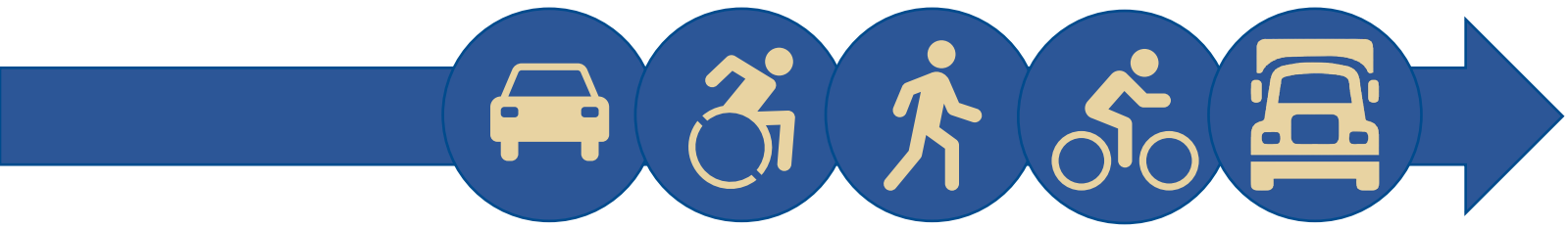
MUNICIPALITY OF
North Perth

North Perth Transportation Master Plan



May 2024

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Executive Summary

Introduction

The **Municipality of North Perth Transportation Master Plan (TMP)** is a strategic planning document that defines the actions to strengthen and support the different elements of the transportation system serving North Perth, particularly the Municipality's road and active transportation networks. The plan recommends facility improvements and supporting policies and programs to meet transportation needs to the year 2041 (and beyond). The objectives of the plan are to:

- Establish a clear vision for the transportation network that will accommodate planned growth and development in the Municipality;
- Articulate a local "Made in North Perth" approach to transportation that aligns with the unique features of the community and respects the Municipality's vision; and
- Provide a policy framework and other guidance to support sustainable transportation practices and liveable communities.

The Municipality prepared the TMP following Master Plan Approach #1 of the Municipal Class Environmental Assessment, with preparation of this plan at the conclusion of Phase 1 (opportunity statement) and Phase 2 (alternatives assessment) of its planning and design process. The study included a comprehensive public consultation and stakeholder engagement program designed to obtain feedback from North Perth residents, Indigenous Communities, key stakeholders, and relevant technical agencies. The program featured two rounds of outreach, with opportunities to participate in consultation events promoted through the project website, newspaper advertisements, and social media. The **Engagement Summary Report** contained in **Appendix A** details the activities, findings, and feedback of the engagement program.

Planning Context

The Municipality of North Perth is a vibrant and friendly community, located in the northern reaches of Perth County, with a population of approximately 15,540 people (2021 Census of Population). Land use in North Perth is characterized by vast rural landscapes and farms, natural environmental features, and several small settlements including the serviced urban areas of Listowel and Atwood. Listowel, the largest urban centre in North Perth, is the commercial core of the Municipality and a regional service hub for nearby communities in Perth County, Wellington County, and Huron County.

The population of North Perth is projected to increase by approximately 12,160 people by 2041 to 27,700, with much of this growth directed to Listowel. Reaching this forecast will require an integrated transportation system capable of safely, efficiently, and sustainably moving people and goods to, from, and within the Municipality.

The existing transportation network includes provincial, county, and local roads, sidewalks and trails, and local transit provided by PCConnect. Although some elements of an active transportation network are present, they are confined to the three largest settlement areas of Listowel, Atwood, and Monkton, and do not provide a cohesive network across the Municipality. Expansion and increased connectivity of the trail, sidewalk, and bicycle networks would encourage and support higher levels of active transportation use.

The land use and transportation planning policy context defined by the Municipality of North Perth, Perth County, Province of Ontario, and other public agencies provided the foundation for the TMP. The **Policy Context** contained in **Appendix B** details the variety of municipal, county, and provincial plans and policies that have informed the TMP, highlighting relevant directives, regulations, and initiatives contained in each document.

Opportunities and Challenges

Existing conditions and prevailing trends will shape and influence transportation needs in the coming years. It is important to recognize and plan for these opportunities and challenges and develop a transportation system for North Perth that serves all users.

The key transportation opportunities for the Municipality include:

- A connected road network in North Perth;
- The existing trail and sidewalk network in Listowel; and
- Previous investments in infrastructure.

The primary transportation challenges in the Municipality include:

- Serving forecast growth;
- Fostering greater use of active transportation modes;
- Limited funding; and
- Traffic congestion and safety concerns on Main Street through downtown Listowel.

Vision and Goals

The Municipality's **transportation vision statement** reads as follows:

A progressive transportation system that provides safe and efficient movement of people and goods and supports diverse transportation options, connecting the community and promoting healthy living to 2041 and beyond.

The transportation vision was shaped through input from key stakeholders, Municipality staff, and the *2023-2026 North Perth Strategic Plan*.

The transportation vision statement is supported by four goals:

- **Safe Mobility** – A transportation system that moves people and goods safely and efficiently and promotes cycling and walking.
- **Sense of Place** – A transportation system that contributes to overall neighbourhood livability and quality of life.
- **Vibrant Local Economy** – A transportation system that supports local business.
- **Personal Health** – A transportation system that connects people with the services they need and recreational opportunities.

Alternative Planning Strategies

The first step in the master planning process involves selecting a preferred solution at the municipal-wide level to address the identified problems and opportunities from a set of reasonable and feasible alternatives. The alternative planning strategies assessed included:

- **Do Nothing** – This alternative would maintain the status quo to the 2041 horizon year. Regular rehabilitation and maintenance works would continue but no new transportation improvement projects would be constructed (for any mode).
- **Alternative 1: Road Improvements Only** – This planning strategy would focus investment on road improvements solely to address the identified opportunities and challenges. No active transportation or other non-road enhancement initiatives would proceed; or
- **Alternative 2: Road Improvements Plus** – This planning strategy would invest in both road improvements and active transportation/other non-road

enhancement initiatives, helping to promote the use of travel modes other than the single-occupant automobile to meet future transportation needs.

A Multiple Account Evaluation was completed to compare Alternatives 1 and 2 to the Do Nothing condition and select the recommended planning strategy. The evaluation criteria used in the assessment included factors related to transportation, natural, social and policy environments, and economic implications.

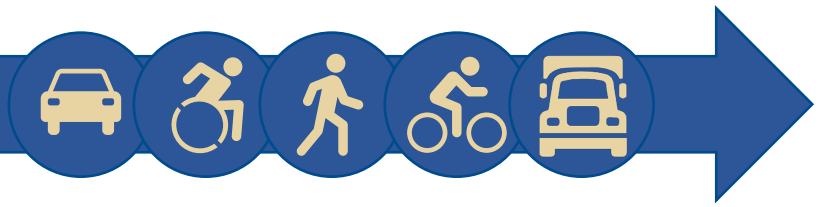
The analysis of the alternatives based on the Multiple Account Evaluation framework led to the selection of **Alternative 2: Road Improvements Plus** as the recommended planning strategy at the municipal-wide level. The combination of road, active transportation, and other supporting measures as part of the framework for Alternative 2 aids in reducing congestion and promotes travel options. The alternative captures the rural and urban characteristics of North Perth and is expected to have the most promising effects on the transportation system.

Roads Strategy

Residents and business in North Perth depend on a safe, efficient, and reliable road network to facilitate the movement of people, goods, and services by a range of transportation modes, including walking, cycling, and driving. Roads serve two primary functions, namely providing travel mobility and access to property. They also play an important role in placemaking within a community and are critical to local economic vitality and competitiveness.

The recommended **roads strategy** details the proposed policies, programs, and infrastructure investments for the road system to address current and future needs. The plan focuses on roads under the Municipality's jurisdiction and complements the **active transportation and shared mobility strategy** to form part of the overall multi-modal transportation plan for North Perth.

Specific elements of the roads strategy include guidance on: Complete Streets, road network hierarchy and jurisdiction (including the role and function of Highway 23 in the municipal context), future road network requirements and improvements, parking, gravel roads, off-road vehicles, and automated, connected, and electric vehicles. **Appendix C** details the technical analyses completed for the **Road Network Assessment** that informed the hierarchy/jurisdiction and requirements/improvements elements. A separate, more detailed investigation specific to downtown Listowel was also completed to address longstanding concerns about truck traffic on Main Street. **Appendix D** describes the recommended approach based on the **Listowel Truck Route Assessment**.



The TMP also includes a **Traffic Management Protocol** in **Appendix E**, which sets out the Municipality's process and procedures for responding to traffic-related queries and concerns received from citizens. Policy guidance is provided specific to pedestrian crossings, all-way stop control, School Zones, Community Safety Zones, speed limits, and traffic calming.

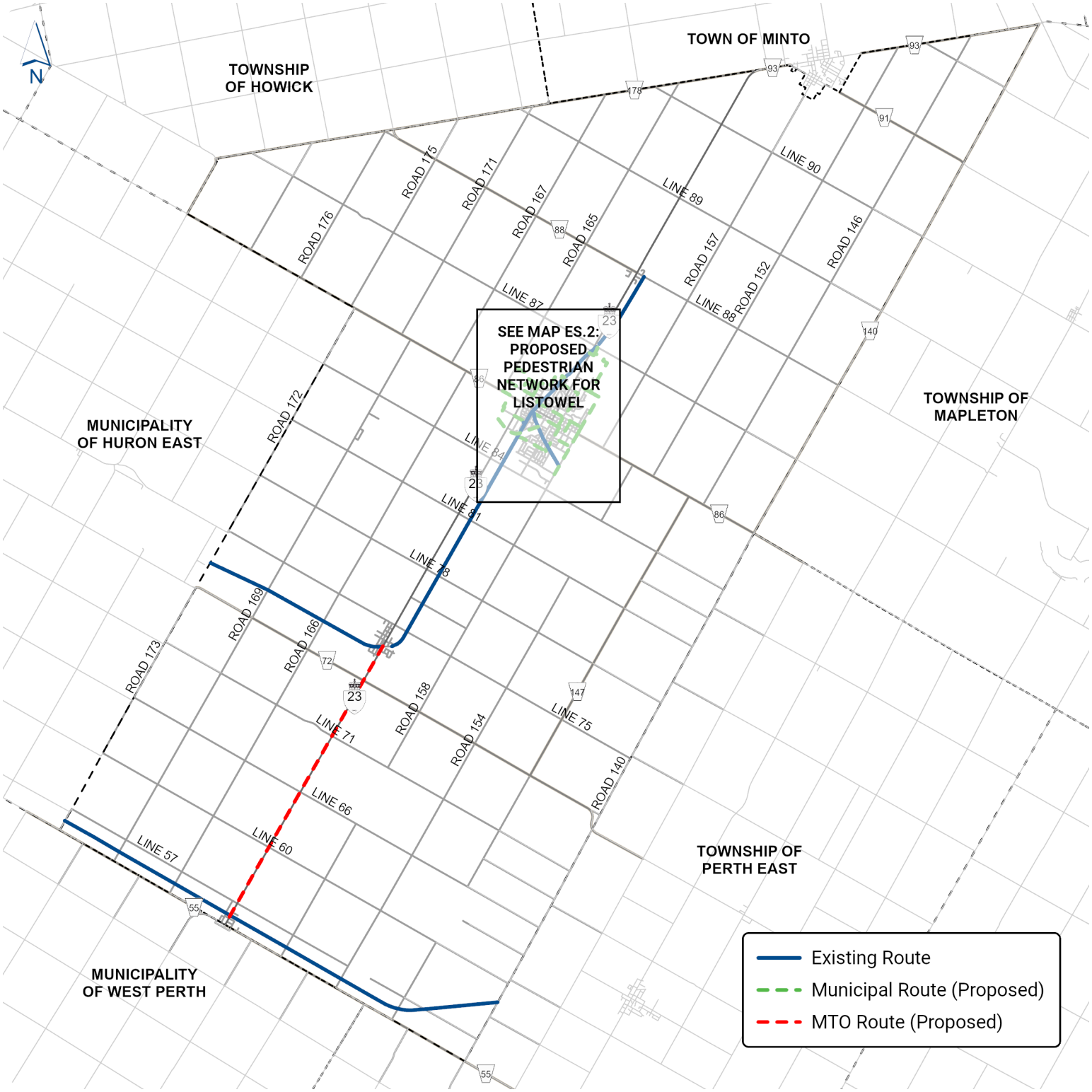
Active Transportation and Shared Mobility Strategy

Active transportation and shared mobility can help reduce automobile dependency, increase physical activity levels, reduce infrastructure demands, improve public health, and create more livable and vibrant communities. Many Canadian jurisdictions have recognized the positive impact of facilitating options for active travel and developed strategies to guide future infrastructure investments and program delivery supportive of these objectives. By contrast, shared mobility is a more emerging field, with most municipalities just beginning to realize the benefits and implications for their communities. In the case of North Perth, offering a range of mobility options will help shape a more sustainable and progressive transportation future for the Municipality.

The recommended **active transportation and shared mobility strategy** details the pedestrian and cycling network development, provides guidelines for bicycle facility design, bicycle parking and end of trip amenities, and outlines community outreach programs to encourage walking and cycling. Shared mobility opportunities are also presented in the strategy.

The network development process builds on existing active transportation corridors and facilities in the municipality and applies recognized guidelines for active transportation implementation. Ground-truthing and knowledge gathered from Municipality staff, local stakeholders, and the public helped to refine the network and shape key outcomes.

Map ES.1 and **Map ES.2** illustrate the proposed pedestrian networks for the rural area and the Listowel Urban Area, respectively, which consist almost exclusively of sidewalk and multi-use trails. **Map ES.3** and **Map ES.4** depict the proposed cycling networks for the rural area and the Listowel Urban Area, respectively, which include multi-use trails and on-road facilities. Building on the established grid of roads in Listowel and existing active transportation facilities, and leveraging planned initiatives by other stakeholders, the future networks provide a permeable and connected system of routes facilitating active travel throughout the Municipality. Opportunities to travel beyond the Municipality's boundaries are also enabled by the network plans.



