Bicycle boulevard with contraflow bicycle lane	• Due to spatial limitations along Huron Street, Hibernia was chosen as the optimal east-west connection from O'Loane Avenue to Downtown • A contraflow bicycle lane is required for westbound cyclists between John Street North and Mornington Street
Lakeside Drive from Waterloo Street to Lakeside Drive North	Bi-directional cycle track (north side)	• Critical waterfront facility based on high demand for both walking and cycling facilities along this corridor • Provides AAA recreational and tourism facility
Oakdale Avenue from O'Loane Avenue to Forman Avenue	Multi-use pathway	• Provides a connection to the existing cycling facilities along O'Loane Avenue and Forman Avenue • Connects to two major educational institutions, providing an improved option for active school travel

3.2.3 Recommended Actions

2. Advance the five key quick-start priority projects identified as part of the priority cycling network in the short term (3 to 5 years).
3. Build the rest of the priority cycling network in the medium term (next 10 years).
4. Continue to advance the build out of the ultimate cycling network in the long term (next 30+ years).
5. Consider opportunities to bundle cycling infrastructure with road capital projects and revisit cycling network considerations at the time of capital project planning.

3.3 Pedestrian Network

3.3.1 Needs and Opportunities

The following pedestrian infrastructure opportunity was identified in Phase 1 of the TMP study under the overarching banner of "Expand active transportation connections to support Stratford as a complete community", as outlined below.

Opportunity: Recognize potential of Stratford as a 15-minute city, where a compact geography and flat topography presents an opportunity to increase walking and cycling mode share for most trips.

The positives of positioning Stratford as a 15-minute city are detailed in Section 3.2.1, which also provides a response from a cycling perspective. The pedestrian experience is also crucial to this concept, however. The pedestrian network in Stratford is comprised of the sidewalks and trails that line the city's streets and cut through the city's parks and greenspaces. Sidewalks are largely provided through the City, though some gaps remain. These gaps, as well as the provision of sidewalks on new streets, are addressed through various policies and strategies outlined in Section 4 of this report. This section focuses on the development of recommendations for pedestrian crossings.

3.3.2 Network Development

Pedestrian crossings are a critical component of the pedestrian network, allowing people to cross the street at a signalized intersection or other dedicated crossing. Providing dedicated infrastructure to facilitate safe crossings is integral to optimizing the transportation system and prioritizing the needs of vulnerable road users.

Within this document, the term "crossings" is used as a generic term that can referred to controlled intersections such as traffic signals or stop signs that allow for safe pedestrian crossings as well as pedestrian-specific infrastructure such as pedestrian crossovers. Crossovers generally consist of a painted crossing with additional treatments ranging from regulatory signage to more elaborate installations with flashing lights. The specific implementation is based on traffic speeds and volumes as outlined in the Ontario Traffic Manual Book 15 – Pedestrian Crossing Treatments (2016) and are also discussed below.

Potential Alternatives

In considering where pedestrian crossings should be located, the first step is to identify the ideal network spacing. Ontario Traffic Manual Book 15 – Pedestrian Crossing Treatments notes that crossings should not be less than 200 metres apart under most circumstances. As such, the following target spacing distances were considered:

- 200 to 300 metres;
- 300 to 500 metres; and
- 500 to 1000 metres.

Ultimately, the target spacing of 300 to 500 metres was determined to be the most appropriate for Stratford. It helps to address the TMP's goals in the TMP by supporting safer pedestrian access, being a key component in complete communities, and improving pedestrian connectivity to support economic activity. Further, environmental impacts are reduced through making walking more attractive, thus reducing reliance on driving, and the mid-range spacing reduces the potential for significant stopping and starting among traffic that may occur if crossings are too closely spaced. Finally, this level of spacing also represents fiscal responsibility, improving the return on investment for individual crossings.

Ultimately, a 300 to 500 metre network spacing was determined to meet the objectives of the TMP by encouraging walking through the provision of safe crossings at a reasonable interval, while balancing the road network efficiency of vehicular traffic and commercial vehicles.

Additionally, it is important to note that this analysis included the City's **arterial and collector streets only**. The potential need for crossing on streets classified as locals has not been assessed.

Analysis Factors

There are other considerations that must be weighed when identifying the desired locations for pedestrian crossings. These include adjacent land uses, logical pedestrian routing, and input from the public and stakeholders. These considerations are discussed in the next section.

A connected pedestrian network is the basis of a healthy and accessible community. A gap analysis was undertaken to identify areas in Stratford where pedestrian crossings are needed to respond to safety concerns and network connectivity gaps. The identification of potential pedestrian crossing locations considered the following:

- **Existing Pedestrian Crossings**: This includes signalized intersections as well as pedestrian crossovers, with a focus along the arterial road network.
- **Planned Pedestrian Crossings:** The City of Stratford is already making strides toward a safer and connected pedestrian network, with pedestrian crossings planned at the following locations:
    - Downie Street and Bruce Street;
    - Downie Street and the Stratford Transit Terminal;
    - Downie Street and George Street;
    - O'Loane Avenue, north of the rail corridor; and
    - Mornington Street and Vivian Line 37.
- **Public and Stakeholder Input:** Throughout both rounds of engagement, members of the public as well as stakeholders provided input regarding the need for improved pedestrian infrastructure in

Stratford. Overall, the desire for better pedestrian connections, sidewalks and crossings were emphasized, and recommended locations were provided. Respondents to the public opinion survey conducted as part of the first round of engagement indicated that more pedestrian crossings are the most important factor to encourage walking in Stratford.

- **Network Spacing of 300 to 500 metres:** Existing gaps in pedestrian crossings along arterial roads were assessed. Guidance from the Ontario Traffic Manual Book 15 – Pedestrian Crossing Treatments (2016) was used as a starting point, which indicates that pedestrian crossovers should not be installed within 200 metres of other signal protected pedestrian crossings.
- **Adjacent Land Uses:** The land use context adjacent to the arterial roadway is an important factor in identifying potential crossing locations. For example, less dense areas at the periphery of Stratford do not require pedestrian crossings like the Downtown. However, the City should monitor gaps in the pedestrian network as development advances and demand increases as part of the West Secondary Plan, Northeast Secondary Plan, Stratford Special Policy Area, and the industrial lands in the south.
- **Pedestrian Routing:** A qualitative assessment of assumed pedestrian routing factors into the identification of pedestrian crossing locations and considers the logical and desired paths a pedestrian would take between two points. Multi-use trails and paths planned as part of the Priority Cycling Network were also considered where safe crossings will be needed to facilitate access to the multi-use facilities.

Sidewalk connectivity is also an integral component of the pedestrian network and to improving overall safety, and the City of Stratford continues to make strides through ongoing sidewalk infilling.

At the TMP level, the provision of sidewalks is being undertaken through an infilling policy approach (see Section 4). In addition, the multi-use path and multi-use trail network developed as part of the Priority Cycling Network will provide important connections to support pedestrian movement across Stratford. While included as part of the cycling network, these connections represent safe and meaningful

facilities for all active transportation users, including cyclists, pedestrians, and other recreational users of all ages and abilities.

Improvements to the road network, as outlined throughout Section 3.1, will also contribute to pedestrian safety improvements. For example, a lane reassignment along Erie Street is expected to improve the pedestrian experience and may result in reduced vehicular speeds, shorted pedestrian crossing distances, and a greater buffer between vehicles and the sidewalk due to the implementation of bike lanes. Additionally, many of the recommendations put forward by the Downtown Traffic Study (2021) relate to improving pedestrian safety, with curb extensions proposed to reduce pedestrian crossing distances.

Crossing Treatments

The pedestrian network is only as safe as its weakest link, and in many instances, crossings and intersections represent unsafe conditions for vulnerable road users. The ongoing installation of pedestrian crossings in Stratford demonstrate the City's commitment to pedestrian safety. The continued installation of safe crossings will be instrumental to increasing pedestrian activity and to the development of Complete Streets in Stratford, allowing for convenient and safe access to destinations and improving transportation sustainability and equity.

The Ontario Traffic Manual Book 15 – Pedestrian Crossing Treatments (2016) provides practical guidance on the planning, design, and operation of pedestrian crossings in accordance with the Highway Traffic Act. Controlled crossings require vehicles to stop or yield to traffic in the crossings, including pedestrians, whereas uncontrolled crossings require pedestrians to wait for a safe gap in traffic prior to crossing the roadway, without the aid of traffic control measures (OTM Book 15 – Pedestrian Crossing Treatments, 2016). Controlled crossings benefit pedestrians by placing priority over vehicles, supporting their security and sense of safety.

Several different types of controlled pedestrian crossings enhance safety for pedestrians, as follows:

- **Traffic Control Signals:** Power-operated traffic control devices that alternatively directs traffic to stop and permits traffic to proceed. Signalized intersections often have countdown timers and other automated safety elements.

- **Intersection Pedestrian Signals**: Traffic control signals implemented for dedicated pedestrian crossings at intersections.
- **Mid-Block Pedestrian Signals:** Traffic control signal implemented for dedicated pedestrian crossings at mid-blocks.
- **Pedestrian Crossovers (PXOs)**: Designated areas where pedestrians can cross the street, often marked by signs, markings on the roadway, or flashing overhead amber beacons. OTM Book 15 outlines two levels of PXOs – Level 1 (corresponding to PXO type A) and Level 2 (corresponding to PXO types B, C and D), as described in Ontario Regulation 402/15.
- **Stop Sign**: A traffic control sign that requires all vehicles to stop at the stop line.
- **Yield Sign**: A traffic control sign that requires all vehicles to slow down and yield the right of way to traffic in the intersection.
- **School Crossings**: Designated crossings at locations close to schools where children can cross when going to or coming from school. School crossings are marked by a double crosswalk line and often require a dedicated crossing guard.

The Ontario Traffic Manual provides recommendations on network spacing between pedestrian crossings, as follows:

- **OTM Book 12 – Traffic Signals (2012):** The minimum distance between traffic control signals for roads posted at 60 km/h or less is 215 metres and for roads posted at 80 km/h is 350 metres. Additionally, PXOs should not be installed within 200 metres of other signal protected pedestrian crossings.
- **OTM Book 5 – Regulatory Signs (2021):** All-way stop controls should not be used where any other traffic device controlling right-of-way is permanently in place within 250 metres, with the exception of a Yield sign.

Sight distances for all road users must be provided and maintained for all controlled crossings. Overall, best practices and guidance from the Ontario Traffic Manual should continue to be followed by the City of Stratford.

Preferred Solution

Building on recent efforts by the City, the TMP recommends the implementation of 16 new pedestrian crossings along arterial roads, detailed in Exhibit 3.30 and shown mapped in Exhibit 3.31.

Please note that the table and map below identify approximate preferred locations. Additional technical work is needed to select the precise locations. Additionally, the type of implementation is subject to guidance provided in Ontario Traffic Manual (OTM) Book 15 – Pedestrian Crossing Treatments.

Exhibit 3.30: Recommended Pedestrian Crossings

No.	Location	Implementation Notes
1	McCarthy Road West at McCarthy Place Retirement Residence	A more detailed feasibility study is needed to review sightlines and stopping distances given curves on street, however a need for a crossing here has been identified.
2	McCarthy Road East and Graff Avenue	Upgrade of existing school crossing.
3	McCarthy Road East and Romeo Street	Pedestrian crossover as an interim measure before more significant intersection upgrades are needed, as outlined in Section 3.1.3.
4	Mornington Street and Delamere Avenue	Refer to OTM Book 15 – Pedestrian Crossing Treatments to identify preferred installation.
5	Mornington Street and Waterloo Street	A crossing along the northwest quadrant of this complex intersection would include a crossover of westbound Mornington St where it becomes a single lane, a new sidewalk along the existing median and a crosswalk at the existing stop sign for eastbound Mornington St to southbound Waterloo St. Additional design work is needed to implement alongside existing traffic controls (yield and stop signs) already in place.