MAP ES.1: PROPOSED PEDESTRIAN NETWORK

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 3 4 5 6 7 8 9 10 11

km

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MAP ES.2: PROPOSED PEDESTRIAN NETWORK FOR LISTOWEL

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 km

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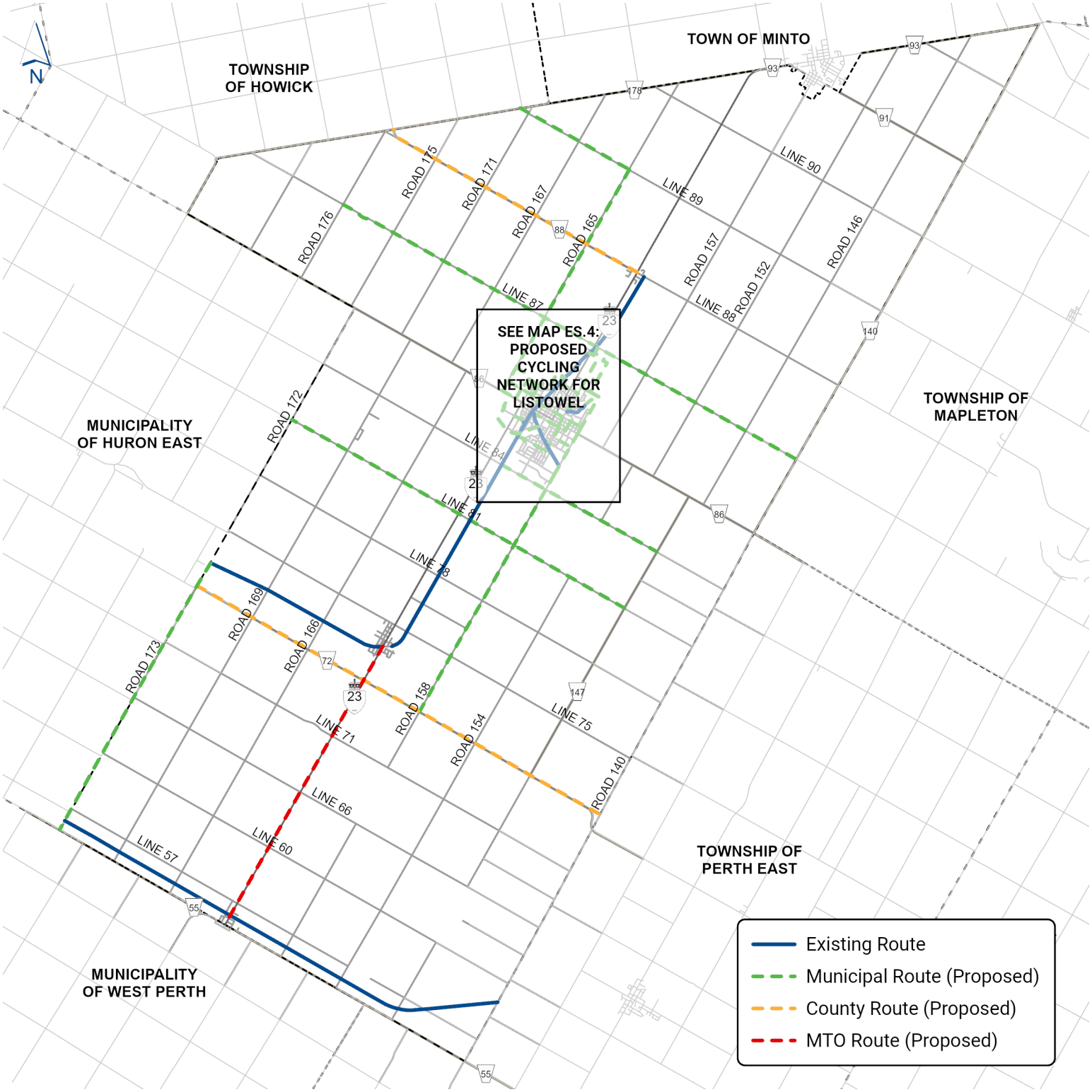

MAP ES.3: PROPOSED CYCLING NETWORK

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 3 4 5 6 7 8 9 10 11

km

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MAP ES.4: PROPOSED CYCLING NETWORK FOR LISTOWEL

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 km

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Implementation

Successful implementation of the TMP will depend on the cooperation and active participation of many stakeholders, including Perth County, the Province of Ontario, other public agencies, the local business and development community, and North Perth citizens. The TMP provides a framework for collaboration between parties and will be relied upon to guide the Municipality's future transportation decisions and actions.

The TMP sets out the process and tools to implement the **roads strategy** and **active transportation and shared mobility strategy**. Proposed infrastructure and program improvements are incorporated into the recommended action plan, which phases the capital projects based on anticipated timing and other prioritization criteria. High-level indicative cost estimates are provided where appropriate. The TMP also includes advice on potential amendments to the Official Plan and guidance on possible funding sources and network maintenance.

Table ES.1 summarizes the recommended phasing and indicative costs for the proposed infrastructure improvements, facilities, and programs. The estimated cost for the proposed improvement program totals approximately $23,678,400 (in 2023 dollars). This program includes the initial phases of the proposed truck route around Listowel, the recommended active transportation facilities, and the transportation policies and studies identified in the TMP. The roads component of the program solely comprises works needed to implement the proposed truck route as the network assessment completed for the **roads strategy** did not identify any other necessary improvements to the 2041 planning horizon.

Table ES.1: Recommended Phasing and Indicative Costs for Proposed Improvement Program

Component	Phasing and Indicative Costs		
	Short (0-5 Years)	Long (+5 Years)	Total
Road Network	$10,495,000	$6,050,000	$16,545,000
Pedestrian Network	$4,487,800	$752,800	$5,240,600
Cycling Network	$359,400	$1,173,400	$1,532,800
Policies and Studies	$230,000	$130,000	$360,000
GRAND TOTAL	**$15,572,200**	**$8,106,200**	**$23,678,400**

The TMP recommends developing an ongoing monitoring program and completing a review of the plan every five years to assess the need for a formal update.

Summary of Recommendations

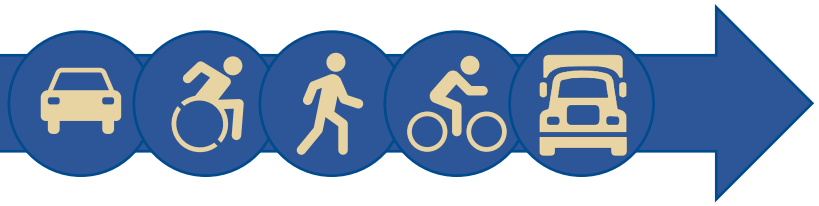
The following table summarizes the 49 recommendations contained in the TMP with recommended phasing/implementation timing noted. The red dots (●) denote initial priorities and/or more immediate actions suggested for the Municipality to pursue.

Recommendation		Recommended Timing		
		Short-Term (0 to 5 years)	Long-Term (5+ years)	On-going
CHAPTER 4 – Roads Strategy				
4.1	Update the Municipality's Design Criteria and Standard Detail Drawings to incorporate Complete Streets principles.	●		
4.2	Apply the criteria specified in **Table 4.1** in the planning, design, operation, and maintenance of rural and urban roads in North Perth.			●
4.3	Modify the classifications of the roads listed in **Table 4.2** and incorporate the recommended changes into the Official Plan.	●		
4.4	Explore the merit of potential road transfers with Perth County.	●		
4.5	Request the Ministry of Transportation to continue monitoring the need for operational and safety improvements on Highway 23 and proceed expeditiously with capital projects to address identified concerns, including at Line 84 and Line 87.	●		
4.6	Develop and implement access management guidelines for municipal roads, with specific focus on the Connecting Link portion of Highway 23, in conjunction with introducing Transportation Impact Study Guidelines (see Recommendation 6.2).	●		
4.7	Continue monitoring traffic conditions at the Wallace Avenue and Main Street, Wallace Avenue and Elizabeth Street, Wallace Avenue and Elma Street, and Wallace Avenue and McDonald Street intersections and the need for transportation network improvements in the future.			●

Recommendation		Recommended Timing		
		Short-Term (0 to 5 years)	Long-Term (5+ years)	On-going
4.8	Consider the need to update the traffic forecasting once the New Perth County Official Plan is approved.	●		
4.9	Designate an east-west truck route around downtown Listowel via Mitchell Road S/Highway 23 (Perth Line 86 to Line 84) (as an interim solution pending further consideration of other routes (see Recommendation 4.10)), Line 84 (Highway 23 to Perth Road 147), and Perth Road 147 (Line 84 to Perth Line 86).	●		
4.10	Investigate alternatives to the Mitchell Road S/Highway 23 (Perth Line 86 to Line 84) road section for the east-west truck route after monitoring truck travel patterns.	●		
4.11	Designate a north-south truck route around downtown Listowel via Perth Line 86 (Mitchell Road S to Road 165), Road 165 (Perth Line 86 to Line 87), and Line 87 (Road 165 to Mitchell Road S/Highway 23) after implementing the east-west route.		●	
4.12	Monitor truck travel patterns between north and east Listowel (i.e., southbound Highway 23 to eastbound Perth Line 86 and westbound Perth Line 86 to northbound Highway 23) to determine the need for a less circuitous route around downtown Listowel for heavy vehicles travelling in this orientation.			●
4.13	Undertake the complementary actions described in the **Listowel Truck Route Assessment** in **Appendix D**.	●		
4.14	Consult and collaborate with the Ontario Provincial Police and Ministry of Transportation on enforcement strategies.	●		
4.15	Adopt and apply the **Traffic Management Protocol** in **Appendix E**.	●		

Recommendation		Recommended Timing		
		Short-Term (0 to 5 years)	Long-Term (5+ years)	On-going
4.16	Establish a uniform 40 km/h speed limit on all residential Local Roads and Collector Roads within the settlement areas designated on Schedule A of the Perth County Official Plan and further reduce the posted speed limit to 30 km/h on road sections in these areas adjacent to a designated School Zone.	●		
4.17	Develop a Speed Management Program focusing primarily on Local Roads and Collector Roads in residential communities and assess the effectiveness of the program in achieving compliance with lower area-wide and School Zone limits.	●		
4.18	Develop and post public education and communication material pertaining to traffic control devices, warrants, and frequently asked questions on the Municipality's website.	●		
4.19	Adopt and apply the guidance in **Subsection 4.8.1** in responding to requests for on-street parking and stopping regulation changes.	●		
4.20	Review and update the on-street parking and stopping regulations in By-law No. 47-PW-2000.	●		
4.21	Review and update the parking standards in Zoning By-law No. 6-ZB-1999.		●	
4.22	Update the Listowel Downtown Core Area Parking Study.	●		
4.23	Develop a Gravel Roads Conversion Policy.	●		
4.24	Develop an action plan identifying the tasks required to prepare the Municipality for the introduction of automated, connected, and electric vehicles, which include changes to by-laws, policies, and guidelines pertaining to testing, infrastructure design, parking, curb management, traffic control, vehicles, and other items.		●	
4.25	Pursuant to the action plan, permit the testing and deployment of automated and connected vehicles on Municipal roads.		●	

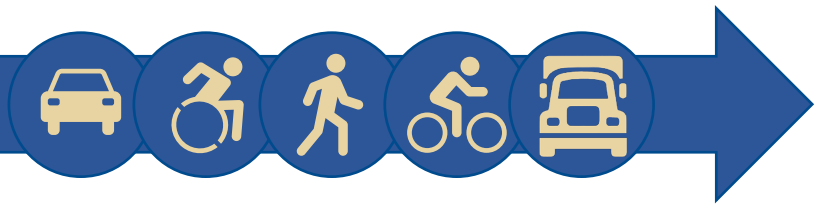
Recommendation		Recommended Timing		
		Short-Term (0 to 5 years)	Long-Term (5+ years)	On-going
4.26	As part of the action plan, expand the availability of electric vehicle charging stations, beginning with installations at the Municipal Office, and at the Listowel and Atwood North Perth Public Libraries.	●		
4.27	As part of the action plan, develop an automated, connected, and electric vehicle public education program.		●	
CHAPTER 5 – Active Transportation and Shared Mobility Strategy				
5.1	Adopt the proposed pedestrian networks illustrated in **Map 5.1** and **Map 5.2.**	●		
5.2	Adopt the proposed cycling network illustrated in **Map 5.3** and **Map 5.4**.	●		
5.3	Develop and implement guidelines for the provision and design of on-site bicycle parking, with implementation primarily through the development approval process.	●		
5.4	Expand and inventory the supply of publicly available bicycle parking in North Perth.	●		
5.5	Develop and implement guidelines for the provision of on-site trip end amenities, with implementation primarily through the development approval process.	●		
5.6	Expand and inventory the supply of publicly available trip end amenities, particularly bicycle repair stations, available in Listowel.	●		
5.7	Investigate areas along the proposed cycling routes for public parking lots.	●		
5.8	Develop and implement a robust Active Transportation Outreach Strategy considering the elements noted in **Section 5.4**.	●		



Recommendation		Recommended Timing		
		Short-Term (0 to 5 years)	Long-Term (5+ years)	On-going
5.9	Upon further development of the proposed cycling network and implementation of the Active Transportation Outreach Strategy, actively pursue designation from Share the Road as a Bicycle Friendly Community.		●	
5.10	Develop a shared mobility strategy in collaboration with local stakeholders and potential partners.		●	
5.11	Consider allowing off-road vehicles to operate on multi-use trails outside and/or select trails within the Listowel Urban Area.	●		
CHAPTER 6 – Implementation				
6.1	Amend the Listowel Ward (or other appropriate) Official Plan to incorporate the proposed policy and schedule changes listed in **Table 6.1**.	●		
6.2	Prepare Transportation Impact Study Guidelines in conjunction with introducing access management guidelines (see Recommendation 4.6).	●		
6.3	Adopt the recommended phasing plan specified in **Table 6.2** to guide the prioritization of road network implementation and budget preparation.	●		
6.4	Adopt the recommended phasing plan specified in **Table 6.5** to guide the prioritization of pedestrian facility implementation and budget preparation.	●		
6.5	Adopt the recommended phasing plans specified in **Table 6.6** and **Table 6.7** to guide the prioritization of cycling facility implementation and budget preparation.	●		
6.6	Reassess the recommended phasing and funding of the proposed pedestrian and cycling facility projects annually, including exploring potential funding sources and other opportunities to implement the networks.			●

Recommendation		Recommended Timing		
		Short-Term (0 to 5 years)	Long-Term (5+ years)	On-going
6.7	Continue to engage in a regular, ongoing maintenance program for the road and active transportation network consistent with the Minimum Maintenance Standards requirements unless specifically defined otherwise.			●
6.8	Provide additional ongoing funding to support growing maintenance activities resulting from expansion of the active transportation network.			●
6.9	Develop and implement an ongoing transportation monitoring program and set performance measures and targets to track progress.	●		
6.10	Prepare a periodic (at least annually) report to Municipal Council on the State of the Transportation System.			●
6.11	Review the Transportation Master Plan every five years, ideally in conjunction with updates to the Official Plan and Development Charges Background Study.			●

Contents



Appendices

Maps

Figures

Tables

1 Introduction

1.1 Context

Located in the northern reaches of Perth County, the **Municipality of North Perth** is a vibrant and friendly community, proud of its small-town feel. Land use in North Perth is characterized by vast rural landscapes and farms, natural environmental features, and several small settlements including the serviced urban areas of Listowel and Atwood. The community offers the best of both rural and urban life to approximately 15,500 residents[1] and features over 300 businesses, which provide local employment opportunities and a healthy industrial tax base.