No.	Location	Implementation Notes
6	William Street and Waterloo Street	A more detailed **feasibility study** is needed to review sightlines and stopping distances given curves on street, however a need for a crossing here has been identified.
7	Ontario Street and Parkview Drive / King Street	Should be implemented in conjunction with planned cycling route requiring a crossing at this location.
8	Downie Street and West Gore Street	Refer to OTM Book 15 – Pedestrian Crossing Treatments to identify preferred installation.
9	West Gore Street and Mowat Street	Upgrade of existing school crossing. Additional analysis may be required due to potential queueing issues across the rail line.
10	Erie Street between St David Street and Cambria Street	Should be implemented in conjunction with Erie Street project (see Section 3.1.3).
11	Lorne Avenue and Oak Street	Installation should be triggered by sidewalk and/or multi-use path construction (see Section 3.2.2) on Lorne Avenue.
12	Erie Street and Whyte Avenue	Should be implemented in conjunction with Erie Street project (see Section 3.1.3).
13	Lorne Avenue and St Vincent Street	Refer to OTM Book 15 – Pedestrian Crossing Treatments to identify preferred installation. Curb ramps already in place.
14	Lorne Avenue and Wright Boulevard	Refer to OTM Book 15 – Pedestrian Crossing Treatments to identify preferred installation. Curb ramps already in place.
15	Lorne Avenue and O'Loane Avenue	Overlaps with street network project (see Section 3.1.3) which will account for pedestrian crossing needs.
16	O'Loane Avenue and Cody Drive	Installation should be triggered by implementation of paved shoulder cycling route on O'Loane Avenue (see Section 3.2.2).

Note: Numbering corresponds to map below.

Respondents to the public opinion survey[11] conducted as part of the second round of engagement showed overall support for the draft recommended pedestrian network – 35% of respondents agreed with the recommended locations, and an additional 35% at least somewhat agreed with locations.

Additionally, sidewalk infilling should continue to be prioritized by the City to support active transportation uptake, as well as a safe, accessible, and convenient transportation network. Targeted improvements to pedestrian infrastructure can help progress the City to embody a true 15-Minute City for all ages and abilities.

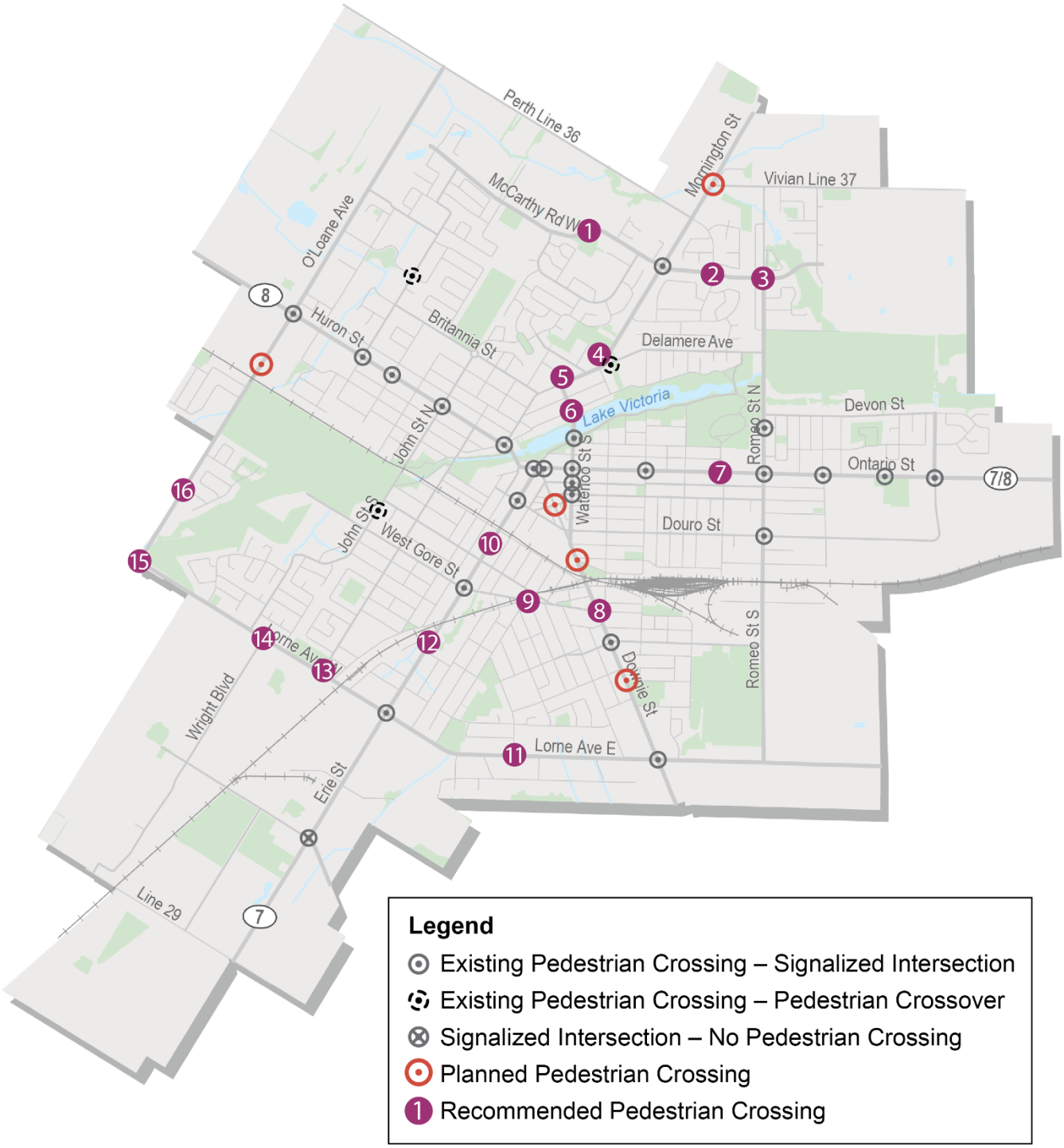
As the population increases, and mobility habits evolve through an expanded sidewalk network, the City should assess the need for additional pedestrian crossings. This is especially true as development advances in the West Secondary Plan Area, Northeast Secondary Plan Area, Stratford Special Policy Area, and the industrial lands in the south. In addition, the signalized intersection at Erie Street and Packham Avenue/Embro Road 113 does not currently have a dedicated pedestrian crossing. As the City's sidewalk expands, the implementation of a pedestrian crossing at this location is recommended should sidewalks be constructed.

3.3.3 Recommended Actions

6. Implement the pedestrian crossings on the City's arterial and collector roads as described in this section, including noted feasibility studies.
7. Continue to monitor the need for additional pedestrian crossings as the City continues to grow, including on local roads where traffic volumes may warrant additional controlled crossings at key destinations.

[11] Note that several additional new pedestrian crossing locations were added following the conclusion of the second round of consultation in response to this feedback.

Exhibit 3.31: Recommended Pedestrian Network



4 Supporting Strategies

To assist in the implementation of the street, cycling and pedestrian networks, as well as to support other components of the transportation system, the following outlines new or updated supporting strategies and policy recommendations. These are intended help achieve the City's vision and objectives and help maximize the return on the capital investment in infrastructure recommended by the TMP.

4.1 Street Safety

Improving road user safety, with a focus on the comfort and safety of vulnerable road users, is a key objective of the TMP. The following need was identified to help improve road user safety in Stratford:

- **Need:** Work towards the elimination of serious injuries and fatalities within the transportation system.
- **Need:** Improve the safety of all vulnerable road users, including pedestrians and cyclists.

Considerations

The City of Stratford is committed to improving safety along its street network. Ensuring all mobility options are safe is important to progressing toward a more multi-modal transportation system. As such, streets in Stratford should be designed and maintained with consideration for the safety and comfort of all road users – this includes people of all ages and abilities, and all modes of transportation, including walking, cycling, transit and motorized vehicles.

Safety concerns emerged as an important topic through the first round of public consultation, and so a safety lens is embedded throughout all elements of the TMP and its recommendations, as reflected in the following topics:

- **Complete Streets:** The adoption of a Complete Streets approach is integral to ensuring safe multi-modal infrastructure is at the forefront of transportation planning for both new development and existing streets. Complete Streets are discussed in Section 4.2.

- **Functional Street Classification:** Reviewing the City's street classification system, with an emphasis on safety outcomes, will ensure the street network continues to meet the needs of all users and aligns with best practices. Street classification is described in Section 4.3.
- **Traffic Calming Measures:** Developing a traffic calming tool will give the City of Stratford the appropriate framework to identify, assess and implement measures to improve the safety of all road users. Traffic calming is discussed in Section 4.6.
- **Commercial Vehicles:** To support the movement of heavy vehicles carrying goods while managing their negative impacts, it is essential to provide a connected network of arterial roads. Supporting goods movement while addressing the safety concerns of other road users is discussed in Section 4.8.
- **Cycling Network:** The Priority and Ultimate Cycling Networks developed as part of the TMP seek to accommodate cyclists of all ages and abilities, meaning that safety considerations are of upmost importance. The active transportation network was previously discussed in Section 3.2.

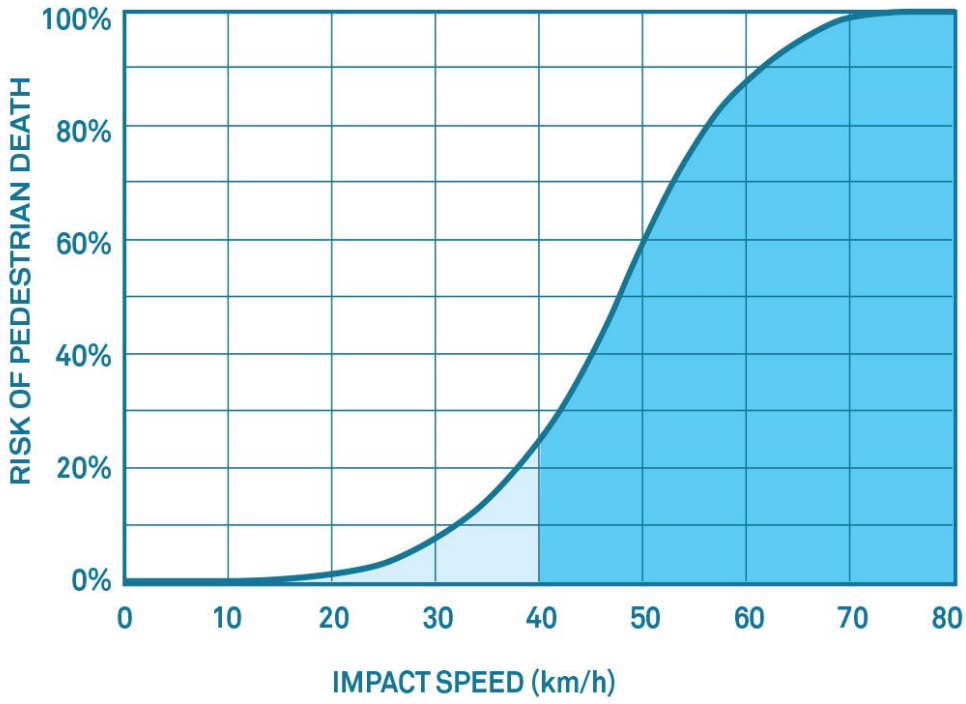
As the City of Stratford makes strides towards Vision Zero[12], the following considerations are important to assist the City with standardization of road design and improved road user safety:

- **Performing a safety audit along corridors of concern:** The City should continue to monitor and audit intersections where collisions are most common for safety deficiencies. Roundabouts, or other physical interventions, may be considered as potential replacements.
- **Considering a reduction in posted speeds:** There is a significant improvement in the outcomes of collisions between vehicles and

[12] Vision Zero is a road traffic safety philosophy adopted by many cities that is focused on eliminating traffic-related fatalities and serious injuries by recognizing how street design influences behaviour of all road users. Vision Zero acknowledges that humans will naturally make mistakes through the course of their day, including while using the transportation system. The main tenet of Vision Zero is that these mistakes should not cost anyone their lives and livelihoods, and that the outcomes of these mistakes can be improved or mitigated through improved engineering and design.

vulnerable road users when the travelled speed is lower. The relationship between speed and risk of pedestrian death in vehicle-pedestrian collisions is presented in Exhibit 4.1 to illustrate this phenomenon. The risk drops from 60% at 50 km/h to 25% at 40 km/h. A 40 km/h default speed limit on local streets, with appropriate updates to design standards, may be considered.

Exhibit 4.1: Relationship between Impact Speed and Risk of Pedestrian Death



Source: Global Street Design Guide (NACTO, Global Designing Cities Initiative, 2013)

- **Designing roads for target speeds**: Conventional road design approaches encouraged design speeds that were 10 to 20 km/h over posted speeds as a way to create a more forgiving road environment. More recently, a Vision Zero approach to road safety has encouraged road design that sets posted speed equal to design speed. By designing a roadway to carry the intended speed of travel for drivers based on the street's context, drivers are encouraged to follow the target speed, improving safety for all road users, especially vulnerable ones.
- **Relating roadway design to surrounding context**: As urban communities have increased turning maneuvers, active transportation

users, and roadside parking, different design approaches are needed within these urban areas. These standards also help to provide a sense of identity within the community as opposed to being a thoroughfare.

- **Providing attractive active transportation facilities**: To encourage pedestrian, cycling and transit uptake, the roadway should provide enhanced safety measures such as physical separation, buffer zones or heightened visibility for pedestrian and cycling infrastructure, where possible. It should be noted that the provision of active transportation infrastructure may impact overall cross-sectional elements, and the increased cost may not be feasible due to limited right-of-way or project funding. The City should seek guidance from the Priority and Ultimate Cycling Networks when prioritizing active transportation infrastructure.
- **Designing for safety of vulnerable road users:** Alongside lowered speed limits, road design changes are often needed to improve driver compliance and avoid future speed reduction measures. Intersections should prioritize safety, maintain visibility and predictability for all road users, serve multi-modal mobility, and accommodate all ages and abilities. Intersection safety can be improved with the implementation of roundabouts and generally lead to improved safety outcomes as they have considerably less conflict points than conventional intersections. Roundabouts should be considered throughout Stratford, where feasible, as a suitable traffic management tool.

  A Leading Pedestrian Interval (LPI) is also a growing trend and important component to progressing toward Vision Zero. Also known as a pedestrian head start signal, a Leading Pedestrian Interval provides pedestrians an advanced walk signal to start crossing an intersection several seconds before vehicles are given a green signal. The purpose of an LPI is to increase the visibility and improve the safety of vulnerable road users, especially older adults, and emphasize their right-of-way ahead of turning vehicles.

  Proactively planning for safer streets, as well as accounting for the safety of vulnerable road users will improve safety outcomes and further encourage the uptake of active modes for travel. Design

considerations for new streets in Stratford are further discussed in Section 4.6.

- **Considering public outreach and education:** Educational resources and outreach strategies may help bring awareness to all road users about their responsibility in improving the safety along Stratford's streets.

Recommended Actions

8. Consider adopting a formal Vision Zero policy and action plan that affirms the City's commitment to reducing and eliminating serious injuries and fatalities within its transportation system.
9. Continue to collect and analyze collision data on an ongoing basis as an input to monitoring street safety across the city.
10. Consider undertaking a safety audit along corridors and at intersections where concerns persist.
11. Consider a reduction in default speed limits on local streets to 40 km/h.

4.2 Complete Streets

The concept of Complete Streets is an overarching theme in this TMP. Simply, the Complete Streets approach states that all street users, all modes, all ages, and abilities, etc. should be explicitly considered when planning and designing streets. This has a range of implications, and the approach is reflected throughout the TMP. However, the three needs found below should be emphasized as support for the Complete Streets approach:

- **Need:** Support all modes of travel along the road network in the development of a multi-modal transportation system and increase transit and active transportation mode share among residents and visitors.
- **Need:** Integrate the planning of the street network to ensure the needs of all street users are considered.
- **Need:** Manage congestion and operational constraints through alternatives to road widening.

Beyond these needs, applying a Complete Streets approach also addresses critical components of the TMP's vision and objectives. These include the principles of environmental sustainability, equity, accessibility, and inclusivity listed within the vision.

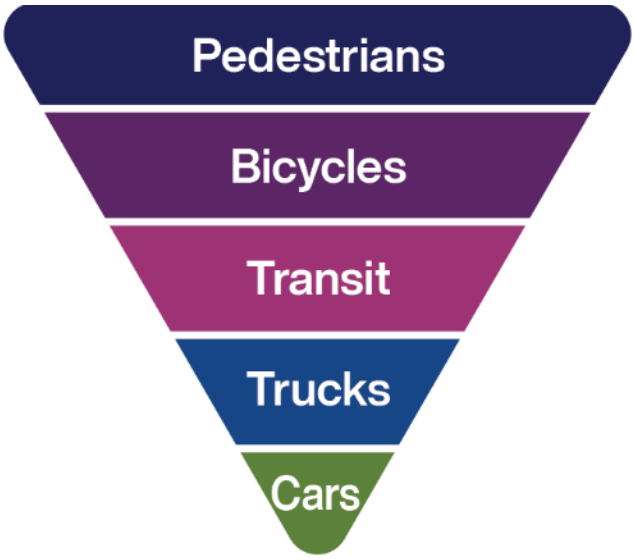
A more detailed overview of the Complete Streets approach is presented in the Phase 1: Needs and Opportunities report.

Considerations

Environmental Sustainability and Climate Change

Various approaches at reducing greenhouse gas emissions in the City are recommended in the TMP (e.g. support for electric vehicles, expanding the cycling network, improving pedestrian crossings, growing the importance of the transit system, etc.). However, these all relate back to the underlying principles of the Complete Streets approach. Shifting the modal focus in the City towards sustainable travel modes like walking, cycling, and public transit will have the greatest impact on transportation-borne greenhouse gases. This requires an acknowledgment of the relative priorities of each mode moving forward. The formal adoption of the hierarchy presented in Exhibit 4.2 will help shift policy, prioritize future investment, and influence individual behaviour all in the direction needed to reduce the City's transportation system's impact on the environment and climate change.

Exhibit 4.2: Recommended Modal Hierarchy



Equity, Inclusivity and Accessibility

The Complete Streets approach addresses the principles of equity, inclusivity and accessibility by ensuring that the needs of all users of the transportation system are

considered during all phases of the street planning and design phases. Vulnerable road users like pedestrians, cyclists, people with mobility aides, etc. are explicitly considered early in the planning and design phases, rather than having to compete for leftover space and funding after the vehicle portion of the street has been decided upon.

Complete Streets is an approach that represents an organizational shift within the City's various departments. The Complete Streets approach starts the moment the idea for a road project has been conceived. The Complete Streets approach requires a re-thinking of the way road projects are planned and designed by City staff. It requires buy-in and coordination from all relevant departments.

Road Diets

Road diets provide an effective way to retrofit Complete Streets design principles into the existing street network. At the time of this writing, Huron Street is in the process of undergoing a road diet to provide improved pedestrian facilities within the constrained right-of-way. Erie Street represents a tremendous opportunity to be re-designed to accommodate all modes of travel as evidenced by the recommendation detailed in Section 3.1. Similarly, re-allocating space along Lakeside Drive for active modes also adheres to this philosophy, also recommended by this TMP.

A road diet typically involves re-organizing the space between the existing curbs and can typically be done both quickly and inexpensively. The most common road diet transforms a four-lane cross-section to one travel lane in each direction, maintaining a centre two-way turn, and re-distributing the space gained from the fourth lane towards other uses. In most cases, the three-lane cross-section improves both traffic flow and improves safety by moving left-turning vehicles out of through lanes.

Road diets are an effective strategy for managing congestion and traffic operations, while simultaneously implementing Complete Streets where appropriate, as identified in this TMP, helping to meet climate change and greenhouse gas reduction objectives and further the shift in Stratford towards a mode multi-modal transportation system.

Complete Streets Policy Recommendation

As stated, the Complete Streets approach means explicitly considering the needs of all road users at all stages of planning and design of new road projects, reconstruction projects or major rehabilitation projects. Any opportunity to improve the multi-modal nature of the road should be explored. However, it should be noted that the Complete Streets approach does not mean that every street in the City will be built to accommodate all modes, but that consideration will be given to each mode explicitly. Where constraints exist, planners and decision makers should refer to the various networks identified in this TMP to help guide the prioritization of specific modes and design elements.

Though the previous TMP included the Complete Streets approach, a formal policy was not adopted by Council. It would reinforce the important principles of Complete Streets and the rest of this TMP if a formal policy was approved by Council, as well as integrated into the Official Plan.

A formal policy could include similar language to that outlined here:

- The City of Stratford is adopting a Complete Streets approach to every new road, road reconstruction and road rehabilitation project. Each project will be planned, designed, constructed, operated, and maintained with the explicit consideration for the needs of road users of all ages and abilities. Where constraints exist, planners and designers will need to demonstrate that the proposed design afforded due consideration for all potential road users and that the prevailing design meets the needs of the intended function of the street and fits within the existing and planned community context.

Recommended Actions

12. Develop and adopt a formal Complete Streets policy that includes affirming the modal hierarchy and other Complete Streets principles.
13. Consider holding internal workshops with all departments involved in the planning, design, operation and maintenance of the City's streets to ensure Complete Streets principles are understood and integrated at all stages.

4.3 Functional Street Classification

The street network in Stratford is foundational to its transportation system and to the movement of personal cars, goods and public transit, as well as pedestrians and cyclists (on or alongside the roadway). The following need can be supported through a review of the City's existing functional street classification and corresponding characteristics:

- **Need:** Support all modes of travel along the road network in the development of a multi-modal transportation system and increase transit and active transportation mode share among residents and visitors.

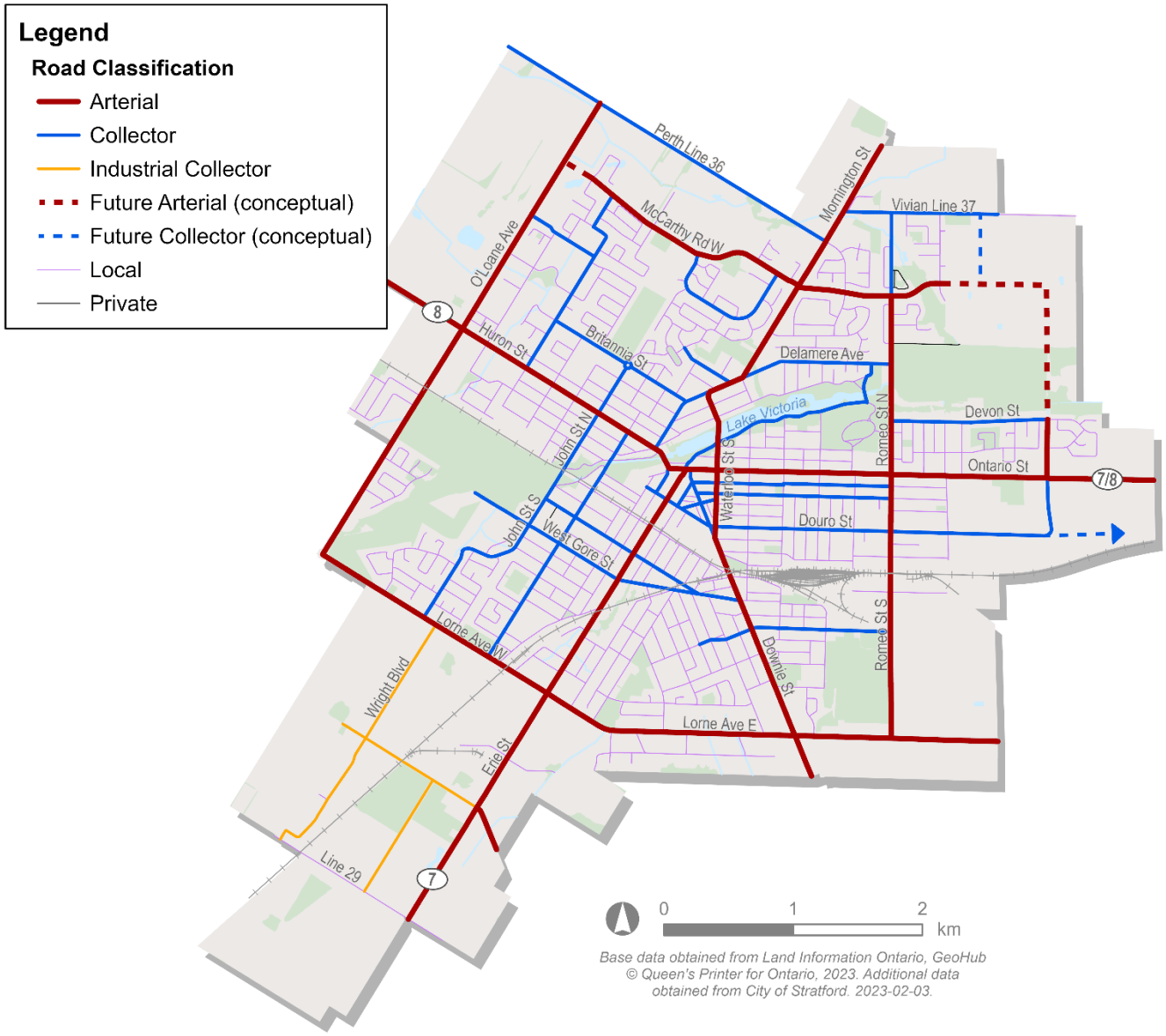
An update to the street classification system is needed to ensure all modes are considered and the TMP's safety lens is applied.