Figure 1.1 illustrates the location of North Perth and its context in Perth County. With planned growth, the Municipality's population is projected to expand to approximately 17,500 by 2041 – an increase of more than 12% over the next 20 years[2]. Most of this growth is expected to occur in and around Listowel, the major urban centre in North Perth and a regional commercial and service hub for nearby communities in Perth, Wellington, and Huron Counties.

The community benefits from a multi-modal transportation network comprising roads, sidewalks, bicycle paths, and trails, including a portion of the Guelph to Goderich Rail Trail (G2G) that runs along a former Canadian Pacific Railway (CPR) rail line for over 127 kilometres. Key links in the road network include Provincial Highway 23, which traverses the Municipality and is an important goods movement corridor, and Line 86, which serves as Listowel's Main Street and provides a direct connection between Kitchener-Waterloo and Lake Huron as Perth Line 86.

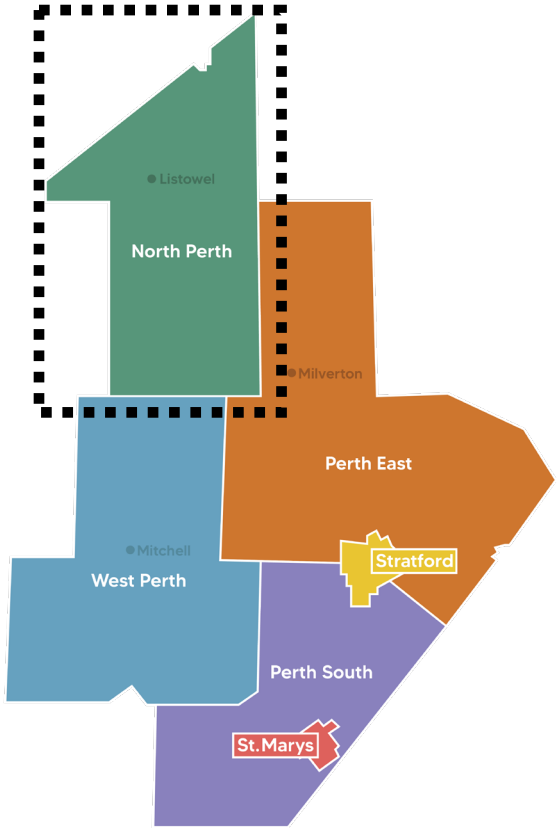
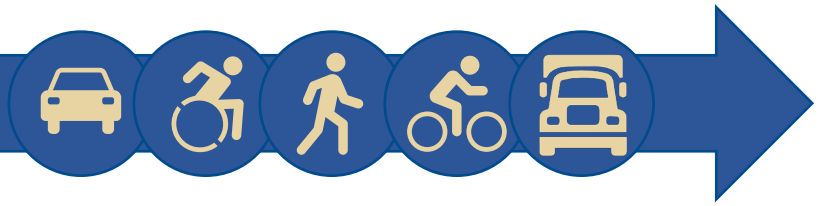


Figure 1.1: The Municipality of North Perth within Perth County

[1] 2021 Statistics Canada Census of Population
[2] 2019 Municipality of North Perth Development Charges Background Study



Within this network, the Municipality is responsible for the ongoing operation and maintenance of local roads and active transportation facilities in North Perth. It is the intent of the Municipality to maintain a safe and efficient transportation system for the movement of people and goods.

1.2 Purpose

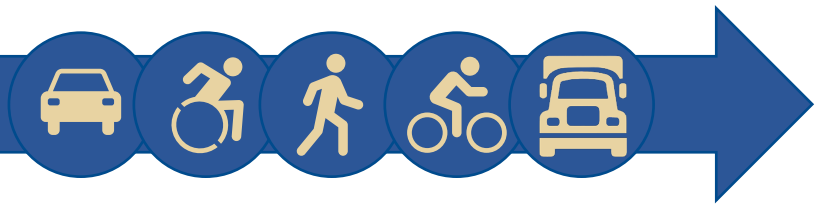
With North Perth poised for continued growth and prosperity, the Municipality requires a strategy to meet future transportation needs. The Listowel Ward and Perth County Official Plans set out broad transportation system objectives but do not articulate a comprehensive mobility plan to serve planned growth. The plan must also address more immediate transportation concerns raised by local constituents, which will only be exacerbated by further development in the community.

Building on these directions, the Municipality has developed this **Transportation Master Plan (TMP)** to define actions to strengthen and support the different elements of the transportation system serving North Perth, particularly the Municipality's road and active transportation networks. The plan provides a forward-looking strategy to guide the planning, coordination, and implementation of an integrated, sustainable transportation system capable of satisfying mobility needs for people and goods. This includes immediate and longer-term actions to improve the attractiveness and safety of walking and cycling in North Perth, with a focus on the Listowel area. Maintaining the high quality of life residents currently enjoy, safeguarding the environment, preserving the historic character of the community, and facilitating continued economic growth and prosperity are priorities of the plan.

1.3 Scope and Objectives

The TMP recommends infrastructure improvements and supporting policies and programs to meet transportation needs in the Municipality of North Perth to the year 2041 (and beyond). The objectives of the plan are to:

- Establish a clear vision for the transportation network that will accommodate planned growth and development in the Municipality;
- Articulate a local "Made in North Perth" approach to transportation that aligns with the unique features of the community and respects the Municipality's vision; and
- Provide a policy framework and other guidance to support sustainable transportation practices and liveable communities.



By providing direction and next steps for planning, building, and maintaining the Municipality's transportation network, the TMP serves as a "blueprint" for action by Municipal Council, with implementation aided through several tools, including:

- **Development Charge By-laws and Annual Budgets** – These documents will identify the necessary financial resources to implement the programs and infrastructure improvements recommended in the TMP;
- **Land Use Planning Process** – Elements of the TMP will be incorporated into the Official Plan to enable implementation through policy direction and the review and approval of development applications;
- **Environmental Assessments** – The Municipality will need to complete the Municipal Class Environmental Assessment planning and design process initiated through the TMP to move forward with the implementation of certain infrastructure improvements identified in the plan, as noted below; and
- **Guideline Documents** – Guidelines, such as those setting design specifications and recommended operating and maintenance procedures, will provide further implementation detail and complement the TMP.

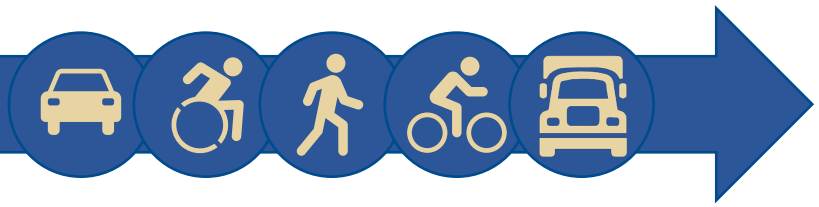
It is important to recognize that certain assumptions underlying the TMP may prove imprecise over time due to changing conditions and will need to be periodically updated. Ideally, this assessment would be linked to reviews of the Official Plan.

Successful implementation of the TMP will ultimately depend on the cooperation and active participation of many entities, including Perth County, the provincial government, First Nations communities, other public agencies, the business and development community, and local citizens. The plan provides a framework for co-operation and will be relied upon to guide the Municipality's future transportation decisions and actions.

1.4 Municipal Class Environmental Assessment Process

The work undertaken in preparing the TMP addresses Phases 1 and 2 of the Municipal Class Environmental Assessment (MCEA)[3], an approved process under the *Environmental Assessment Act* for the planning of municipal infrastructure projects in Ontario. The study followed master planning **Approach #1** of the MCEA, with preparation of this document at the conclusion of:

[3] Municipal Engineers Association. *Municipal Class Environmental Assessment (Class EA).* October 2000, last amended in 2023.



- Identifying the problem or opportunity (Phase 1); and
- Identifying alternative solutions to address the problem or opportunity (taking into consideration the existing environment) and establishing the preferred solution (taking into consideration public and review agency input) (Phase 2).

Consistent with this approach, the TMP was completed at a broad level of assessment, allowing the plan to serve as the basis for more detailed future investigations where required. The only recommendations of the plan that may necessitate further MCEA study pertain to the proposed truck route around Listowel (see **Section 4.6** and **Section 6.3** for further information).

1.5 Report Organization

The remainder of the TMP is organized into the following five chapters:

- **Chapter 2 – Community and Stakeholder Engagement** summarizes the engagement activities carried out in developing the TMP, with details of the program content, communication methods, and feedback received;
- **Chapter 3 – Plan Foundations** describes the policy context for the TMP, the natural, cultural, and socio-economic environments and transportation system in place at the time of preparing the plan, the outlook for the Municipality, the alternative planning solutions considered to address identified problems and opportunities, and the transportation vision and goals for North Perth;
- **Chapter 4 – Roads Strategy** sets out a Complete Streets policy, reviews the roadway network hierarchy and classifications (including the role and function of Highway 23), details the road network assessment to meet future needs (particularly the need for a by-pass or truck route around Listowel), and provides guidance on traffic management, parking, gravel roads, and automated, connected, and electric vehicles;
- **Chapter 5 – Active Transportation and Future Mobility Strategy** presents the proposed cycling and pedestrian networks and supporting policies, guidelines, and end-of-trip facilities, with a description of the process followed to develop this component of the plan. This chapter also outlines other available and emerging travel options in the Municipality, including shared mobility; and
- **Chapter 6 – Implementation** explains the process and tools for implementing the TMP, provides phasing, costing, and potential financing sources for the recommended improvement program, highlights operating and maintenance considerations, and proposes monitoring strategies and a process of continual review and updates to the plans.

The plan also includes a series of **six appendices** containing the:

- Details of the community and stakeholder engagement program (**Appendix A – Engagement Summary Report**);
- Policy framework informing and guiding the plan (**Appendix B – Policy Context**);
- Technical analysis completed to assess future road needs (**Appendix C –Road Network Assessment**);
- Assessment of truck route options to by-pass downtown Listowel (**Appendix D – Listowel Truck Route Assessment**);
- Procedures for responding to citizen concerns about traffic on streets in North Perth (**Appendix E – Traffic Management Protocol**); and
- Cost estimates for the proposed cycling and pedestrian facilities (**Appendix F – Costing of Proposed Active Transportation Improvements**).

2 Community and Stakeholder Engagement

2.1 Program Overview

Consultation is a core element of the MCEA process and a vital component of a master planning study. The **Engagement Program** for the project offered the public, First Nations, agencies, and participating stakeholders a variety of opportunities to learn about the TMP and provide input into the development of the long-range transportation strategy for North Perth. The program aimed to:

- **INFORM:** get the word out regarding the project, schedule, events, milestones, and availability of information;
- **EDUCATE**: provide a common level of understanding about the purpose, content, and role of the TMP and transportation needs in North Perth;
- **CONVERSE:** engage community stakeholders to discuss key transportation challenges and opportunities;
- **REFINE:** revise policies and plans to better reflect what was heard and capture new and additional thoughts, opportunities, and directions; and
- **SUPPORT:** build consensus within the community for the TMP recommendations, ultimately leading to support for the approval of the plan.

The Engagement Program featured a range of consultation, outreach, and communication initiatives to involve a broad spectrum of participants in the TMP Study, recognizing the unique challenges presented by the global COVID-19 pandemic ongoing for part of the project. Designed to satisfy MCEA requirements, the program focused on the following key messages:

- The Municipality is planning for population and employment growth in the community;
- The Municipality aims to offer a range of safe, efficient, and accessible mobility choices to users; and
- Involving the community and stakeholders in the study helps to ensure the final plan is pragmatic and meets needs now and into the future.

Appendix A provides the detailed **Engagement Summary Report**, which documents the consultation approach, outreach methods, engaged stakeholders, and feedback received, with supporting documentation. Overall, the program included formal notices to begin and end the study, three rounds of engagement (with one specific to the Listowel Truck Route Assessment) to gather feedback in developing the TMP, and an

opportunity for public input on the proposed plan before Municipal Council considered approval.

2.2 Notice of Study Commencement

The TMP Study formally launched on June 1, 2020, with the Notice of Study Commencement posted to **Your Say North Perth** and on the Municipality's website, published in The Listowel Banner, and sent to First Nations, agencies, and participating stakeholders per the MCEA. The Contact List generated for the distribution of notices was maintained throughout the study.

2.3 Engagement Round #1

2.3.1 Program Elements

The first round of engagement took place from June 2020 to August 2020. Round #1 engagement activities focused on gathering information and conducting conversations with participants to establish a foundation for the plan policies and strategies. Specific activities included:

Your Say North Perth (YSNP)

The Municipality established a project site on its online communication portal, Your Say North Perth (YSNP), to share background information and updates on the study. The project team updated the site as work progressed to keep the community informed of upcoming events and provide access to draft documents. Emails sent to the project email address tmpstudy@northperth.ca and Municipality staff were addressed and incorporated into the project record.