Considerations

A functional street classification framework establishes a hierarchy of streets based on each segment's context and the degree to which the segment prioritizes serving mobility versus land access needs. In line with the Transportation Association of Canada's (TAC's) Geometric Design Guide for Canadian Roads (2017), a street classification is the orderly group of roads into systems according to the type of service they provide. A street's service function can range from arterials that give a high priority to traffic movement and therefore a lower priority on local property access (driveways), to collector and local streets that have a decreasing focus on traffic movement and an increasing priority on local property access.

A map of the City of Stratford functional street classification is shown is shown in Exhibit 4.3, consistent with the City's Official Plan. The existing classifications support the different land access and movement needs of the City's street network. This includes facilitating both city-wide and broader connections to the regional highway network by maintaining continuity along higher-order roads.

Exhibit 4.3: City of Stratford Functional Street Classification



Street Classification Framework and Network Review

The five functional street classifications in Stratford are as follows:

- **Arterial:** The primary function of arterial streets is mobility, serving regional and local travel demand by carrying large volumes of all types of vehicular traffic. Arterials typically connect between provincial highways and other arterial or collector roads and serve as the primary connection between major activity centres.

Typically, direct access from abutting properties may be restricted. The number and spacing of driveways along these roadways allowing access to adjacent land uses should be limited to minimize traffic conflicts and operational impacts to the arterial street function. On-street parking also increases the potential for conflicts with through traffic and may be avoided along identified arterials. However, within urban areas, especially where the street grid is more regular, the number of spacing of driveways should be assessed on a case-by-case basis in support of achieving intensification targets and other desirable land use planning outcomes.

Where the street segment is on an identified cycling route, separated facilities may be required. Pedestrians should be accommodated by sidewalks or multi-use paths on both sides of the street, especially given the larger spacing between opportunities for pedestrians to cross the street at traffic-controlled locations. Lastly, the movement of heavy vehicles will be accommodated along all arterial roadways, and a network of signed truck routes along selected arterial streets will help facilitate the movement of some commercial vehicles to bypass the Downtown.

- **Collector:** Collector streets serve as the connection between local streets and arterial streets, and generally give equal priority to land access and to mobility. They are designed to carry moderate volumes of traffic and provide connections within neighbourhoods. Where a collector is part of the City's cycling network, designated or separated facilities are likely required, depending on traffic volumes and speed. Sidewalks should be provided on both sides of the collector streets.
- **Industrial Collector:** Industrial collector streets serve local travel demands by providing connections within industrial areas. These are similar to collector streets but provide access to employment and industrial uses, and therefore need to be designed to accommodate the physical requirements of heavier vehicles. The mix of traffic (e.g. a higher proportion of heavy vehicles) should be a consideration in determining appropriate cycling facility types where the street is an identified cycling route.

- **Local:** Local streets serve local travel demands by providing direct access from abutting properties to the road system. These streets exist primarily to provide access to adjacent residential land uses, and movement of traffic is a secondary consideration. As these streets are designed to carry low volumes of traffic, separated cycling facilities are typically not required; however, sidewalks should be provided to separate pedestrians from traffic and parking. Additionally, traffic calming measures may be considered to discourage through traffic and maintain low traffic volumes and vehicle speeds.
- **Industrial Local:** Serves local travel demands by providing direct access from abutting properties to the street network within industrial areas. These are similar to local streets but provide access to employment and industrial uses. Roadway widths are also wider to accommodate the physical requirements of heavier vehicles.

It is recommended that the City of Stratford carry forward its existing functional street classification designations, consistent with guidance outlined by TAC. However, a comprehensive framework of typical roadway characteristics of each functional street class has been developed and is outlined in Exhibit 4.4. This will be an important reference tool in classifying new streets built in the City's annexed lands, as well as to facilitate any future changes to street designations, as required. The framework summarizes the desired characteristics of new roadways and does not necessarily suggest that all existing streets need to be updated to reflect these characteristics. Any changes to the function and design of an existing roadway segment requires study, and modifications should strive to align with the desired characteristics outlined in the framework.

The applicability of the classifications to the existing street network was reviewed to accommodate the changing needs of Stratford and to align with strategic objectives such as improving connectivity and supporting goods movement. In conjunction with the City's upcoming Official Plan review, selected street segments are identified as potential candidates for consideration, as outlined in Exhibit 4.5. These candidate roadway segments do not necessarily require structural or capacity upgrades, rather, a change in classification would better align with the streets' existing mobility and access function.

Exhibit 4.4: Functional Street Classification Framework – Typical Characteristics

Characteristic	Arterial	Collector	Local	Industrial Collector	Industrial Local
Traffic Service / Land Access	Traffic movement primary consideration. Direct access may be restricted, subject to intensification, planning and other land use objectives.	Traffic movement and land access of equal importance. Serves local travel demands providing connections within neighbourhoods.	Serves local travel by providing direct access from abutting properties to the road system. Traffic movement secondary consideration.	Traffic movement and land access of equal importance. Serves local travel demands by providing connections within industrial areas.	Serves local travel by providing direct access from abutting properties within industrial areas. Traffic movement secondary consideration.
Traffic Volume	>6,000 vehicles/day	<6,000 vehicles/day	<1,000 vehicles/day	<8,000 vehicles/day	<2,000 vehicles/day
Posted Speed = Design Speed	50 to 60 km/h	30 to 50 km/h	20 to 40 km/h	30 to 50 km/h	20 to 40 km/h
Vehicle Type	All types	Passenger and service	Passenger and service	All types	All types
Connection Hierarchy	Collectors	Arterials, Locals	Collectors	Arterials, Locals	Collectors
Pedestrian Facilities*	Sidewalks on both sides	Sidewalks on both sides	Sidewalks on one or both sides	Sidewalks on both sides	Sidewalks on one or both sides
Typical Cycling Facilities**	Physically separated bikeway preferred	Designated operating space preferred	Shared operating space	Physically separated bikeway preferred	Designated operating space preferred
Fixed Transit Service	Preferred	Preferred	Permitted	Preferred	Permitted
Typical Road ROW Width	30 metres	23 metres	20 metres	26 metres	23 metres
Traffic Calming***	Suitable, with caution	Suitable	Suitable	Suitable	Suitable
Parking Provision******	Generally not provided – exceptions for main streets	Generally not provided, with exceptions	May be provided where desired.	Generally not provided, with exceptions	Generally not provided, with exceptions

* Sidewalks may not be necessary where multi-use paths are provided alongside roadways.

** Cycling facilities determined on a case-by-case basis as detailed in the Priority Cycling Network with guidance from OTM Book 18 – Cycling Facilities (2021).

*** Traffic calming suitability is dependent on the roadway segment, and should be evaluated based on context, safety needs and community priorities.

**** Need for on-street parking is context-driven, and should be based on adjacent land-uses and availability of off-street parking. This framework does not suggest that existing on-street parking shall be removed. Any changes to on-street parking should be facilitated by a study and community consultation.

Exhibit 4.5: Potential Future Candidates for Street Classification Changes

Corridor	Limits	Existing Class	Future Class	Rationale
Perth Line 36	O'Loane Avenue to Mornington Street	Collector	Arterial	Reflects growth expected as part of anticipated development. Algins with truck routing and supports a connected network of arterial roads.
Vivian Line 37	Mornington Street to Romeo Street	Collector	Arterial	Reflects growth expected as part of anticipated development. Algins with truck routing and supports a connected network of arterial roads.
Romeo Street	McCarthy Road to Vivian Line 37	Collector	Arterial	Reflects growth expected as part of anticipated development. Algins with truck routing and supports connected network of arterial roads.
Graff Avenue	Mornington Street to Glendon Road	Local	Collector	Better defines street network hierarchy. Reflects existing access to Local streets.
Glendon Road	Mornington Street to Graff Avenue	Local	Collector	Better defines street network hierarchy. Reflects existing access to Local streets.
Lakeside Drive	Waterloo Street to William Street	Collector	Local	Supports recommended changes to the roadway, supporting the higher cycling function, while maintaining access to the arena, theatre, and parking.
Veterans Drive	Cobourg Street to Waterloo Street	Collector	Local	Reflects existing local road function of street, in coordination with Lakeside Drive re-designation as local. (Assumes road is not fully closed despite TMP recommendation.)
Albert Street	Waterloo Street to Romeo Street	Collector	Local	Reflects existing local road function of street, existence of parallel arterial to the north and collector to the south, and TMP recommendation for corridor to be adapted as a bicycle boulevard.

Corridor	Limits	Existing Class	Future Class	Rationale
Brunswick Street	Waterloo Street to Romeo Street	Collector	Local	Reflects existing local road function of street, existence of parallel arterial to the north and collector to the south, and TMP recommendation for corridor to be adapted as a bicycle boulevard.
Douro Street	Romeo Street to CH Meier Boulevard	Collector	Arterial	Reflects existing arterial road function and traffic volumes. Support anticipated growth as part of Stratford East Special Policy Area.
CH Meier Boulevard	Douro Street to Ontario Street	Collector	Arterial	Reflects existing arterial road function and traffic volumes. Support anticipated growth as part of Stratford East Special Policy Area.
Oak Street	Dufferin Street to Lorne Avenue	Local	Collector	Better defines street network hierarchy. Reflects existing access to Dufferin Lions Area.
Brydges Street	Oak Street to Mowat Street	Local	Collector	Better defines street network hierarchy and extends existing collector west to connect with possible future Collector at Oak Street.
Line 29	Entire length of roadway	Local	Industrial Collector	Aligns with adjacent industrial land uses and supports anticipated industrial and employment growth anticipated in the 2020 annex lands.
Crane Avenue	Entire roadway	Local	Industrial Local	Aligns with adjacent industrial land uses.
Griffith Road	Entire roadway	Local	Industrial Local	Aligns with adjacent industrial land uses.
Dunlop Place	Entire roadway	Local	Industrial Local	Aligns with adjacent industrial land uses.
Hanh Court	Entire roadway	Local	Industrial Local	Aligns with adjacent industrial land uses.
Boyd Street	Entire roadway	Local	Industrial Local	Aligns with adjacent industrial land uses.
Humber Street	Entire roadway	Local	Industrial Local	Aligns with adjacent industrial land uses.
Scott Street	Entire roadway	Local	Industrial Local	Aligns with adjacent industrial land uses.

Provincial Connecting Links

The Province's Connecting Links program provides support to municipalities to repair designated municipal roadways and bridges that connect two ends of a provincial highway through a community. Huron Street and Ontario Street serve as connecting links to Highway 7/8, a provincial arterial highway that provides connections northwest to Goderich in Huron County and east into the Region of Waterloo. Erie Street serves as a connecting link to Highway 7, a provincial arterial highway that provides connections southwest towards London. Together, they form the backbone of an important regional road network.

Maintaining these roadways as arterials is appropriate, considering their focus on traffic movement and the role they play as part of a regional highway network. These streets, however, also serve local mobility especially in the Downtown, where they serve a higher proportion of transit and active transportation trips. As commercial vehicle traffic and other through traffic is expected, balancing the needs of different road users, while mitigating negative impacts and improving safety for all, will continue to be a focus into the future.