Social Media

As work progressed, the Municipality communicated information about the study through its social media feeds (Facebook and Twitter). During Round #1, the feeds informed recipients about study initiation activities, provided links to YSNP, and invited community input and feedback on the study.

Council Presentation

The project team kicked-off the study with an introductory presentation to Municipal Council on June 1, 2020, outlining the study goals and objectives, work plan, and engagement program.

Online Survey and Interactive Map

Between June 1, 2020 and August 16, 2020, the Municipality conducted a survey through YSNP to gather public opinion on transportation in North Perth. The survey asked respondents to cite current transportation conditions, concerns, needs, and expectations in the Municipality. Barriers and motivators to the use of active transportation facilities and services were also queried. In total, 162 individuals completed the 14-question survey.

The Municipality also invited location-specific feedback on the transportation system through an interactive, online mapping tool accessed via YSNP. Thirty-nine (39) unique respondents provided 99 comments, which were grouped into the three themes of driving, walking, and cycling.

Stakeholder Interviews

On October 1 and 6, 2020, the project team held individual meetings with key stakeholders to obtain their views on transportation in North Perth. Participants included resident and business associations, active transportation groups, Perth County staff, Municipality staff, and Council representatives.

2.3.2 Summary of Feedback Received

The following summarizes the feedback received during Round #1:

- A by-pass remains crucial to divert truck traffic not intending to visit downtown Listowel and relieve pressure on an already congested road network. The assessment of potential by-pass route(s) needs to consider a multitude of factors, including route attractiveness, connectivity to local truck destinations and industries, impact on existing rural roads, and impact to adjacent rural residential and agricultural properties.
- The entire length of Wallace Avenue presents challenges to movements across this principal road corridor. For the north segment concerns relate to traffic signals and vehicular movement, while for the south segment issues pertain to vehicle speeds and pedestrian crossings.
- Local trails attract visitors and residents, but the network needs further connections to “finish” the system, particularly new linkages in the rural areas to connect those residents to existing trails.
- Public parking lots at strategic trailhead locations are needed to provide access to the trail system for residents coming from a distance and for visitors from outside North Perth.

- The sidewalk network in Listowel needs to be expanded to provide convenient and safe access to key destinations, particularly schools and core area businesses. Expansion should be in a coordinated manner together with operational considerations for safe crossings and signalization.
- The incorporation of new cycling routes, complementing existing on-road facilities and the trail system, is needed to provide safe, continuous options for all ages and abilities.
- Public parking is key infrastructure in the Listowel core. While the supply of available spaces is generally adequate (although loss of existing parking is a concern of business owners) more effective wayfinding to parking areas is needed.
- Transportation planning for the broader system in North Perth needs to consider opportunities for alternate travel methods in the future, including public transit options and newer technologies like e-bikes.

2.4 Engagement Round #2

2.4.1 Program Elements

The second round of engagement took place in November 2021. Round #2 engagement activities focused on presenting the proposed plan directions and gathering feedback to ensure alignment with the community's vision for transportation. Specific activities included:

Your Say North Perth

The project team updated the study status on YSNP and posted interim draft reports, online survey links, and consultation notices to the communication portal. Feedback received through YSNP and emails sent to the Municipality were addressed and incorporated into the project record.

Social Media

The Municipality continued to communicate information about the study through its social media feeds (Facebook and Twitter). In Round #2, the feeds updated recipients on study progress updates, provided links to YSNP, shared notices for the virtual Public Information Centre (PIC – see below), and invited community input and feedback on the study.

Public Information Centre

The Municipality held a virtual PIC on November 10, 2021 to present the proposed plan directions and gather feedback on the work to date. Notice of the meeting was posted on the Municipality's website, published in The Listowel Banner, and sent to First Nations, agencies, and participating stakeholders on the Contact List.

The PIC featured a PowerPoint presentation summarizing the study goals and objectives, Round #1 engagement activities and feedback, preliminary recommendations, and next steps. The recommendations included:

- An active transportation strategy comprising a network of urban and rural trails and supporting policies and programs;
- Future road network needs;
- Traffic safety policies; and
- Truck route considerations.

Following the presentation, the project team responded to questions and offered comments.

2.4.2 Summary of Feedback Received

The feedback for Round #2 centred around the potential truck route(s) presented at the virtual PIC. Respondents suggested the Municipality should:

- Avoid directing truck traffic onto Tremaine Road S;
- Gain a better understanding of truck travel patterns in Listowel, such as their origins and destinations; and
- Consider and evaluate alternate routes to direct trucks around Listowel.

2.5 Engagement Round #3 – Listowel Truck Route Assessment

2.5.1 Program Elements

The third round of engagement took place in June and July 2022 and focused solely on the Listowel Truck Route Assessment. Round #3 presented potential truck routes and gathering feedback on the options.

Partially in response to comments raised at the virtual PIC during Engagement Round #2, the Municipality expanded the TMP Study scope to include a more comprehensive examination of potential truck routes around Listowel (initially described as the

"commercial (truck) bypass"). **Appendix D** provides the **Listowel Truck Route Assessment** findings (which are also summarized in **Section 4.6**), with the consultation carried out as part of the investigation documented in **Appendix A**. Specific activities included:

Public Information Centres

The Municipality held three in-person PICs at Kin Station – one on June 15, 2022 and two on July 12, 2022 –specific to the Listowel Truck Route Assessment. Approximately 40 people in total attended the three sessions. Notice of the meetings was posted on the Municipality's website and published in The Listowel Banner.

The PICs featured a series of display boards summarizing the work completed to date, proposed evaluation criteria, potential route options, and next steps. Members of the project team attended the meetings to explain the assessment process and respond to questions.

Comment Form/Participant Survey

At the PICs, the project team provided attendees a comment form to solicit written feedback on the material presented. The form also included a brief three-question survey to gauge participant opinions on the need for a truck by-pass, the route options presented, and the proposed evaluation criteria. After the meetings, the Municipality posted the PIC display panels and comment form on YSNP to allow individuals unable to attend in person to view the information and offer input through an online version of the comment form.

2.5.2 Summary of Feedback Received

The following summarizes the feedback received through the comment forms and survey specific to the truck route assessment:

- About 85% of respondents expressed strong support (i.e., scores of 8, 9 or 10) for a truck route. The remainder felt a route was not needed or offered only limited benefit.
- About 58% of respondents have some concern about a potential truck route. The concerns focused on the possible location of the route and its impacts on adjacent property owners. Specifically, participants noted:
  - Tremaine Avenue S would not be a suitable truck route because of nearby schools and residential areas; and
  - Trucks should not be completely banned from making local deliveries and routes should be convenient for trucks.

2.6 Notice of Master Plan and Review Period

The Municipality released the proposed TMP for comment prior to Municipal Council considering the plan for approval on May 6, 2024. The review period took place between December 2023 and February 2024, following a presentation of the proposed plan to Municipal Council. Comments received through this period were incorporated into the final version of the TMP. Specific activities included:

Council Presentation

The project team presented the proposed TMP to Municipal Council on December 11, 2023.

Your Say North Perth

The project team updated the study status on YSNP and posted the proposed TMP and consultation notices to the communication portal. Feedback received through YSNP and emails sent to the Municipality were addressed in preparing the final plan.

Social Media

The Municipality communicated the review period through its social media feeds (Facebook and Twitter). The feeds informed recipients of the report availability and invited community feedback.

Notice of Master Plan

Per the MCEA, the Municipality issued the final public notice for the TMP (Notice of Master Plan) on December 12, 2023, informing the document was available for public comment until February 12, 2024. The notice was posted on the Municipality's website, published in The Listowel Banner, and sent to First Nations, agencies, and participating stakeholders representatives on the Contract List.

Comment Submissions

The Municipality received three comment submissions from agencies and one from a resident during the review period.

Between December 26, 2023 and February 12, 2024, the Municipality invited feedback on the proposed TMP through an online comment form hosted on YSNP. In total, the site received 343 visits, with 54 individuals completing the form.

Truck and Transport Operator Survey

Between January 1, 2024 and February 12, 2024, the Municipality invited input from local truck and transport operators on the recommended heavy vehicle provisions in the proposed TMP through an online survey hosted on YSNP. The questionnaire sought stakeholder feedback on the proposed truck routes and their potential implications. In total, 56 individuals completed the survey.

3 Plan Foundations

3.1 Policy Context

The TMP builds on the land use and transportation planning policy context defined by the Province of Ontario, Perth County, and the Municipality of North Perth. **Figure 3.1** lists documents that informed the TMP. **Appendix B** details this **Policy Context**, summarizing the pertinent directives, regulations, and initiatives influencing the planning, design, construction, and operation of transportation facilities and services in the Municipality.

Province of Ontario	Perth County	Municipality of North Perth
• *Planning Act* • Provincial Policy Statement (PPS) • *Accessibility for Ontarians with Disabilities Act*, 2005 (AODA) • Southwestern Ontario Transportation Plan (draft) • #CycleON: Ontario's Cycling Strategy • Ontario Trails Strategy	• Perth County Official Plan (Current and New) • Perth County Strategic Plan • Perth County Cycle Tourism Strategy	• Listowel Ward Official Plan • North Perth Strategic Plan • Community Safety and Well-Being Plan • North Perth Development Charges Background Study • North Perth Master Growth Plan Update • North Perth Servicing Master Plan • North Perth Parks and Recreation Services Master Plan • North Perth Northeast Master Plan

Figure 3.1: Policy Framework

3.2 Existing Environment

3.2.1 Geographic Setting

Figure 1.1 (in **Chapter 1**) shows the geographic setting of the Municipality of North Perth, located at the northwestern edge of Perth County in southwestern Ontario. The Municipality is situated northwest of the cities of Kitchener and Waterloo, and directly north of the City of Stratford. Most residents of North Perth can access these regional centres with a drive of one hour or less.

3.2.2 Natural Environment

The quality of life of a community is typically influenced by the quality of its natural environment. The health of natural heritage features and areas directly reflects the social, environmental, and economic health and well being of the whole community. It is the responsibility of the Municipality in partnership with Perth County, the Province, and the conservation authorities to provide a high-quality natural environment for the community including a diverse and healthy natural heritage system.

Due to a strong agricultural resource base in North Perth, many of the natural resource features present before settlement in the 1800s have either been cleared or drained in the pursuit of agricultural land use activities. The resulting natural resource features include some wetland areas, wooded areas, and watercourses and valley lands to be protected and enhanced.

Through the "Natural Resources/Environment" designation, the Perth County and Listowel Ward Official Plans denote the natural resource features and areas in North Perth and include specific policies to permanently protect these features. **Figure 3.2** illustrates the land use plan for the Listowel Ward within North Perth, identifying the location of the "Natural Resources/Environment" lands. The County Official Plan contains a similar plan (Schedule 'A' – Land Use Plan) and policy framework.

3.2.3 Cultural Heritage

The *Environmental Assessment Act* defines the environment to include cultural conditions that influence the life of humans or a community. Cultural heritage resources are important components of those cultural conditions and include archaeological resources, built heritage resources and cultural heritage landscapes.

The Municipality values the conservation of cultural heritage resources. The Vision statement outlined in its 2020 Strategic Plan states that "[North Perth is] first and foremost striving to retain who we are and the feel of the community that we have".

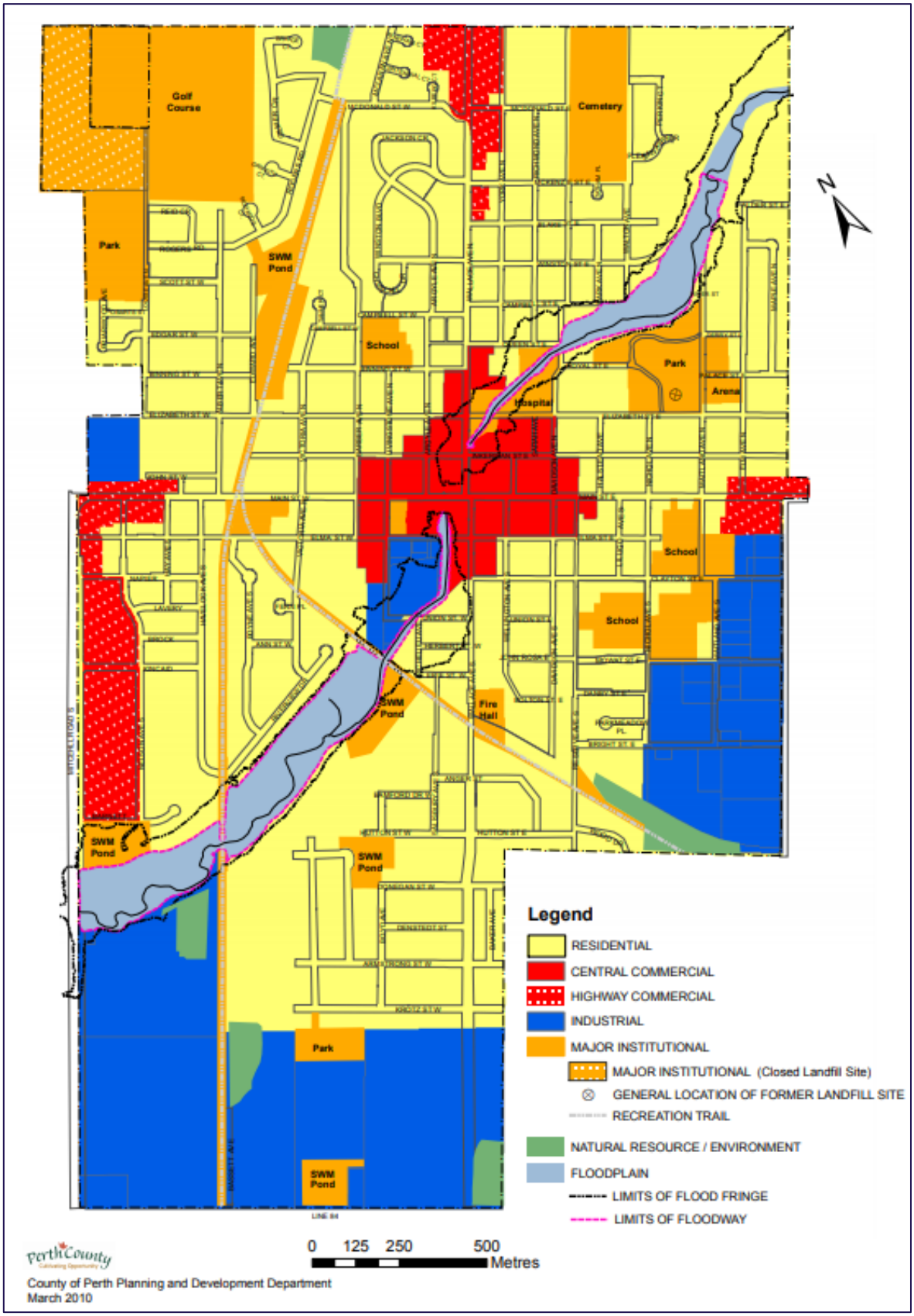


Figure 3.2: Listowel Ward Land Use Plan

(Source: Official Plan for the Listowel Ward Municipality of North Perth, March 2010, Schedule A)

The Provincial Policy Statement (PPS) encourages the conservation of cultural heritage resources by not permitting development or site alteration on lands containing archeological resources or areas with archeological potential unless significant conservation efforts have been made and impacts have been evaluated.

Similarly, the Perth County Official Plan emphasizes the importance of conserving cultural heritage resources and maintaining a County-wide inventory of cultural heritage resources. The plan also outlines several policy recommendations aimed at addressing the directives of the PPS, including updating the County Official Plan to conserve cultural heritage.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the Ontario Heritage Act.

The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11 the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.

3.2.4 Socioeconomic and Demographic Profile

The Municipality was formed in 1998 through the amalgamation of the former Town of Listowel, Township of Elma, and Township of Wallace. The current municipal structure maintains these communities as separate electoral wards.

North Perth is a predominately rural municipality featuring nine designated settlement areas – Atwood, Britton, Donegal, Gowanstown, Kurtzville, Listowel, Monkton (split with West Perth), Newry, and Trowbridge. Listowel, Monkton, and Atwood are the three largest in terms of population, with all except Monkton developed on municipal services.

Table 3.1 summarizes population trends in North Perth between 2011 and 2021 based on Statistics Canada Census of Population data. Approximately 15,540 people reside in North Perth, with about 9,540 (or 61%) of the residents living in the Listowel Urban Area. The Municipality is growing and experienced more growth over the last five-year period (2016 to 2021) than in the preceding five years (2011 to 2016). The Listowel community tends to experience a higher rate of growth than the remainder of the Municipality, as evidenced by the greater population change percentages.

Table 3.1: Historical Population Trends in North Perth

Census Year	Population		Change	
	North Perth	Listowel	North Perth	Listowel
2011	12,631	6,828	-	-
2016[4]	13,130	7,530	+3.9%	+10.3%
2021[5]	15,538	9,539	+18.3%	+26.7%

Figure 3.3 illustrates the socioeconomic and demographic profile of North Perth residents and households based on 2021 Census of Population data. Other noteworthy statistics include:

- The 2020 median and average after-tax incomes of North Perth households were $74,500 and $83,800, respectively. The average income was less than Perth County ($84,700) and Ontario ($95,300);
- Unlike Canadian trends, only 11% of North Perth residents were born outside Canada, 50% of whom arrived prior to 2000. Most immigrants are from Europe (42%), the Americas (31%), or Asia (25%);
- About 15% of North Perth residents identified a non-official language as their mother tongue, although 87% speak English at home;
- The average age (39.6 years) in North Perth is younger than overall in Canada (41.9 years) and Perth County (42.3 years); and
- The key industries in North Perth include agriculture, retail, and manufacturing.

4 Statistics Canada, *Census Profile*. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E.

5 Statistics Canada, *Census Profile*. 2021 Census of Population. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released November 30, 2022. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E.

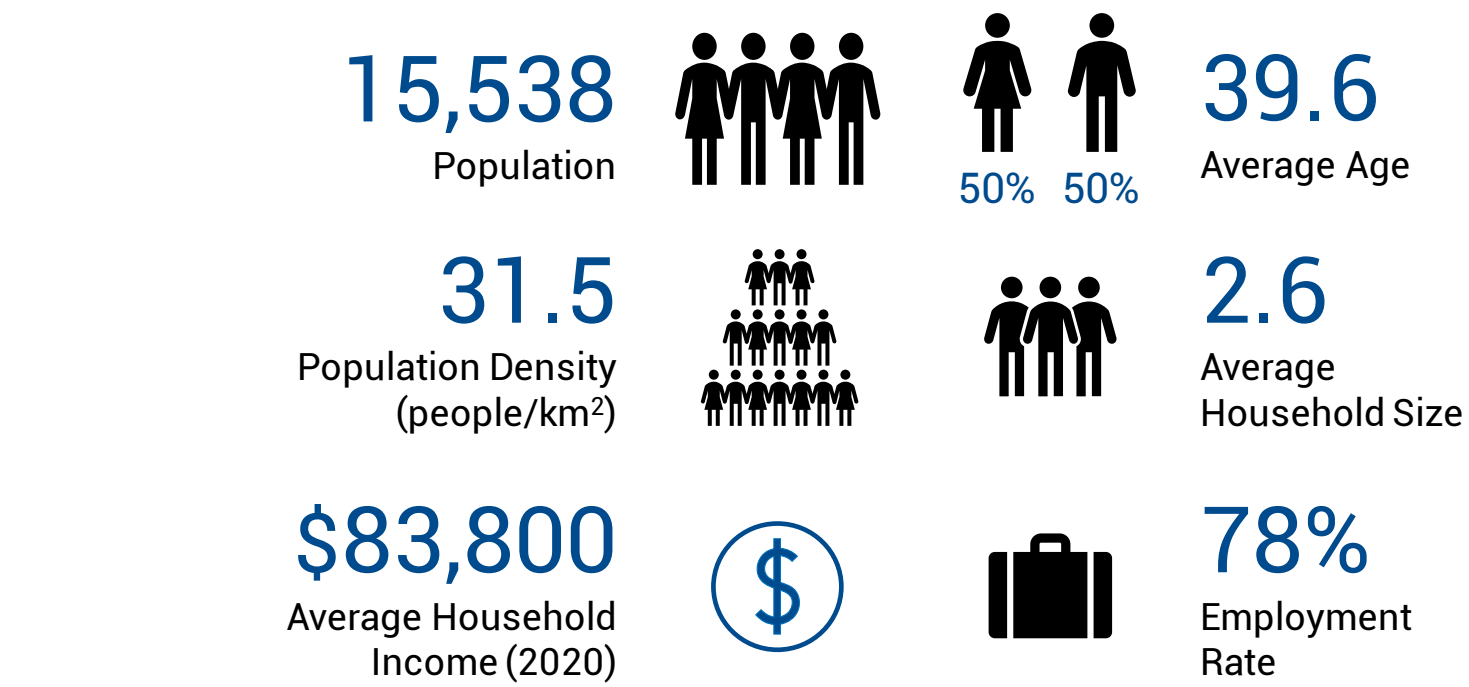


Figure 3.3: Socioeconomic and Demographic Profile for North Perth

3.3 Transportation System

3.3.1 Road Network

Map 3.1 shows the road network serving North Perth. The network comprises a grid of provincial highways, arterial and collector roads under Perth County jurisdiction, and arterial, collector, and local roads maintained by the Municipality.

Highway 23 is the only provincial highway in North Perth, running (nominally) north-south between Monkton and Palmerston. The Municipality has jurisdiction over Highway 23 through most of Listowel (Main Street between Mitchell Road S and Wallace Avenue N and Wallace Avenue N between Main Street and the north limit of Listowel). The Ministry of Transportation (MTO) designates this section as a Connecting Link highway under Section 21 of the *Public Transportation and Highway Improvement Act* [6].

[6] Connecting Links are municipal roads that connect two ends of a provincial highway through a community. Under the *Highway Traffic Act*, the Ministry of Transportation has the authority to approve all municipal by-laws and traffic control signals that restrict or interrupt the flow of through traffic on a connecting link highway.

MAP 3.1: EXISTING ROAD NETWORK

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 3 4 5 6 7 8 9 10 11

km

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Perth County roads in North Perth include Perth Line 55, Perth Line 72, Perth Line 86, Perth Line 88, Perth Line 91, Perth Line 93, Perth Road 140, Perth Road 147, and Perth Road 178. These primarily rural arterials carry significant volumes of through traffic and heavy vehicles at higher speeds and connect municipal roads to Highway 23.

The municipal road network in the rural areas outside Listowel generally follows a grid pattern. These roads are typically continuous and carry moderate traffic volumes with few trucks unless in an employment area. In the Listowel Urban Area, the network comprises a denser, grid pattern of mostly local roads (albeit with some discontinuities). In total, the Municipality's network currently comprises approximately 174 kilometres of paved roads, 272 kilometres of unpaved roads, 113 bridges, and 228 culverts.

Table 3.2 lists the arterial and collector roads under the Municipality's jurisdiction, all of which are in Listowel. These higher-order facilities connect the local roads in town to Mitchell Road S/Highway 23 and the Perth County road system.

Table 3.2: Arterial and Collector Roads Under Municipal Jurisdiction in Listowel Urban Area

Road	From	To	Listowel Ward Official Plan Designation
Line 84	Highway 23	Tremaine Avenue S	Arterial
Main Street W	Mitchell Road S	Wallace Avenue N	Arterial/Connecting Link
Main Street E	Wallace Avenue N	Tremaine Avenue S	Arterial
Mitchell Road S	Main Street W	Listowel Urban Area Boundary	Arterial/Connecting Link
Tremaine Avenue S	Main Street E/ Perth Line 86	Line 84	Arterial
Wallace Avenue N	Listowel Urban Area Boundary	Main Street	Arterial/Connecting Link
Wallace Avenue S	Main Street	Middle Maitland River	Collector

3.3.2 Active Transportation Network

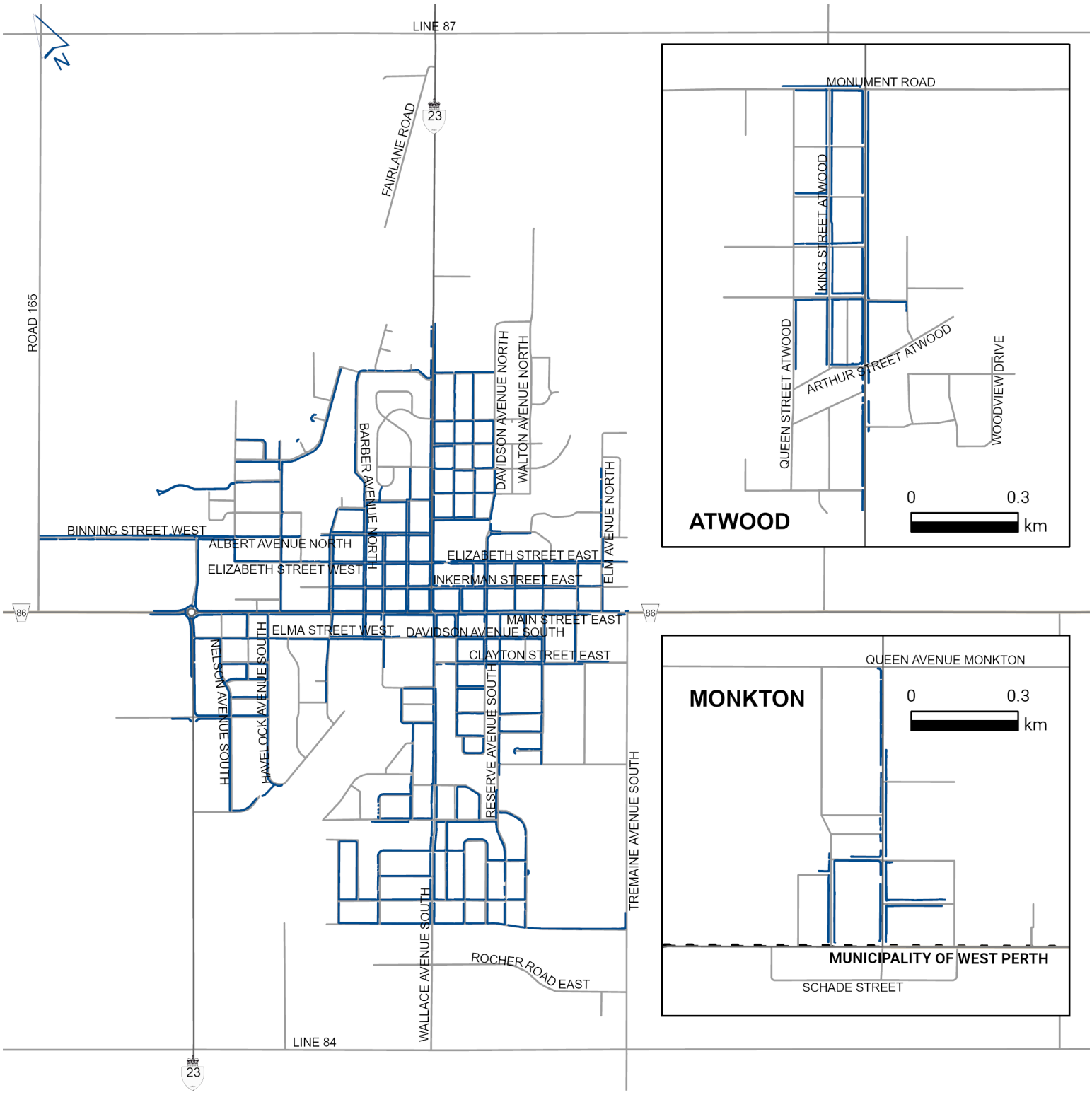
The active transportation network in North Perth comprises sidewalks (in the larger settlement areas) and (mostly) unpaved multi-use trails. In total, the Municipality currently maintains about 55 kilometres of sidewalks and boulevard multi-use paths and 35 kilometres of off-road trails.