Recommended Actions

14. Adopt the Functional Street Classification Framework as part of the upcoming new Official Plan, carrying forward the five-level street classification describing the function of municipal roadways for inclusion in the new Official Plan.
15. Consider potential changes to the classification of selected streets to better reflect their existing function and support anticipated growth.

4.4 Land Use Planning

The way in which a community plans its neighbourhoods may be the most important input into how people choose to get around. In order for the recommendations in this TMP to be most effective, the City's land use planning and zoning regimes must continue to evolve to reflect principles that support a healthy, safe and complete community. In that context, the following needs and opportunities were identified:

- **Need:** Plan for complete communities with densities to support transit and active transportation
- **Need:** Connect existing and planned developments and subdivisions at the periphery of the City to major destinations via safe and direct active transportation routes, with an emphasis on a complete sidewalk network to support walking trips.
- **Opportunity:** Support placemaking opportunities and recognize the value of the transportation system in improving the public realm.

Considerations

Land Use Influences Transportation Decisions

The influence of zoning by-laws and Official Plan policies may be the greatest determinant in whether a person decides to walk, cycle, take transit, or drive. The prevailing pattern of dispersed, lower density development, with circuitous streets and lack of regular grid pattern in most North American cities conspire to make active travel modes more difficult to sustain. Stratford's ongoing growth, however, presents an opportunity to build pedestrian-friendly communities. The following items should be considered when designing new neighbourhoods in Stratford, and enshrined in the new Official Plan update:

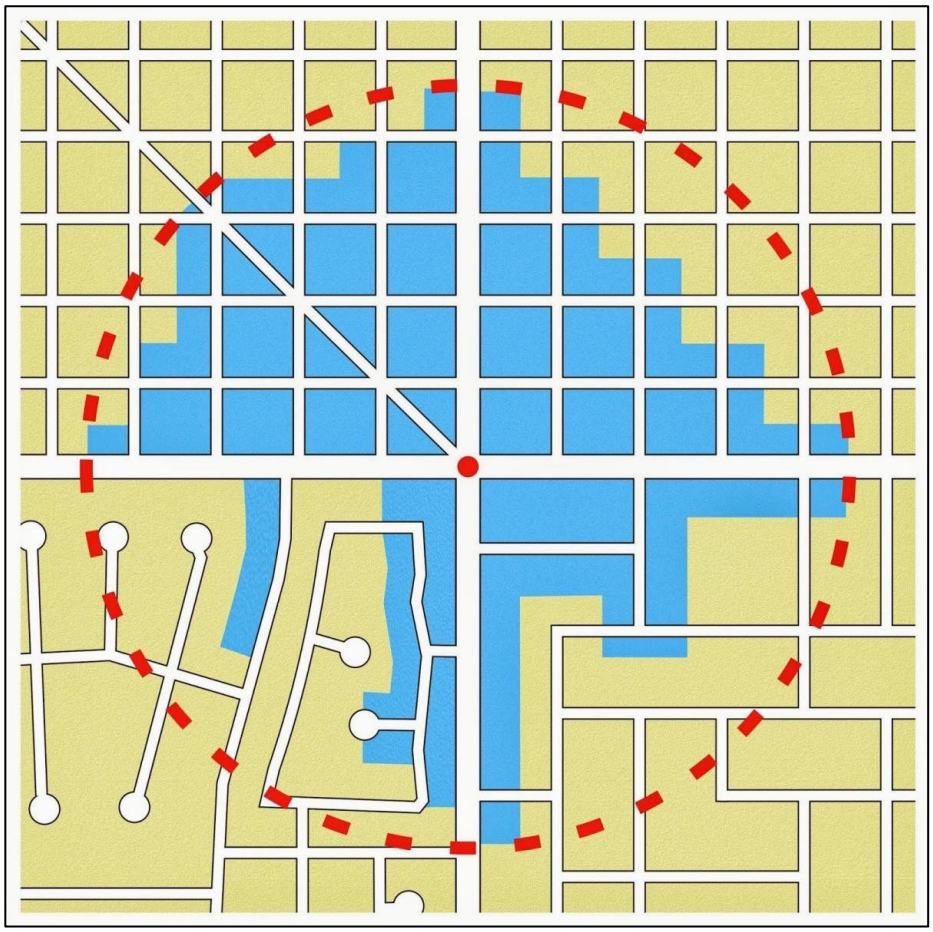
- **Mixed uses:** Building complete communities with neighbourhood-level retail, schools, community facilities and other amenities mixed in with residential buildings typically means a higher proportion of trips can be made within shorter distances with a higher probability of walk trips.
- **Site planning:** Narrow frontages encourage more variety and increase the attractiveness of walking. Smaller lots also help to locate more people and services close to one another. Providing pedestrian-scale design (e.g. a lower rise podium) and orienting buildings to the street (rather than behind parking lots or large setbacks) improves the overall streetscape and street wall, while improving the pedestrian and cyclist experience.
- **Parking requirements:** A reduction or elimination of minimum parking requirements for new developments will allow for market-driven decisions on the supply of off-street parking. In fact, many communities

across North America are moving towards parking maximums enshrined in their zoning by-laws to ensure parking needs are met, but not oversupplied. The provision of too much parking leads to inefficient land use patterns and undermines the multi-modal objectives of this TMP. A detailed review should be undertaken of peer cities of similar sizes and urban contexts, as well as a review of the latest industry best practices surrounding parking requirements.

- **Provision of active transportation facilities:** Sidewalks, trails and cycling facilities should be provided in accordance with the typical characteristics outlined in the functional street classification framework presented in Section 4.3. Additionally, new neighbourhoods should seamlessly integrate new cycling facilities into the cycling networks presented in Section 3.2. While the TMP considered the provision of paths and trails in the development of the cycling network, a separate Trails Master Plan should be undertaken. The Trails Master Plan would support a comprehensive natural heritage trails system and future off-road connections for pedestrians and cyclists, including through new developments, and connect to the greater active transportation networks.
- **Pedestrian walksheds:** Street networks should be designed to maximize pedestrian convenience. Traditionally, a fixed grid provides the most efficient layout for pedestrians, as depicted in Exhibit 4.6. However, where a full street grid is not desired, the pedestrian network should be designed to include a system of pedestrian walkways that provide a connected grid (or “fused” grid) for pedestrians and other active modes. Referring again to Exhibit 4.6, the lower left quadrant, as shown, represents the worst walkability of the four street patterns shown. However, it could be significantly increased with the inclusion of pedestrian and cycling connections from the cul-de-sacs to the major streets they abut, as well as pedestrian and cycling connections to one another. Effectively, this creates an efficient grid for pedestrian and cyclist movements while maintaining the traditional deterrents to excessive cut-through vehicular traffic.
- **Preventative traffic calming:** Streets should be designed to encourage slower traffic speeds and help mitigate the other negative impacts of traffic such as noise pollution, making the streetscape safer and more

desirable for pedestrians and cyclists. This is further discussed in Section 4.1.

Exhibit 4.6: Five Minute Walkshed with Different Street Layouts



Source: Congress for the New Urbanism[13]

Other Official Plan Directions

In addition to the items above, the TMP also provides recommendations that should be implemented through the next Official Plan update. These include:

- Adopting the Complete Streets policy and approach as a central theme (Section 4.2);

[13] Great idea: Interconnected street networks (March 6, 2017). Retrieved March 6, 2023 from https://www.cnu.org/publicsquare/2017/03/06/great-idea-street-networks

- Adopting the functional street classification framework (Section 4.3); and
- Updating by-laws to require the provision of short- and long-term cycling parking in new residential, office and commercial developments (Section 4.5).

Placemaking and Public Realm

Streets are most cities' largest collection of public spaces. In a city like Stratford, these public spaces are vital to the vibrancy and livability of the City. The City's downtown and environs are the epicentre of the City's vibrancy, with a lively mix of cafes, restaurants, historic buildings, and cultural institutions. Flexible streets and those with wide pedestrian realms are best suited to be adapted to other non-transportation uses that contribute to vibrancy and livability in the City. This principle is reflected in the infrastructure recommendations for Erie Street, Veterans Drive and Lakeside Drive.

Recommended Actions

16. Consider the relationship between land use planning and transportation outcomes when preparing the new Official Plan update, reflecting the principles outlined above.
17. Review zoning by-laws and land use designations to ensure complete communities principles are reflected (e.g. site planning is pedestrian-oriented, mixing complementary uses is allowed, etc.), and update as necessary.
18. Review plan of subdivision requirements to ensure pedestrian walksheds are considered when new street layouts are being designed, through the requirement of grid patterns or direct pedestrian and cycling connections and update as necessary.
19. Undertake a Trails Master Plan to support a comprehensive natural heritage trails system and future off-road connections for active transportation users.
20. Review and update all relevant design guides, manuals, standard cross-sections, zoning by-laws and Official Plan policies to ensure guidelines

reflect safe street principles, including ensuring the design speed on urban streets matches the desired maximum speed of vehicular traffic.

21. Undertake a review of peer cities and the latest best practices surrounding new development parking requirements. If supported by this study, a reduction of minimum parking requirements or imposition of maximum parking requirements is recommended.

4.5 Active Transportation

To help maximize the return on investment in the physical infrastructure outlined in the TMP's recommended Priority Cycling Network, Ultimate Cycling Network, and Pedestrian Network, complementary supporting strategies are needed. Together, these help to realize the following identified opportunities:

- **Opportunity:** Recognize potential of Stratford as a 15-minute city, where a compact geography and flat topography presents an opportunity to increase walking and cycling mode share for most trips.
- **Opportunity:** Take advantage of placemaking opportunities that support the character and protect the natural heritage of Stratford and recognize the value of cycling and walking tourism potential

Considerations

Event Focused TDM Program

As tourism is such a major part of the Stratford economy and identity, there is a noticeable influx of demand for travel from tourist-related activities. A focus on encouraging locals as well as tourists to leave their car at home or at their place of lodging and walking or biking to the theatre or other events can help reduce general congestion and greenhouse gas emissions related to travel, while increasing the vibrancy of street life in the City. A more detailed strategy, partnerships with major events, and coordination with Stratford Transit would be needed.

Cycling Tourism

Cycling tourism is a growing form of recreation and touring in Southern Ontario. The City of Stratford can be an ideal destination for day trips from touring cyclists

or an ideal stopover on multi-day rides. In addition to creating safe cycling facilities within Stratford, the City should consider providing safe short-term and long-term bicycle parking in tourist-focused parts of the City.

Additionally, developing and advertising cycling tourism routes, with Stratford identified as a hub, can help create awareness and encourage cycling tourists to add Stratford to their route.

The City should consider developing a more comprehensive strategy to attract cycling tourists, in conjunction with Destination Stratford and other business groups.

Bicycle Parking

To accommodate more cyclists, safe and secure cycling parking is needed across the City. This includes both parking provided by the City itself within its rights-of-way and City-owned land (e.g. municipal parking lots and other civic institutions), as well as encouraging private properties to provide parking for cyclists.

Existing private commercial properties can be encouraged to provide cycling parking through a City program that organizes the purchase and installation of consistent bicycle parking facilities, working towards achieving economies of scale. Cost sharing between the City and private properties could be considered.

Meanwhile, new developments can be required to provide bicycle parking through the zoning by-laws and other site plan controls.

Each of these avenues should be considered by the City.

Micromobility Sharing Systems

Bicycle-sharing systems, or bike share programs, offer bicycles for shared use, usually for a fee. Conventional bikes, e-bikes and e-scooters are some of the active transportation sharing systems that are providing residents and visitors in numerous jurisdictions across Canada healthy and green mobility options.

Due to its compact size and strong tourist base, the City of Stratford may benefit from adopting a micromobility system. A bicycle-sharing system, for example, could help divert single-occupancy vehicle trips among residents, as well as support Stratford as a competitive tourist destination by offering a fun way to

explore the City and help address last-mile solutions. A micromobility system would also support Stratford as a 15-Minute City.

Progress Tracking

A key action to maintain momentum coming out of the TMP is to provide progress updates at regular intervals. Reporting back to Council through an Active Transportation or Cycling Yearbook can highlight the big moves and projects completed so residents and stakeholders can help understand how the network is progressing over the planning horizon of the TMP. Performance monitoring is a key component of any Transportation Master Plan, but an active transportation-specific annual reporting requirement will help to keep the plan on track while ensuring Council and other stakeholders are well informed.