Map 3.2 illustrates the existing sidewalk networks for Listowel and Atwood. In both settlement areas, as well as Monkton, sidewalks are provided on one or both sides of most roads. Overall, the sidewalk networks in the Municipality are well maintained and connected. It is noted that some sidewalks along arterial roadways are positioned directly next to the curb, with no boulevard buffer, creating a higher stress environment for pedestrians.

Map 3.3 illustrates the existing trail network. The Municipality permits walking, running, cycling, snowshoeing, cross-country skiing, horseback riding, and snowmobiling (with some restrictions) on most multi-use trails, which include:

- **Kinsmen Trail** – This trail extends from Tremaine Avenue S to Wallance Avenue N just south of Line 87, mostly along a former rail line. The trail jogs at Elma Street W, introducing a slight discontinuity for users. To the south of Elma Street W, the trail extends about 1.8 kilometres (to Tremaine Avenue South). North of Elma Street W, the trail measures 2.7 kilometres (to Wallace Avenue N);
- **Gowanstown Trail** – A 2.5-kilometre trail that runs along the former rail line between Gowanstown and Line 87; and
- **Listowel-Henfryn Trail** – The Listowel-Atwood segment of the trail stretches 8.8 kilometres from Main Street Listowel to Main Street Atwood along a former rail line. From Atwood the trail continues another 6.5 kilometres to Henfryn.

In addition, a non-profit organization is working to establish the Goderich to Guelph Rail Trail (G2G) along a 132-kilometre former rail line. Locally, the trail runs through Monkton and is available for public recreational trail (non-motorized) use.



MAP 3.2: EXISTING SIDEWALK NETWORKS FOR LISTOWEL AND ATWOOD

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 km

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MAP 3.3: EXISTING TRAIL NETWORK

MUNICIPALITY OF
North Perth

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 3 4 5 6 7 8 9 10 11
km

3.4 Travel Trends

3.4.1 Travel Behaviour

The 2016 Journey to Work data from Statistics Canada provided insight into resident commuter travel patterns to and from the Municipality. **Figure 3.4** summarizes the main mode of commuting for home to work trips. Most residents in North Perth commute by auto, with auto driver (81%) and auto passenger (8%) trips comprising 89% of all travel. Walking, cycling, and other modes account for the remainder (11%). The survey does not capture individuals working from home.

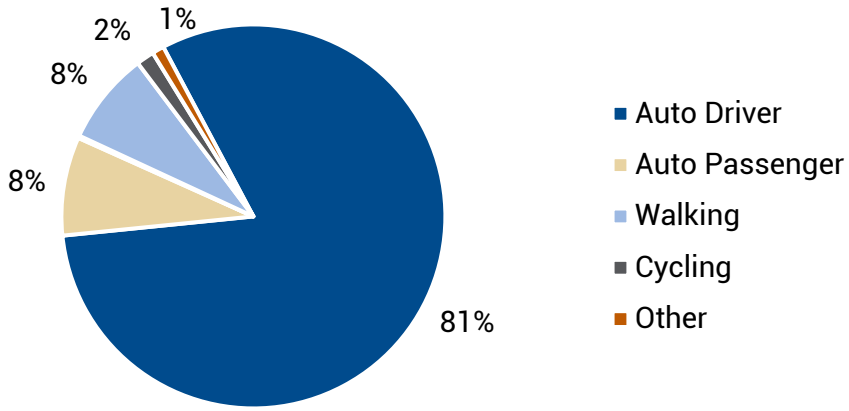


Figure 3.4: Primary Mode of Commuting for North Perth Residents

Figure 3.5 illustrates workplace destination. Approximately 63% of North Perth residents with a fixed place of employment work inside the Municipality. The remaining 37% travel to locations outside North Perth but still within Perth County (7%) or to other destinations beyond the County (30%).

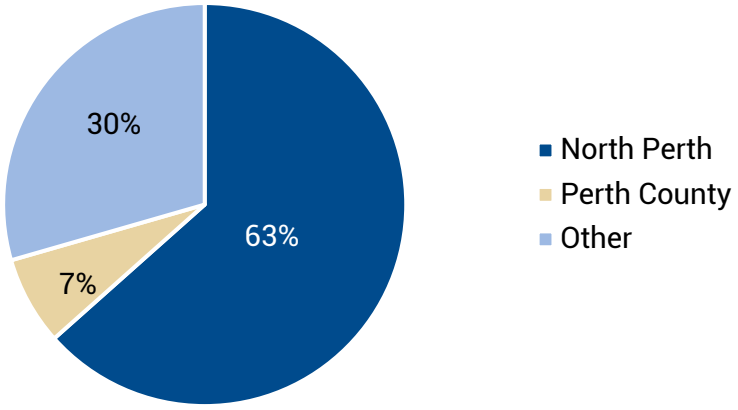


Figure 3.5: Workplace Destination of North Perth Residents

3.4.2 Active Transportation Travel Patterns

Data from Strava provided insight into active transportation travel patterns and commonly travelled corridors in North Perth. Strava is a crowdsourced website and mobile application used to log exercise activities, including cycling, running, swimming, skiing, and other athletic pursuits. Using this information, Strava creates spatial representation maps ("heat maps") based on the volume and frequency of routes travelled by app users and makes the maps available for reference.

Figure 3.6 shows cycling activity in North Perth, and Listowel more specifically, based on data obtained from the Strava Global Heatmap[7] website. Areas in red represent higher levels of activity, while areas in blue represent lower levels. Care should be exercised when using the Strava heat maps because the data tends to reflect individuals with more experience and greater confidence riding or running on roads with higher vehicle speeds and volumes. Despite the caveat, the data can help pinpoint more optimal routes for active travel.

The analysis of the Strava data identified the following roads as being commonly used by cyclists and pedestrians in North Perth, and Listowel more specifically:

East-West Routes:

- Main Street/Perth Line 86
- Elma Street
- Elizabeth Street
- Krotz Street
- Binning Street
- Line 87
- Perth Line 72
- Line 89

North-South Routes:

- Road 165
- Kinsmen Trail
- Wallace Avenue
- Reserve Avenue
- Davidson Avenue
- Nichol Avenue
- Tremaine Avenue
- Road 158

[7] Strava. *Global Heat Map.* 2020. https://www.strava.com/heatmap#13.54/-80.94816/43.73410/hot/all

Figure 3.6: Cycling Activity in North Perth

(Source: Strava Global Heatmap)

3.5 Future Directions

3.5.1 Growth and Development

Table 3.3 summarizes the population and employments forecasts to 2041 for North Perth contained in the *Perth County 2023 Official Plan Update – Comprehensive Review*[8], the most current projections publicly available. Based on these projections, the Municipality is forecast to grow by about 12,160 people to 27,700 by 2041, representing an increase of 44%. Employment in the North Perth is also expected to expand over this period by about 5,425 jobs, or 63%, to 14,085.

[8] Watson & Associates Economists Ltd., *Perth County 2023 Official Plan Update – Comprehensive Review*, October 2023

Table 3.3: Population and Employment Forecasts

Year	Population		Employment	
	People	Change	Jobs	Change
2021	15,540		8,660	
2026	19,200	3,660	9,935	1,275
2031	22,300	3,100	11,370	1,435
2036	25,200	2,900	12,835	1,465
2041	27,700	2,500	14,085	1,250

Source: Watson & Associates Economists Ltd., *Perth County 2023 Official Plan Update – Comprehensive Review*, October 2023, Chapter 3, Figure 3-1 and Figure 3-4.

Much of this growth will be directed to Listowel – the largest serviced settlement area in North Perth – to ensure development is sequential, phased, and makes economical use of existing infrastructure and services. Intensification will also be promoted, where deemed appropriate. **Figure 3.2** (earlier in this chapter) illustrates the planned land uses in Listowel consistent with this direction.

3.5.2 Opportunities and Challenges

The assessment summarized in the preceding sections highlights existing conditions and prevailing trends that will shape and influence transportation needs in the coming years. It is important to recognize and plan for these opportunities and challenges and develop a transportation system for North Perth that serves all users.

The key transportation **opportunities** for the Municipality include:

- A **connected road network** in North Perth, which allows for relatively uninhibited movement of vehicles and some cyclists. Preserving, optimizing, and enhancing the safety of the existing grid network of roads can reduce the need for new infrastructure to accommodate growth;
- The **existing trail and sidewalk network** in Listowel, which provides a solid foundation for future active transportation connectivity within the Municipality. Additional connections and accessible infrastructure would allow more people to travel around North Perth in a healthy, equitable, and sustainable manner; and
- Leveraging **previous investments in infrastructure** like the Line 84 reconstruction project and the northeast Master Plan development.

The primary transportation **challenges** in the Municipality include:

- **Serving forecast growth** in a safe, sustainable, and cost-effective manner that facilitates travel by different modes and does not create more congestion, particularly in downtown Listowel;
- **Fostering greater use of active transportation modes**, particularly for trips within Listowel, and reducing the reliance on motorized vehicles. These measures can reduce congestion, help combat climate change, and improve public health;
- **Limited funding** to allocate between transportation maintenance requirements, such as road resurfacing, and new infrastructure projects, such as a truck route and active transportation facilities; and
- **Traffic congestion and safety concerns on Main Street** through downtown Listowel, caused by undesirable volumes of trucks passing through town and other factors, including:
  - Frequent, closely spaced intersections and driveways;
  - Offset alignment of Wallace Avenue at Main Street;
  - Presence of on-street parking; and
  - Pedestrian crossing activity.

3.5.3 Vision and Goals

The Municipality's **transportation vision statement** reads as follows:

A progressive transportation system that provides safe and efficient movement of people and goods and supports diverse transportation options, connecting the community and promoting healthy living to 2041 and beyond.

The transportation vision was shaped through input from key stakeholders, Municipality staff, and the *2023-2026 North Perth Strategic Plan*.

The transportation vision statement is supported by four goals:

- **Safe Mobility** – A transportation system that moves people and goods safely and efficiently and promotes cycling and walking.
- **Sense of Place** – A transportation system that contributes to overall neighbourhood livability and quality of life.
- **Vibrant Local Economy** – A transportation system that supports local business.
- **Personal Health** – A transportation system that connects people with the services they need and recreational opportunities.

3.5.4 Alternative Planning Strategies

The first step in the master planning process involves selecting a preferred solution at the municipal-wide level to address the Problem and Opportunity Statement from a set of reasonable and feasible alternatives. The study team identified the following alternatives (described as "planning strategies") to tackle the opportunities and challenges (problems) summarized in **Subsection 3.5.2** and achieve the transportation vision at the municipal-wide level, with the "do nothing" option providing a benchmark for the assessment. The following describes the alternatives:

- **Do Nothing** – This alternative would maintain the status quo to the 2041 horizon year. Regular rehabilitation and maintenance works would continue but no new transportation improvement projects would be constructed (for any mode).
- **Alternative 1: Road Improvements Only** – This planning strategy would focus investment on road improvements solely to address the identified opportunities and challenges. No active transportation or other non-road enhancement initiatives would proceed; or
- **Alternative 2: Road Improvements Plus** – This planning strategy would invest in both road improvements and active transportation/other non-road enhancement initiatives, helping to promote the use of travel modes other than the single-occupant automobile to meet future transportation needs.

A Multiple Account Evaluation was completed to compare Alternatives 1 and 2 to the Do Nothing condition and select the recommended planning strategy. The evaluation criteria used in the assessment included factors related to transportation, natural, social and policy environments, and economic implications. **Table 3.4** lists the five criteria and their applicable indicators/measures.

Table 3.5 presents the Multiple Account Evaluation matrix summarizing the assessment. Each criterion was assigned a score on a five-point scale per the legend at the bottom of the table. The criterion scores were summed to derive the Total Scores. Sensitivity testing performed to determine if different criteria weightings (instead of equal) would affect the ranking found the recommended alternative remained the same regardless of the weights applied.

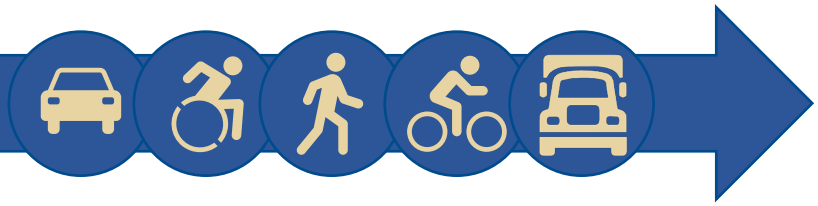


Table 3.4: Evaluation Criteria for Alternative Planning Strategies

Criteria	Indicator/Measure
Transportation	• Efficiency in moving people and goods • Degree of network connectivity and continuity • Range of active transportation options available • Facilitation of goods movement
Natural Environment	• Protection of significant natural environmental areas, local streams, aquatic resources, environmentally sensitive areas, and air quality
Social Environment	• Safety of all users • Appropriateness for the demographic • Support for a healthier community • Mobility for all users • Impacts to archaeological resources and areas of archaeological potential • Impacts to known and potential built heritage resources and cultural heritage landscapes
Policy Environment	• Compatibility with provincial and municipal objectives • Alignment with Municipal policies
Economic	• Capital and maintenance costs • Impact on travel time • Support for the existing and potential business community

Table 3.5: Multiple Account Evaluation of Alternative Planning Strategies

Criteria	Do Nothing	Alternative 1: Road Improvements Only	Alternative 2: Road Improvements Plus
Transportation	🔴	🟢	🟢
Natural Environment	🔵	🟡	🟡
Social Environment	🔵	🔵	🟢
Policy Environment	🔵	🔵	🟢
Economic	🟢	🟡	🔴
Total Score	**14**	**14**	**18**
Overall	**Not Preferred**	**Not Preferred**	**Preferred**

Legend: 🟢 Most Favourable (5 Points), 🟢 More Favourable (4 Points), 🔵 Neutral (3 Points) 🟡 Less Favourable (2 Points), 🔴 Least Favourable (1 Point)

In summary:

- **Do Nothing**, while minimizing impact to the natural environment and with no financial implications, does not meet the transportation, social environment, or policy environment objectives, and was therefore screened out.
- **Alternative 1: Road Improvements Only** provides improvements to the road network but does not support the Municipality's sustainability objectives. Additionally, this alternative more significantly impacts the natural environment (compared to Do Nothing) and does not encourage healthier travel options.
- **Alternative 2: Road Improvements Plus** builds on Alternative 1 by providing both roadway improvements and travel mode options. This is reflected in the high ratings for transportation, social environment, and policy environment criteria. While the financial implications are higher, the overall benefits are better aligned with the Municipality's goals.

3.5.5 Recommended Alternative

The analysis of the alternatives based on the Multiple Account Evaluation framework led to the selection of **Alternative 2: Road Improvements Plus** as the recommended planning strategy at the municipal-wide level. The combination of road, active transportation, and other supporting measures as part of the framework for Alternative 2 aids in reducing congestion and promotes travel options. The alternative

captures the rural and urban characteristics of North Perth and is expected to have the most promising effects on the transportation system.

The Municipality also completed a separate, more detailed investigation specific to downtown Listowel to address longstanding concerns about truck traffic on Main Street as part of this TMP. **Appendix D** describes the recommended strategy based on the **Listowel Truck Route Assessment**, which is also summarized in **Section 4.6**.

4 Roads Strategy

4.1 Overview and Context

Residents and business in North Perth depend on a safe, efficient, and reliable road network to facilitate the movement of people, goods, and services by a range of transportation modes, including walking, cycling, and driving. Roads serve two primary functions, providing **travel mobility** and **access to property**. They also play an important role in **placemaking** within a community and are critical to local **economic vitality and competitiveness**.

This chapter outlines the recommended **roads strategy** for the Municipality of North Perth. The strategy details the policies, programs, and infrastructure investments proposed for the road system to address current and future needs. The plan focuses primarily on roads under the Municipality's jurisdiction and complements the **active transportation and shared mobility strategy** presented in **Chapter 5** to form part of the overall transportation plan for North Perth.

4.2 Complete Streets

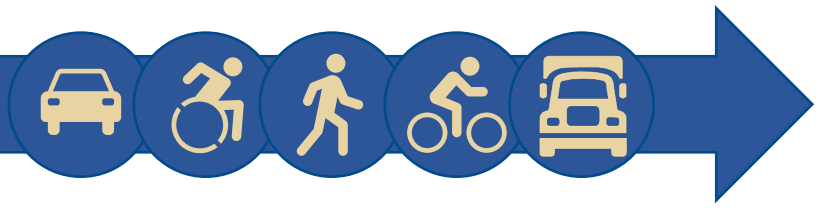
Policy:

The Municipality will apply Complete Streets principles in the planning, design, construction, and operation of streets in the settlement areas of North Perth, particularly in Listowel.

A Complete Street offers a safe, comfortable, barrier-free environment for people of all ages and abilities to move within a community using a diversity of non-automobile travel options in the interests of providing alternatives for active and healthy living. It is important to note that the Municipality's commitment to Complete Streets does not necessarily mean that all streets will "look" the same. Rather, context, planned function, and existing conditions will dictate design.

The following six goals form the basis of the Complete Streets approach in North Perth:

- **Goal 1: Connected Street Network** – Streets need to be inter-connected on a municipal-wide basis to create continuous routes of travel for all modes. This helps to avoid placing pedestrians and cyclists in uncomfortable or less safe situations because of network inconsistencies and gaps. Connected systems offer street users practical and predictable choices for moving around North Perth, whether on foot, bicycle, or in a car.



- **Goal 2: Safe and Accessible Infrastructure** – Streets need to be safe and accessible for people of all ages and abilities. This is especially true for more vulnerable users, including children, older adults, people with disabilities, and individuals using mobility devices. Users of non-motorized travel modes, such as walking and cycling, also need prioritization. Streets that are perceived as safe and accessible are more comfortable in general, leading to a greater likelihood of movement by active transportation.
- **Goal 3: Contextual to Surroundings** – Design needs to reflect context, recognizing the variety of street types – both urban and rural – in North Perth. A "one-size-fits-all" approach to street design is not appropriate given that hierarchy, function, and location vary. Creating Complete Streets is more about a mindset and an effective process, rather than a rigid application of design standards. Street design needs to appropriately respond to situational and contextual relationships, hence flexibility of application is important.
- **Goal 4: Balanced Movement Corridors** – Streets need to be designed and constructed considering the needs of different travel mode users. With existing facilities, Complete Streets design typically involves rebalancing priorities to better allocate or reallocate space within the public right-of-way to accommodate all or more travel modes. With new facilities, design typically involves "right-sizing" streets and their components from the outset. This is not to say that every street will accommodate all forms of travel equally or look the same, recognizing that consideration given to different users and travel modes will vary by location, context, and function.
- **Goal 5: Great People Places** – Streets should help promote healthy and active lifestyles by being places that are more comfortable and inviting for people to walk and bicycle, and hence be more physically active. They form part of the public realm and need to be designed to promote a sense of civic pride and embrace an important part of place-making for communities. Coordinated with street design, the surrounding urban form needs to be scaled and organized to reinforce and establish a comfortable urban environment that supports moving by non-automobile means.
- **Goal 6: Sustainable** – Streets should be designed and constructed with a view to sustainability. Efforts to reduce urban heat island effects, stormwater runoff, energy consumption, and greenhouse gas emissions are all examples of sustainability through design. These efforts are achieved partly through composing streets to support active transportation and partly by incorporating sustainably driven infrastructure and elements.

Figure 4.1 illustrates the general process for implementing Complete Streets principles in the settlement areas of North Perth, particularly Listowel. The process applies to both public streets constructed as part of newly developing areas as well as the reconstruction and rehabilitation of existing roads.

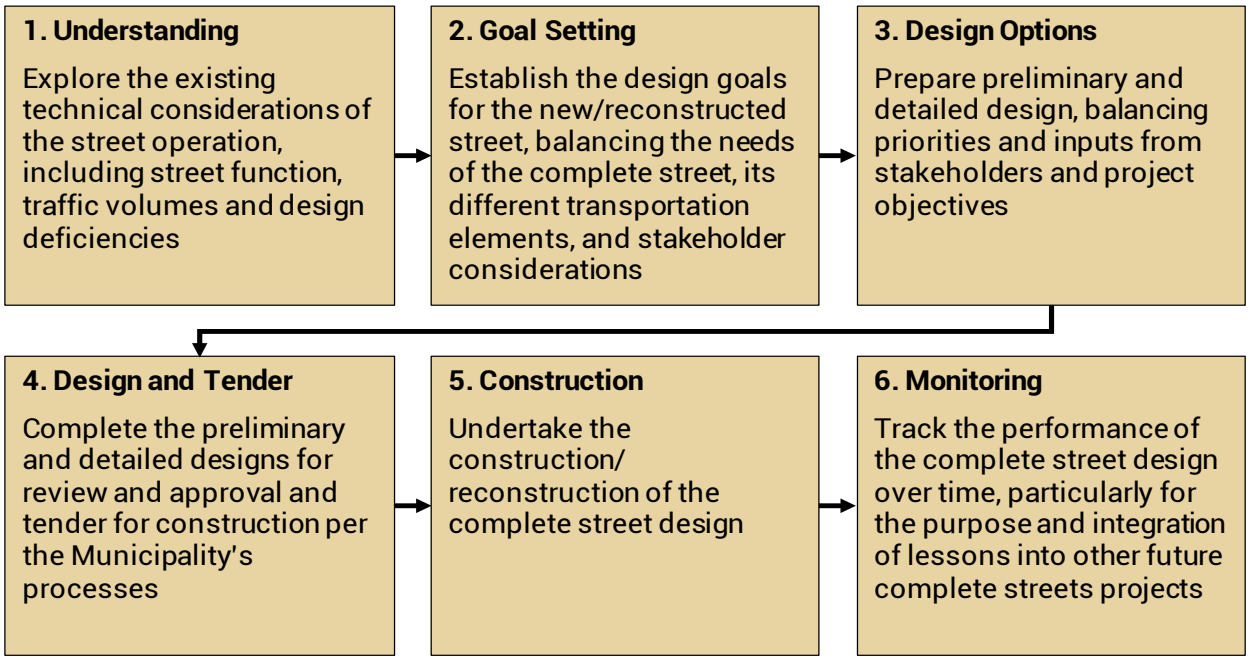


Figure 4.1: Complete Streets Implementation Process

Recommendation 4.1: Update the Municipality's Design Criteria and Standard Detail Drawings to incorporate Complete Streets principles.

4.3 Road Network Hierarchy and Jurisdiction

4.3.1 Classification

Road networks comprise various facility types, each of which performs a specific function from moving traffic through the network to providing access to abutting lands, or a combination of both. A functional roadway classification system establishes a "hierarchy" of roads grouped according to the type of service they provide, with gradation in function from access to mobility. The concept is based on the principle that roads do not operate independently but form part of an interconnected system. The design of the road must also fit its function and context, consistent with the Complete Streets principles articulated above.

A road network operates most efficiently and safely when each facility is designed and managed to serve its intended purpose. When a roadway attempts to prioritize both

movement and access, neither function is well served. This compression of service functions typically results in higher collision rates, excessive vehicle emissions and fuel consumption, and community displeasure with neighbourhood traffic conditions.

Most Ontario municipalities prescribe a road classification system in their Official Plans and designate their roadways based on this structure to help minimize potential conflicts between service functions. Factors influencing classification include adjacent land use, desired service function (traffic movement versus land access), traffic volume, flow characteristics, operating speed, and vehicle types.

In North Perth, the Perth County Official Plan establishes the classification system for roads outside Listowel, while the Listowel Ward Official Plan specifies classifications for roads within the Listowel Urban Area. Both Official Plans contain relatively similar roadway classification policies. The Perth County Official Plan defines three categories of roads (Provincial Highways, County Roads, and Local Roads), while the Listowel Ward Official Plan specifies four following an amendment in 2021 (OPA 34) to introduce a Collector Road designation. The categories are as follows:

- **Provincial Highway** is a highway under the jurisdiction and control of MTO.
- **Arterial Roads** (or **County Roads** in the County Official Plan) are intended and designed to carry large volumes of traffic from one area to another and/or through a settlement area (e.g., Listowel).
- **Collector Roads** are designed to collect and distribute traffic from Local Roads to Arterial Roads, and to provide access to abutting properties. These roads tend to be shorter and carry lower volumes of traffic than Arterial Roads.
- **Local Roads** are intended and designed to provide access to abutting properties and to carry lesser volumes of traffic than Provincial Highways and Arterial Roads. Most roads in the Listowel Ward are Local Roads.

The **Road Network Assessment** summarized in **Appendix C** concluded that the existing road classification systems are generally consistent with current recommended practice and provide sufficient gradation in service function (i.e., arterial, collector, and local) to enable appropriate designation of the municipal road network in North Perth. However, the current systems could benefit from additional criteria defining (and differentiating between) the characteristics of different road classes, particularly for roads in the Listowel Urban Area. **Table 4.1** recommends typical characteristics for rural and urban roads in North Perth based on guidance provided in the Transportation Association of Canada *Geometric Design Guide for Canadian Roads*[9].

[9] Transportation Association of Canada, *Geometric Design Guide for Canadian Roads*, (Ottawa, TAC, 2017).

Table 4.1: Characteristics of Roads

Characteristic	Local		Collector		Arterial	
	Rural	Urban[1]	Rural	Urban[1]	Rural	Urban[2]
Service Function	Traffic movement secondary consideration		Traffic movement and land access of equal importance		Traffic movement primary consideration	Traffic movement major consideration
Land Service	Land access primary consideration		Traffic movement and land access of equal importance		Land access secondary consideration	Some access control
Traffic Volumes (Daily Typical)	< 1,000 AADT		< 5,000 AADT	< 8,000 AADT	< 12,000 AADT	5,000 – 20,000 AADT
Flow Characteristics	Interrupted flow		Interrupted flow		Uninterrupted flow except at signals and crosswalks	
Design Speed (km/h)	50 – 110	30 – 50	60 – 110	50 – 80	80 – 130	50 – 70
Average Running Speed (km/h)	50 – 90	20 – 40	50 – 90	30 – 70	60 – 100	40 – 60
Vehicle Type	Predominantly passenger cars, light to medium trucks, and occasional heavy trucks	Passenger and service vehicles	All types, up to 30% trucks	Passenger and service vehicles	All types, up to 20% trucks	All types
Normal Connections	Locals, Collectors		Locals, Collectors, Arterials		Arterials, Highways	
Accommodation of Cyclists	n/a	No restrictions or special facilities	n/a	Special facilities considered	n/a	No restrictions; special facilities considered

Table 4.1: Characteristics of Roads

Characteristic	Local		Collector		Arterial	
	Rural	Urban[1]	Rural	Urban[1]	Rural	Urban[2]
Accommodation of Pedestrians	n/a	Sidewalks normally on one or both sides	n/a	Sidewalks provided on both sides	n/a	Sidewalks may be provided, separation for traffic lanes preferred
Parking (typically)	n/a	No restrictions or restrictions one side only	n/a	Few restrictions other than peak hour	n/a	Peak hour restrictions
Minimum Intersection Spacing (m)	n/a	60	n/a	60	n/a	200
Right-of-Way Width (m) (typically)	20	15 – 22	20	20 – 24	30	20[3] – 45[4]

Notes:

1. Based on Residential Local category.

2. Based on Minor Arterial category.

3. Rights-of-way 20 m in width applicable to retrofit conditions only.

4. Wider rights-of-way are often required to accommodate other facilities such as auxiliary turn lanes, utilities, noise mitigation implications, bikeways, and landscaping. For new streets, the immediate provision of wider rights-of-way may be considered to accommodate such facilities.

Source: Transportation Association of Canada, "Design Controls, Classification and Consistency," Chapter 2 in *Geometric Design Guide for Canadian Roads*, (Ottawa, TAC, 2017), 51.

The existing road classifications were reviewed against the criteria in **Table 4.1** to determine the need for any modifications. The assessment summarized in **Appendix C** focused on roads in the Listowel Urban Area. Outside of Listowel, the roads generally follow a grid pattern, connect to Provincial Highways and County Roads at relatively regular spacing, and align with intended roles per the Perth County Official Plan.