Recommended Actions

22. Consider developing an event focused TDM program to encourage and enable locals and visitors to adopt sustainable modes for major cultural events and during the tourist season.
23. Consider developing a cycling tourism strategy.
24. Continue to provide short- and long-term cycling parking on City land, aiming to increase the number of bicycle parking spaces on an annual basis at a consistent rate.
25. Consider developing a program, working with private properties, to encourage the provision of secure, standardized bicycle parking.
26. Review zoning by-laws and other policies to require new developments to provide both short- and long-term secure bicycle parking on-site; update by-laws and policies as required.
27. Work with key municipal staff and relevant stakeholders, including Cycle Stratford and the Downtown Stratford Business Improvement Area, to discuss funding opportunities and the feasibility of a bicycle sharing system.
28. Report back on pedestrian and cycling network progress to Council on an annual basis as a way of tracking action against the active

transportation infrastructure recommendations as well as highlighting other programming initiatives.

4.6 Traffic Calming

Traffic calming is a means of altering driver behaviour through physical measures or programs to improve safety conditions for all road users, including vulnerable road users such as pedestrians and cyclists.

The following needs and opportunities were identified that can be addressed through the implementation of a traffic calming policy and process:

- **Need:** Respond to driver behaviour concerns (e.g. cut-through traffic, speeding), especially on local roads and in school zones
- **Opportunity:** Standardize traffic calming process to allow for transparent responses to traffic calming requests

Considerations

Traffic calming is an intervention along a specific street or corridor that aims to achieve either or both of the following:

- Improve driver compliance with the posted speed limit, either through visual cues that improve awareness or through physical infrastructure changes that require slower speeds to navigate safely; and
- Reduce cut-through traffic by making the route slower, and thus less attractive than roads better suited for through traffic.

A successful traffic calming program results in enhanced safety and improved quality of life for residents.

Typical traffic calming implementation falls into one of two categories:

- **Soft traffic calming**: Installation of visual cues or other passive measures such as enhanced signage, radar speed signs, pavement markings, reduced lane widths, changes to roadway colour or texture, or roadside trees; or
- **Hard traffic calming:** Physical changes to the horizonal or vertical alignment of the roadway, such as speed humps, bump outs, median islands, and roundabouts.

The Canadian Guide to Traffic Calming (2018) by the Transportation Association of Canada (TAC) is an important resource in providing practitioners and municipalities the guidance required to make sound traffic calming decisions. Varying interventions can be used to manage traffic and achieve the intended results of traffic calming. Exhibit 4.7 outlines selected measures as identified by the TAC, These measures represent some of the road treatments that the City of Stratford can consider, with the most appropriate intervention selected at the professional judgment of municipal staff and/or external consultants.

Different traffic calming measures are best suited to specific contexts, and it is important to apply the most appropriate measure that responds to the circumstances of a specific location. Traffic calming can be applied to local and collector roads to slow traffic and reallocate shortcutting traffic away from local streets, as well as to reduce speeds on arterial roads. Exhibit 4.7 outlines the appropriateness of each measure for different roadway contexts.

Further detail on these approaches, as well as other speed reduction mechanisms for rural arterial roads, can be found in various design guidelines documents, including the Canadian Guide to Traffic Calming by the Traffic Association of Canada (2018).

Exhibit 4.7: Traffic Calming Measures and Roadway Applicability

Measure	Description	Roadway Applicability	
		Local / Collector	Urban Arterial
Vertical deflection			
Raised Crosswalk	A marked pedestrian crosswalk either at an intersection or mid-block location constructed at a higher elevation than the roadway.	✓	✗
Raised Intersection	A full intersection, including crosswalks, constructer at a higher elevation than the adjacent roadways.	✓	✗
Speed Hump	A raised portion of the roadway that deflects traversing vehicles.	✓	✗
Speed Table	An elongated speed hump with a flat top that is long enough to raise the wheelbase of a vehicle.	✓	✗
Speed Cushion	A speed hump constructed to allow the passage of larger vehicles (i.e. emergency response, buses) without difficulty, while reducing automobile speeds.	✓	✗
Horizontal Deflection			
Chicane or Serpentine	Curb extension on alternating sides of a roadway that narrow the road width and require drivers to navigate more cautiously.	✓	✗
Curb Radius Reduction	The curb radius at an intersection impacts how fast turns can be made by right-turning traffic. Large curb radii pose a risk to pedestrians crossing and can increase crossing distances within the crosswalk. Reducing curb radii at intersections can force drivers to make turns at slower speeds.	✓	▲

Measure	Description	Roadway Applicability	
		Local / Collector	Urban Arterial
Lateral Shift	A roadway alignment change using a jog to the left or right, causing drivers to alter their path and slow down.	✓	▲
Speed Kidney	The arrangement of three elongated humps with a curvilinear shape in the direction of traffic which requires vehicles to navigate the curvilinear shape to avoid the deflection.	✓	✗
Traffic Circle / Mini-Roundabout	A raised island at the centre of an intersection, which requires vehicles to travel through the intersection in a circular, counter-clockwise direction around the island. These are smaller in scale from typical arterial road roundabouts and perform more of a traffic calming function rather than a traffic control function.	✓	✗
Road Narrowing			
Curb Extension / Bulb-Out	A horizontal extension of the curb that results in a narrower roadway width.	✓	✓
Lane Narrowing	Reduced lane widths using pavement markings to make travelling at higher speeds less comfortable, since navigating the roadway requires more accurate steering and greater concentration.	✓	▲
On-Street Parking	Allowing parking adjacent to the curb reduces the roadway width.	✓	▲
Raised Median Island	An island constructed on the centreline of a two-way roadway to reduce width of the travel lanes, forcing drivers to reduce operating speeds. The island also provides a refuge area for pedestrians and can help to reduce conflicts with vehicles.	✓	▲

Measure	Description	Roadway Applicability	
		Local / Collector	Urban Arterial
Road Diet	A reconfiguration of the roadway that can result in the reduction of vehicle travel lanes or roadway width in order to reallocate space for other uses (e.g. bike lanes).	✓	✓
Vertical Centreline Treatment / Speed Limit Bollard	The use of vertical treatments (e.g. flexible delineator posts) along the centreline of a roadway to create the perception of lane narrowing, requiring heightened driver attention. The vertical treatment can feature a speed limit sign to remind the driver of the posted speed.	✓	✗
Surface Treatment			
Textured Crosswalk	A crosswalk with a textured or patterned surface that contrasts with the adjacent roadway.	✓	▲
Textured Pavement	Textured roadway surface that alerts drivers to reduce speed.	✓	✗
Rumble Strips	Raised grooves that are closely spaced at regular intervals on the roadway that create noise and vibration to a moving vehicle.	▲	✗
Pavement Markings			
Converging Chevrons	Painted markings in the shape of a V pointing in the direction of travel to create the illusion that a vehicle's speed is increasing.	✓	▲
On-Road Painted Text	Text painted onto the roadway to provide information that would typically be shown on signage to attracting drivers' attention (e.g. *SLOW*).	✓	✓

Measure	Description	Roadway Applicability	
		Local / Collector	Urban Arterial
Access Restriction			
Directional Closure	A vertical barrier extending to the centreline of a roadway to prohibit the movement of one direction of traffic.	✓	✗
Right-In/ Right-Out Island	A raised triangular island at an intersection approach that obstructs left turns and through traffic movement.	✓	▲
Traffic / Truck Diversion	Diverting traffic onto alternate routes can decrease through traffic volumes. This cost-effective measure improve safety by routing traffic and heavy vehicles to alternate routes that are better suited to that type of traffic. This can be accomplished using signage or introducing a truck route by-law to alternate roads.	✓	✓
Enforcement			
Fixed Speed Enforcement	Automatic speed cameras that photograph speeding / unsafe vehicles.	✗	✓
Mobile Speed Enforcement	Radar photography units mounted in mobile vehicles that can be moved depending on locational needs.	✓	✓
Targeted Enforcement Program	Police are used to monitor problematic roadways and issue tickets for violations. This serves as a visible deterrent and may elicit driver compliance both with other treatments or on its own.	✓	✓

Measure	Description	Roadway Applicability	
		Local / Collector	Urban Arterial
Education			
Speed Display Devices / Radar Message Board	Interactives signs that display vehicle speeds to oncoming motorists. Radar message boards can be set up as permanent installations or can be temporary installations that rotate to various locations.	✓	✓
Emerging Technologies			
LED Pavement Markings	LEDs embedded in pavement with different display abilities (e.g. displaying an advisory speed limit for a curve in the roadway).	✗	▲
Rest-on-Red Signal Phasing	Programming of a signalized intersection in which the red light is activated for all approached in the absence of vehicles or pedestrians. The green light is activated through detection by a signal loop by a vehicle or push button by a pedestrian.	✗	▲
Section Control	An approach to automated speed enforcement that calculates the average speed of a vehicle between two points on a section of roadway using licence plate recognition technology.	✗	▲

✓ Applicable ▲ Use with Caution ✗ Not Appropriate

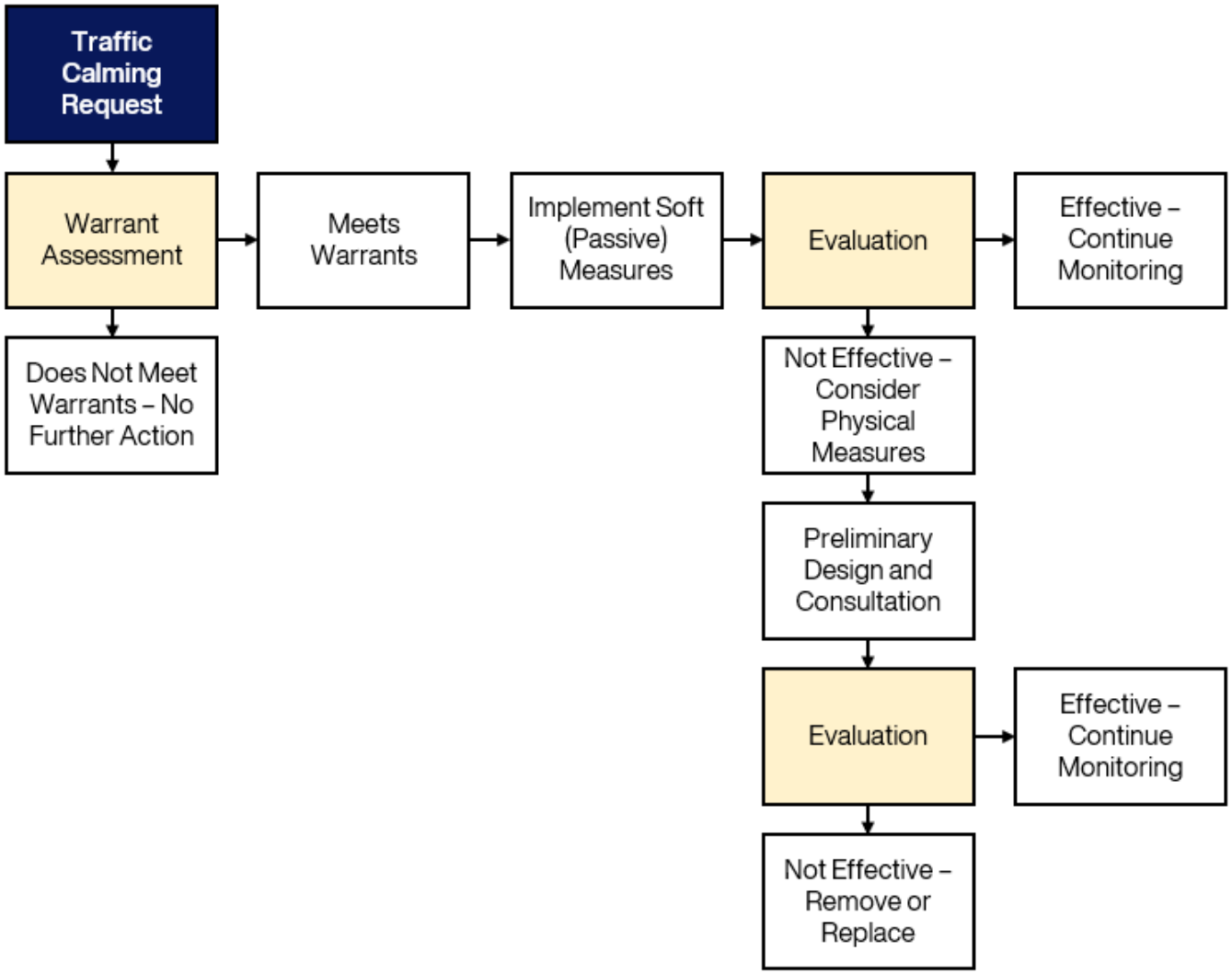
Source: Adapted from Canadian Guide to Traffic Calming (Transportation Association of Canada, 2018)

Traffic Calming Requests

Requests for traffic calming are common within the City of Stratford, however, the City does not currently employ a standardized process to respond to these requests. A standardized process allows the City to prioritize the streets with the greatest need based on traffic volume and speed data and help identify the best traffic calming elements to implement.

A standardized process is presented in Exhibit 4.8 and further detailed below.

Exhibit 4.8: Traffic Calming Process Flow Chart



The traffic calming process is intended to provide a transparent, traceable and data-driven response to traffic calming requests. After a traffic calming request has been received, the first step is to assess the corridor against the warrant criteria, presented below in Exhibit 4.9. The intention is to screen out lower volume corridors where overall risk is smaller. As such, higher risk areas are carried forward for further analysis. It should be noted that volume and speed data collected for this purpose should also be used to prioritize implementation of measures, with the higher speed and volume corridors being addressed first.

Exhibit 4.9: Traffic Calming Warrant for Urban Streets

Measure	Warrant
Traffic Volume	One of: • More than 500 vehicles per day on local road • More than 1500 vehicles per day on collector road
	AND
Traffic Speed	85th percentile speed is >10 km/h over the posted speed limit

If these warrants are met, soft or passive traffic calming measures should be implemented first. Types of soft traffic calming measures are outlined in Exhibit 4.7. Starting with soft traffic calming measures allows for low-cost solutions to be tested prior to contemplating more expensive physical interventions.

Following implementation, the corridor should be evaluated to determine whether the measures applied have been successful in addressing the speeding and/or cut-through traffic issues. If they have been deemed successful, no further action needs to be taken, though periodic monitoring and evaluation should continue.

If the soft measures are deemed to not have been effective, physical measures should be considered. At this stage, an analysis should be undertaken to identify the preferred physical intervention and develop the preliminary design. Staff may consult with the public and stakeholders at this stage.

Following consultation, detailed design is completed, and the measures are implemented. Monitoring and evaluating the impacts of the intervention are critical. If the physical measures are deemed effective, the process is complete. If they are

not effective, the City should consider removing the measures or replacing the measures with a new approach. Ongoing monitoring should continue in all cases.

Preventative Traffic Calming

To avoid the need for retroactive traffic calming, new streets should be proactively designed with consideration towards the ultimately desired travel speeds. Where low speeds are desired, the road design should reflect this with characteristics intended to naturally lower travel speeds to the targeted maximum. This type of design should be reflected in the City's standard design guidelines and other relevant guides or policies aimed at new development. Essentially, urban roads design speed should match the desired running speed. This is reflected in the functional street classification framework presented in Section 4.3. New roads designed through the City's complete streets approach, with a focus on safety and accommodating vulnerable road users, should generally not require retrofit traffic calming implementation, if designed and built in accordance with these principles.

Recommended Actions

29. Formally adopt the traffic calming process outlined in this section.

4.7 Public Transit

The TMP takes a strategic approach to long-term transit system growth, rather than a more detailed route-level review. In that context, four needs and opportunities were identified for the City's public transit system:

- **Need:** Improve the convenience of Stratford's transit system
- **Need:** Accommodate current and future growth
- **Need:** Improve equity and accessibility
- **Opportunity:** Recognize the opportunity of Stratford Transit in being a leader in the transition to more sustainable transportation and reduction of greenhouse gases

Considerations

A robust analysis of the transit network's performance was undertaken and documented in Phase 1 of the TMP study. The following takeaways were noted, relating to the three needs identified above.

Convenience

- The existing route network optimizes for walking distance to/from destinations and single-seat rides (few transfers) at the expense of frequency and travel time, which better meets the needs of senior/retiree riders than other groups. As the city grows, more frequent services along major corridors should be prioritized to build ridership along direct routes.
- Despite having the second-lowest per capita ridership of peer transit systems, Stratford had the second-highest investment in service hours in the pre-pandemic era. This implies existing service may need to be adjusted to better serve popular destinations and provide faster, more direct service.
- Though the City introduced an electronic fare option through the mobile app HotSpot in August 2022, there remain opportunities to expand availability of fare media, through additional points-of-sale, expanded electronic options, and other digital payment options.

System Growth

- Through continued service investment, Stratford experienced minimal pre-pandemic ridership loss, despite many agencies in North America trending downwards up to 15%. Continued investment and service improvements are critical to maintaining and growing Stratford transit as a reliable option for residents, as the system needs to win riders back as the economy recovers from the pandemic.
- On-demand service can be explored to expand service span and service area initially, before determining if/where fixed route service may be needed to meet demand.
- The transition to on-demand transit during lower-ridership periods likely resulted in reduced overall operating costs due to fewer operators

needed. Further opportunities for optimizing operational costs should be explored.

- Most of the operational and capital funding comes directly from the City of Stratford with inconsistent inputs from the Province. Additional dedicated funding streams would help ease the burden on the City and allow for expanded services.

Equity and Accessibility

- To improve accessibility and equity, the Affordable fare discount could be further increased to better meet industry best practices, including lowering eligibility criteria, and improving the discounts relative to adult fares. Additionally, fare capping, enabled by digital payment solutions, improves fare equity and fairness by removing high cost barriers and potential overpayment.

Greenhouse Gas Reduction

In addition to the key takeaways outlined above, there is an opportunity to leverage the transit system as a conduit towards lower greenhouse gas emissions. This can come from growing ridership of the transit system as it exists today, which generally provides lower GHG output per trip than single occupancy vehicles. It can also come from a shift to zero-emission buses, which the City is currently studying the feasibility of implementing. Investments in the City's transit system are key to reducing greenhouse gases city-wide.

Recommended Actions

30. Develop a ridership strategy to determine how to retain and expand ridership in the wake of COVID-19.
31. Consider modifying the route network to improve travel times, maintaining reasonable walking distances to/from bus stops, to account for changing transit demand that evolves with City growth, and to better connect major trip generators with more frequent service.
32. Review routes and operating hours to ensure the needs of vulnerable users such as night shift workers and students are being met.

33. Explore expansion of on-demand transit to expand service span and service area.
34. Continue to expand access to passes and tickets through electronic fare options, digital payment solutions, and additional points-of-sale.
35. Strengthen policies related to affordable fares to improve the accessibility of the program to low-income riders.
36. Implement the recommendations from the feasibility study examining how Stratford Transit can transition to zero-emission buses
37. Explore partnership with Stratford Festival to reduce emissions and traffic congestion related to tourism.
38. Explore opportunities to optimize service delivery to reduce costs.

4.8 New and Emerging Technologies

New and emerging transportation technologies could represent important opportunities in the development of a future-looking transportation network. Technological advancements that support electric, shared, automated and connected transportation options are reshaping mobility and can help increase non-private vehicle travel and reduce greenhouse gas emissions, supporting the TMP study vision and objectives. By developing strategies that support the identification and adoption of technologies that work for the needs and context of the Stratford, the City can take advantage of these new technologies as appropriate.

The following needs and opportunities were identified related to emerging technologies in Stratford:

- **Opportunity:** Position Stratford to be able to take advantage of new and emerging transportation technologies.
- **Need:** Ensure new innovations provide positive benefits to residents.

Considerations

Zero-Emission Vehicles

The City of Stratford has a proven record of implementing new mobility opportunities that work for its scale and context. Most recently, the City received

funding through the Zero Emission Vehicle Infrastructure Program (ZEVIP) as part Natural Resources Canada. ZEVIP is an ongoing initiative to address the lack of electric vehicle (EV) charging and hydrogen refuelling stations across Canada, a key obstacle to the adoption of zero-emission vehicles. The program seeks to increase the prevalence of charging and hydrogen refuelling stations through providing federal funding of up to 50% of the total project cost. As a result of ZEVIP, the City of Stratford will install electric vehicle charging infrastructure at the following municipal parking locations over the next two years:

- **Lower Erie Parking Lot:** Two dual output, Level 2 connector stations (208/240V);
- **Upper Erie Parking Lot:** Two dual output, Level 2 connector stations (208/240V) and one single output, Level 3 Fast Charging station (62.5kW);
- **Kalbfleisch Lot:** Three dual output, Level 2 connector stations (208/240V);
- **York Lot:** Two dual output, Level 2 connector stations (208/240V); and
- **Albert Lot:** Two dual output, Level 2 connector stations (208/240V).

As well as supporting residents' uptake of EVs now and in the future, the City should build on its momentum and continue with a charging deployment strategy to support tourism. A robust network of charging stations would help mitigate the "range anxiety" that is commonly associated with EVs, helping to attract a growing demographic of drivers. Range anxiety is the fear that EV drivers may feel when the battery charge of their vehicle is low, and a charging port is not available. Charging ports would help support tourism either as a final destination or as a refuelling stopover before continuing to other destinations like Lake Huron. Similarly, increasing charging facilities in Stratford could help stimulate the local economy from charge fees and additional commercial patronage while drivers wait for their vehicles to charge.

Connected and Autonomous Vehicles

Stratford has developed a reputation in the autonomous vehicle world due to its designation as a demonstration zone where autonomous technology and infrastructure could be tested in real life traffic conditions. Stratford is among the first cities in North America to fully implement the installation of dedicated short-

range communications technology equipment on all traffic lights that will enable the testing of and eventual full-time deployment of Connected and Autonomous Vehicle (CAV) technology.

At a broader level, evolving technologies related to CAVs are being actively developed and tested, with potential impacts that could improve the safety, efficiency, and accessibility of the transportation landscape. Examples of CAVs that will impact the way people, goods and services travel include the following[14]:

- **Automated scanning** involves vehicles that automate the process of scanning the environment for the purpose of collecting data.
- **Automated pick-up or delivery** comprise automated freight and delivery vehicles.
- **Cooperative truck platooning** is the linking of two or more trucks equipped with connectivity technology and automated driving support systems that are driven together.
- **Driverless taxis** are used for passenger transport.
- **Low-speed automated shuttles** are typically used as a first-mile / last-mile solution to transport passengers between specific locations.
- **Utility devices** can support operations such as snow removal and garbage collection.

While there may be many potential benefits to CAVs, including increased safety and efficiency of vehicular transportation, the City should continue to follow Provincial direction on this evolving space, as the technical and regulatory context around their integration remains uncertain. The City can continue to build off their implementation successes to prepare for CAVs. This could include monitoring technology advancements and identifying some of the risks and detriments CAVs may bring to help mitigate negative impacts on residents. For example, the growing demand for CAVs may see increases to overall vehicle kilometres travelled (VKT) if people are able to live further away from destinations because of the increased ease of driving and a higher tolerance for longer commutes. This in turn may result in more congestion and increases the possibility of zero-occupancy trips. Energy use is also an important consideration and may increase as demand for new

[14] TAC (2022). Connected and Automated Vehicles: A Primer for Canadian Municipalities. <https://www.tac-atc.ca/sites/default/files/site/doc/publications/2021/prm-cav-e.pdf>

mobility systems grows. Municipal policies are key to shaping how CAVs are deployed and that their use support City-building goals.

Recommended Actions

39. Continue to investigate opportunities to install EV chargers throughout Stratford to support electrification efforts and uptake.
40. As the MTO advances its own initiatives to facilitate two-way communication of traffic and road condition information between vehicles and infrastructure, the City should continue to prepare for future advancements in technology by monitoring developments in CAVs and following the direction of the Province.
41. Promote emerging transportation technologies through outreach and marketing, ensuring that residents are educated about the benefits and potential impacts (including safety) of new mobility modes and services.
42. Identify supportive policies and infrastructure to be "ahead of the game" to ensure the continued rollout of CAVs and other emerging transportation technologies support City-building initiatives and align with provincial plans. Infrastructure to support CAV deployment, traffic control devices that consider both human drivers and automated driving systems, and traffic laws and regulations should continue to be considered in anticipation for a growth in CAVs.

4.9 Goods Movement

Supporting the continued efficient movement of goods throughout the City of Stratford is important. Commercial vehicles (i.e. medium and heavy trucks) are responsible for the movement of the goods shipped to, from, within and through Stratford. They also support essential services such as construction, repair and maintenance, waste management, and emergency response. Stratford's industrial lands will continue to require good connections to the provincial highway network to facilitate the movement of goods in addition to requiring good travel options for people to access jobs in these locations.

The following need was identified to help improve goods movement in Stratford:

- **Need:** Manage the safe and efficient movement of commercial vehicles.

Considerations

Prohibitive and Permissive Approaches

There are two main approaches to managing truck traffic:

- By **prohibiting heavy truck traffic** on specific streets. Heavy trucks are restricted by municipal by-law from using these streets except if they are needed to reach their final pick up or drop off point.
- By signing **permissive truck routes** that indicate a preferred continuous routing for heavy vehicles, usually to bypass more sensitive uses. These routes also communicate to drivers that streets are specifically designed for heavier vehicles.

In Stratford's case, a combination of both approaches has been applied by the City and should continue to be used.

Signage is a key component to both approaches and should be implemented in accordance with Ontario Traffic Manual Book 5 – Regulatory Signage (2000).

Truck Route Network

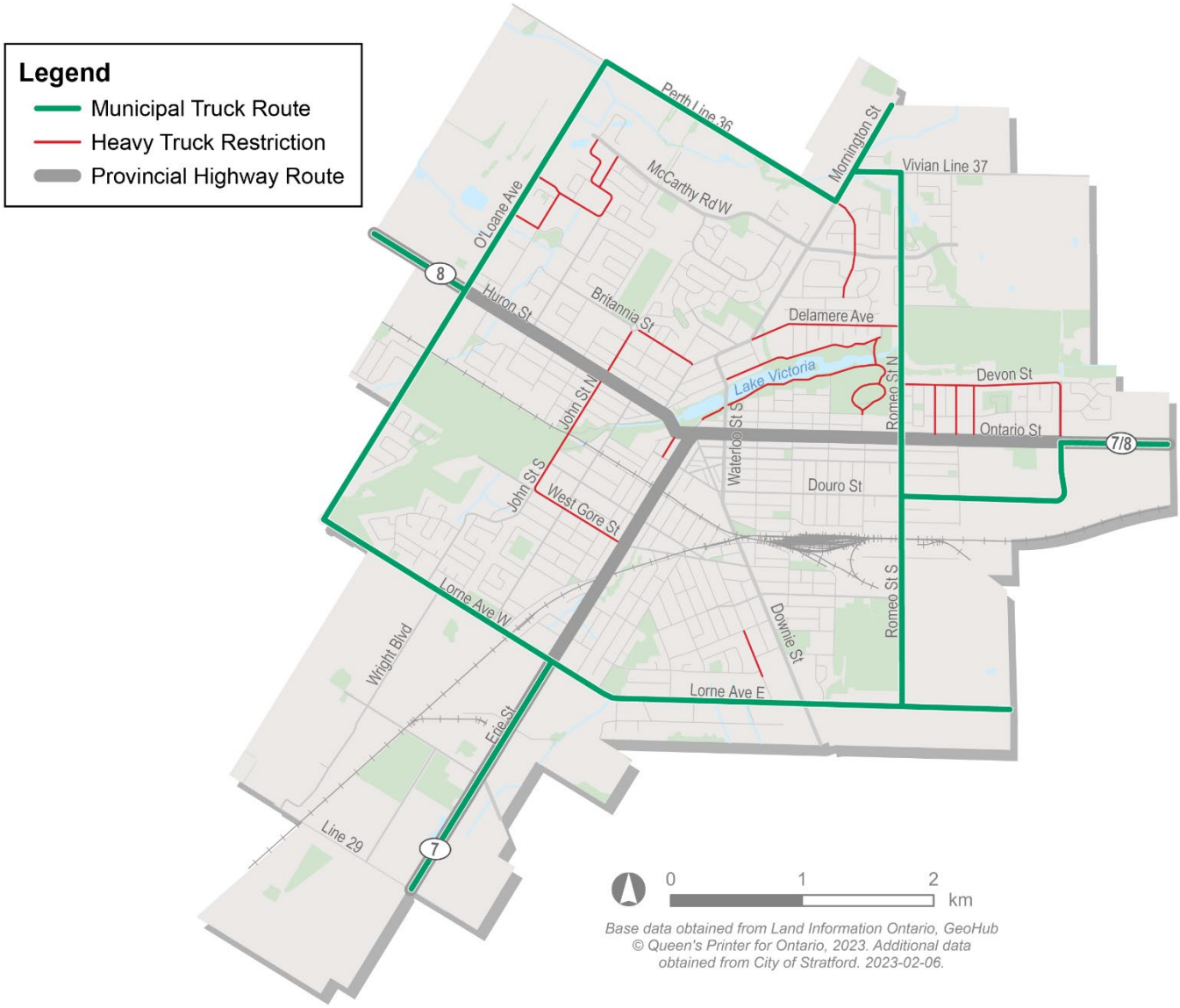
The truck route network in Stratford represents the permissive approach and provides several potential routes to bypass the busy downtown and its choke points. This is shown in Exhibit 4.10, with the prohibited streets highlighted for additional context.

While the truck route network identifies key routes to support the movement of commercial vehicles, all arterial streets, by virtue of their role as important regional and local connectors, are intended to accommodate truck traffic.

This route has been adapted from the previous truck route network identified in the 2010 City of Stratford Master Transportation Plan, which solely identified "Municipal Truck Routes". Notably, the following changes have been made:

- Huron Street east of O'Loane Street has been removed from the Municipal Truck Route network;
- Ontario Street west of CH Meier Boulevard has been removed from the Municipal Truck Route network; and
- In force Heavy Truck Restrictions have been added to the map.

Exhibit 4.10: City of Stratford Existing Truck Route Network



In removing Huron Street and Ontario Street, it is important to note that, as Connecting Links for the provincial highway network, these corridors are still expected to be used by commercial vehicles and will continue to be designed to accommodate them (as all arterial streets do). However, the removal of these segments from the Municipal Truck Route network emphasizes the desire to route through traffic away from the Downtown. It also more accurately reflects the signs that are currently in place, further discussed below.

Recommended intersection improvements along Lorne Avenue, as outlined in Section 3.1.2, will also increase capacity along the corridor. Supporting the efficiency and arterial road function of Lorne Avenue will help make this bypass route more attractive for vehicular traffic, especially heavy vehicles destined for Stratford's growing industrial district.

Mitigating Impacts

While trucks and other commercial vehicles are essential to the economic vitality of the City and perform important services for residents, their needs must be met while mitigating negative impacts to the community, such as noise and pollution. This is especially important to manage the risk of potential safety conflicts with other road users, including vulnerable road users.

Stratford's permissive truck route network should help facilitate decision-makers when determining which elements, facilities and modes are to be prioritized as part of a road project. For example, an increase of truck traffic along Lorne Avenue could be accompanied by sidewalks to help facilitate safe pedestrian connectivity. Additionally, road design characteristics to help support multi-modal mobility are outlined previously in Exhibit 4.4.

The City of Stratford should also continue to apply guidance from the Province's Freight-Supportive Guidelines (2016)[15], to balance the needs of both freight movement and passenger transportation on shared mobility corridors.

Recommended Actions

43. Support and encourage the use of the permissive truck route "ring road" network as an effective tool in managing through truck traffic through the Downtown.
44. Adopt the updated Municipal Truck Route through the new Official Plan and/or as a standalone policy endorsed by Council.
45. Consider a truck route map that is easy to locate on the City of Stratford website.

[15] Ministry of Transportation of Ontario (2016). Freight-Supportive Guidelines. < https://www.ontario.ca/files/2022-03/mto-freight-supportive-guidelines-en-2022-03-31.pdf> Accessed October 2022.

46. Mitigate impacts of truck traffic through the City by implementing safe street design, including separated cycling facilities and pedestrian expanded pedestrian connections.
47. Continue to use heavy truck restrictions as a management tool along selected local streets where through truck traffic is a concern, as appropriate.

4.10 Ongoing Maintenance

Ongoing maintenance has a significant cost given the typical conditions that Canadian roadways are exposed to. The freeze-thaw cycles over the winter help create cracks and potholes in the road surface that require ongoing attention. Frequent comments heard through the engagement process related to potholes and other ongoing maintenance concerns, as reflected in the following need.

- **Need:** Improve existing roads, with a focus on road surface maintenance

In addition to surface maintenance (e.g. repairing potholes), ongoing road maintenance covers items such as snow removal for vehicle lanes, sidewalks, and cycling facilities, and other day-to-day maintenance activities.

Considerations

Minimum Maintenance Standards

The day-to-day maintenance of the City's transportation is an integral part of managing transportation in the City. It is a legislative requirement per Ontario Regulation 239/02 Minimum Maintenance Standards for Municipal Highways (O.Reg. 239/02) under the Municipal Act for the City to perform specific maintenance functions to a pre-defined standard. The latest update to O. Reg 239/02 (2018) includes updates to sidewalk maintenance standards and bike lane maintenance, in addition to the road surface.

The City of Stratford's current maintenance program exceeds the minimum maintenance standards set out by the Province. To further improve maintenance would be a costly endeavor – one that is not recommended by the TMP. The City

should continue with its maintenance program, ensuring to meet the Provincial requirements.

However, it is important when planning for the new infrastructure that accompanies growth, that ongoing maintenance be considered. Full-cost or life-cycle accounting should be undertaken when identifying infrastructure investments. Considering the longer-term costs of ongoing maintenance will ensure that infrastructure is not overbuilt, and maintenance costs can be lowered moving forward.

Recommended Actions

48. Continue to comply with O. Reg. 239/02: Minimum Maintenance Standards for Municipal Highways on all streets in Stratford.
49. Embed life-cycle cost analysis in the City's infrastructure planning to affirm the longer-term sustainability of infrastructure investments and their ongoing maintenance, rehabilitation, and ultimate replacement.

5 Summary and Next Steps

This report documents the development of the recommendations for the City of Stratford Transportation Master Plan from infrastructure projects to policy recommendations to supporting strategies and to a preliminary action plan to help guide City staff.

Infrastructure recommendations include:

- Road diets on Erie Street and Lakeside Drive to implement a complete street with active transportation facilities;
- Intersection improvements along O'Loane Avenue, McCarthy Road, and Lorne Avenue;
- Continued implementation of the Downtown Traffic Study recommendations in Downtown Stratford;
- A Priority Cycling Network to be constructed within the first 10 years, including 5 key quick-start priority projects (Albert Street, Erie Street, Hibernia Avenue, Lakeside Drive, and Oakdale Avenue);
- An Ultimate Cycling Network intended to be built out over the next 30+ years; and
- Sixteen new pedestrian crossings.

Strategy and policy recommendations have been developed to further advance the City towards the TMP's vision and objectives and help maximize the return on investment in transportation infrastructure.

Finally, a preliminary action plan was developed identifying 49 distinct actions to be undertaken to implement the infrastructure and strategy recommendations of the TMP.

5.1 Next Steps

The final phase of the TMP study involves finalizing the strategy, policy, and infrastructure recommendations presented in this document, and preparing the final TMP document.

The final TMP document will be an overview of the recommendations and action plan, and will provide additional implementation details, including estimated costing and timing.

The final TMP document, together with the interim reports (Phase 1: Needs and Opportunities, Phase 2: Alternative Solutions, and Engagement Summary), will be presented to Council and subsequently issued to the public for a formal review period of 30 days. This provides the last chance for public and stakeholders to comment on the TMP study. However, individual projects and policy recommendations arising from the TMP may be subject to further consultation as they proceed through the planning and Environmental Assessment process, where appropriate, as well as additional support from City Council.