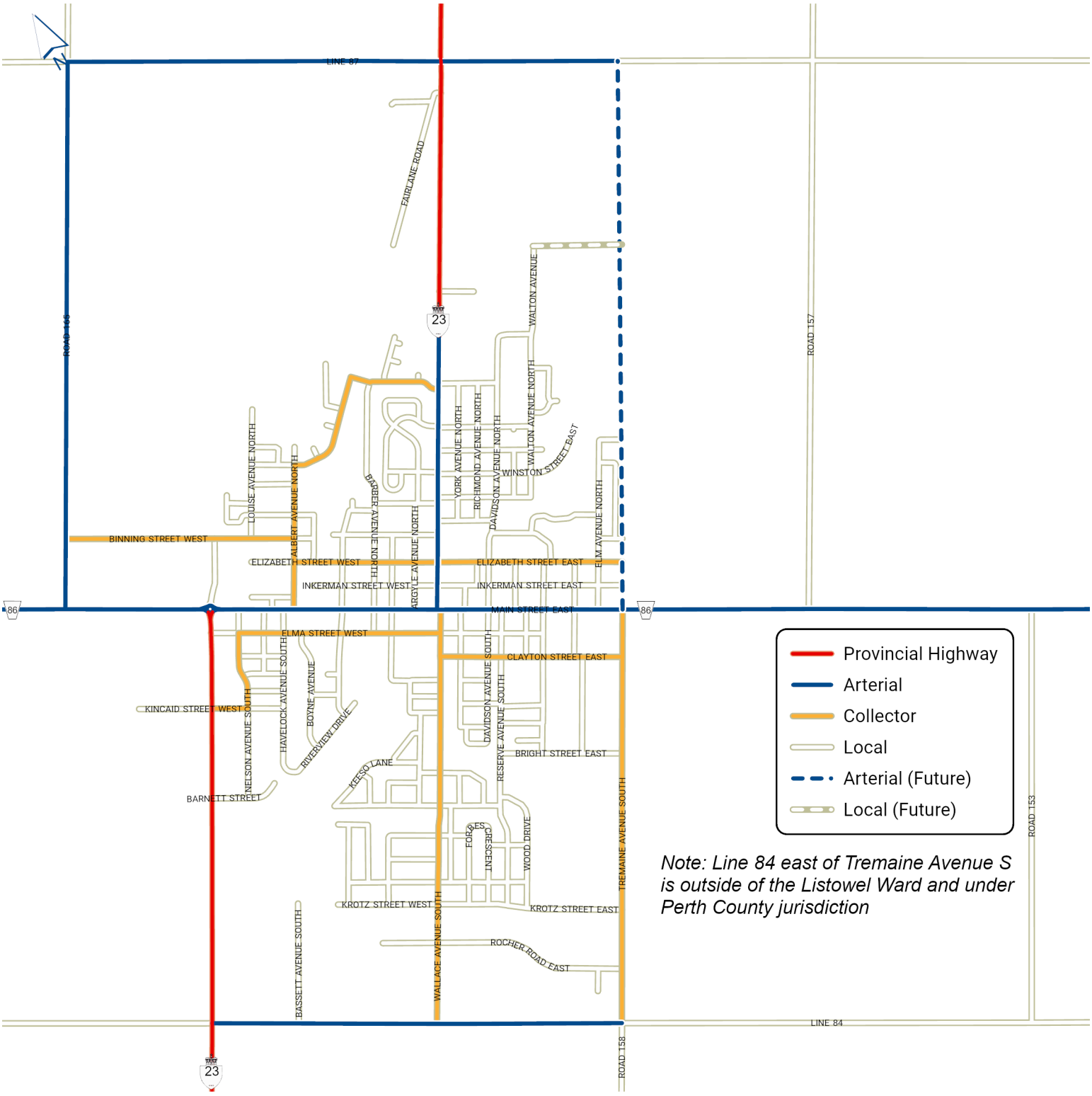
The review of road classifications in the Listowel Urban Area assessed the merit of designating additional Arterial and/or Collector Roads to form a broader network of higher-order facilities. The assessment process comprised the following three steps:

1. Identify key north-south and east-west Local Road corridors providing connectivity between existing Arterial and/or Collector Roads.
2. Estimate daily traffic volumes for each corridor and denote road segments meeting defined volume thresholds for reclassification.
3. Identify gaps in the network affecting connectivity between Arterial and/or Collector Roads.

Map 4.1: illustrates the recommended road classification system for the Listowel Urban Area based on this assessment. **Table 4.2** summarizes the recommended classification changes.

Table 4.2: Recommended Road Classification Changes in Listowel Urban Area

Road	Limits	Recommended
Albert Avenue N	Main Street W to Rogers Road	Collector
Binning Street W	Road 165 to Albert Avenue N	Collector
Clayton Street E	Wallace Avenue S to Tremaine Avenue S	Collector
Elizabeth Street W/E	Albert Avenue N to Tremaine Avenue N extension	Collector
Elma Street W	Nelson Avenue S to Wallace Avenue S	Collector
Kincaid Street W	Mitchell Road S to Nelson Avenue S	Collector
Line 87	Road 165 to Wallace Avenue N/Highway 23	Arterial
McDonald Street W	Rogers Road to Wallace Avenue N	Collector
Nelson Avenue S	Kincaid Street W to Elma Street W	Collector
Road 165	Line 86 to Line 87	Arterial
Rogers Road	Albert Avenue N to McDonald Street W	Collector
Tremaine Avenue S	Line 84 to Main Street E	Collector



Note: Line 84 east of Tremaine Avenue S is outside of the Listowel Ward and under Perth County jurisdiction

MAP 4.1: RECOMMENDED ROAD CLASSIFICATIONS FOR LISTOWEL

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

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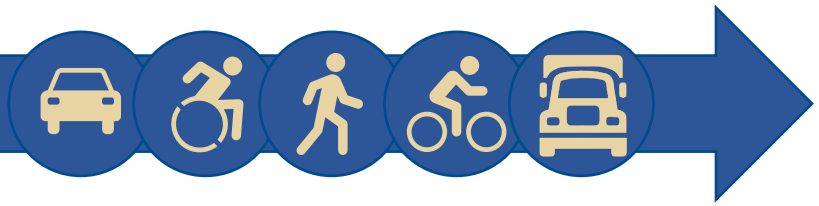
4.3.2 Jurisdiction

Road rationalization is a process intended to assign ownership and responsibility for each road to the most appropriate municipal authority (assuming the provincial highway network remains unchanged and the responsibility of MTO). Rationalization aims to create a municipal road system whereby local municipalities (North Perth) have responsibility for roads primarily providing local service and upper-tier municipalities (Perth County) have jurisdiction over roads principally serving through traffic. Assigning jurisdiction based on intended function helps promote efficient and effective service delivery and the application of consistent design, operations, and maintenance standards and practices on roads with similar roles. It also ensures appropriate accountability and greater clarity to road users.

Perth County has initiated a road network rationalization review exploring the potential transfer of roads between jurisdictions to better recognize their role and function in the broader network. While most roads in North Perth appear assigned to the appropriate jurisdiction based on their function (as noted above), the Municipality may wish to consider the merit of transferring the segments listed in **Table 4.3** subject to further in-depth analysis of financial, legal, and operational considerations.

Table 4.3: Roads Considered for Potential Transfer

Road Section	Transfer	Rationale
Perth Road 147 from Perth Line 86 to Perth Line 72	County to Municipality	Is relatively short in length and not continuous over an extended distance. Would likely only consider with the transfer of Road 140, as noted below.
Road 140 from Perth Line 86 to Perth Line 55	Municipality to County	Extends Perth Road 140/Wellington County Road 9 to the south to form a continuous connection between two County Roads over an extended distance. Would likely require upgrade to meet County road design standard. Would likely only consider with the transfer of Perth Road 147, as noted above.
Line 88 from Highway 23 (Road 164) to Perth Road 140/Wellington County Road 9	Municipality to County	Extends Perth Road 88 to the east to form a continuous connection between two County Roads over an extended distance. Offers a parallel route to Perth Line 86. Would likely require upgrade to meet County road design standard.



Recommendation 4.2: Apply the criteria specified in **Table 4.1** in the planning, design, operation, and maintenance of rural and urban roads in North Perth.

Recommendation 4.3: Modify the classifications of the roads listed in **Table 4.2**.and incorporate the recommended changes into the Official Plan.

Recommendation 4.4: Explore the merit of potential road transfers with Perth County.

4.4 Role and Function of Highway 23 in the Municipal Context

Provincial Highway 23 connects the main settlement areas in the Municipality – Atwood, Gowanstown, Monkton, and Listowel. The road jogs from its primary "north-south" orientation (known locally as Road 164) and runs "east-west" between the roundabout at Mitchell Road South and the signalized intersection at Wallace Avenue N through downtown Listowel concurrently with Main Street W (which extends to the east and west as Perth Road 86). The road is one of (if not) the most critical transportation facilities in North Perth.

Within Listowel, the Municipality has a Connecting Link agreement with MTO for the operation and maintenance of a portion of Highway 23 as noted in **Section 3.3**. As such, the facility serves a dual role through town, carrying both longer-distance highway traffic and local trips within the community. This requires a balance be struck between the mobility and access functions of the roadway, which can be challenging when a highway is also the community's main street. As a result, facilities like Highway 23 usually have greater access densities (per kilometre) than comparable roadways despite carrying higher traffic volumes, particularly trucks, as evidenced in downtown. This reduces traffic carrying capacity and tends to increase conflicts between road users, which often contributes to more collisions and poses challenges for pedestrians and cyclists attempting to cross the road.

In Listowel, the discontinuity of Highway 23 (Mitchell Road S) at Perth Line 86 and the absence of a continuous alternative route only exacerbates the problem, with all north-south traffic needing to pass through downtown Listowel to continue travelling along the highway. The constrained road cross-section in downtown, along with the closely spaced intersections, frequent driveways, and on-street parking, further complicate conditions, resulting in traffic congestion and delays for vehicles and safety concerns for pedestrians and cyclists.

Based on the traffic forecasts developed in **Appendix C**, it is unlikely Highway 23 will need to be widened to four through lanes in Listowel for the foreseeable future, especially if trucks can be diverted around the downtown core (see **Section 4.6**). But localized operational and safety issues may materialize, potentially necessitating traffic control changes and/or intersection/corridor improvements, with MTO likely

leading the initiative. Specific locations include the intersections of Highway 23 with Line 84 and Line 87. Opportunities to apply more stringent access management practices should also be considered to defer the need for infrastructure improvements. Such provisions commonly form part of Transportation Impact Study guidelines.

Recommendation 4.5: Request the Ministry of Transportation to continue monitoring the need for operational and safety improvements on Highway 23 and proceed expeditiously with capital projects to address identified concerns, including at Line 84 and Line 87.

Recommendation 4.6: Develop and implement access management guidelines for municipal roads, with specific focus on the Connecting Link portion of Highway 23, in conjunction with introducing Transportation Impact Study Guidelines (see Recommendation 6.2).

4.5 Road Network Improvements

The potential impacts of traffic generated by anticipated development on the municipal road network were assessed to determine the need for future road improvements. The assessment summarized in **Appendix C** focused on the eight arterial/collector and collector/collector intersections shown in **Map 4.2**: for the following reasons:

- With minimal growth forecast to occur outside the Listowel Urban Area, traffic volumes on roads in the more rural areas of the Municipality are not anticipated to change much in the future. The current road network generally serves existing volumes adequately, so it is unlikely future conditions would necessitate any improvements.
- The need for road widening (other than at intersections) and new links (other than the roads identified in **Table 4.2** to enhance network connectivity) is highly unlikely based on current traffic volumes and anticipated growth in Listowel. Intersection upgrades will be the only road network improvements required to serve planned development.
- Most arterial/arterial intersections in North Perth fall under the jurisdiction of MTO or Perth County, so the Municipality has no responsibility for improvements at these locations. The few arterial/arterial intersections under Municipal jurisdiction are already being addressed due to downtown location (i.e., Wallace Avenue and Main Street) or because the intersection falls along a proposed truck route (e.g., Road 167 and Line 87) (see **Section 4.6**).

MAP 4.2: STUDY INTERSECTIONS

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 km

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The assessment of future road improvement needs involved the following three steps:

1. Estimate current (2023) and forecast future (2041) traffic volumes for the weekday PM peak hour by applying a growth rate to the most recent traffic counts collected. The PM peak hour was selected for the analysis period as it typically represents the busiest time of the day/week from a traffic perspective.
2. Analyze existing and future traffic operations using Synchro 11 (traffic modelling software that implements the methodologies of the *Highway Capacity Manual* (HCM)[10]) to identify potential deficiencies.
3. Identify required improvements to address noted operational concerns.

In the absence of more specific development plans, future vehicle volumes were forecast at the study intersections by applying a uniform traffic growth factor to observed turning movement counts. The 2041 horizon year growth rates were calculated based on projected population growth in the Municipality, as summarized in **Table 3.3**. This assumes traffic volumes increase at a rate proportional to population expansion. A separate growth factor was derived from historical population data to expand observed counts from earlier years to a common 2023 base year.

The 2041 horizon year traffic analyses did not identify critical operations at four of the eight study intersections. On this basis, no road improvements are recommended at these locations. Operations are forecast to deteriorate more significantly at four intersections – Wallace Avenue and Main Street, Wallace Avenue and Elizabeth Street, Wallace Avenue and Elma Street, and Wallace Avenue and McDonald Street – assuming no change in traffic patterns, or modifications to signal timing at these locations.

The intersection of Wallace Avenue and Main Street operates somewhat poorly today and is forecast to further deteriorate, assuming no change in traffic patterns or modifications to signal timing. A pilot project conducted in 2021 and 2022, which included conversion of Wallace Avenue S to one-way southbound between Main Street and Elma Street, found the measures reduced queuing and overall delay at the intersection, but increased travel time for rerouted northbound traffic. The modified traffic pattern also posed other adverse consequences, leading to the reversion of Wallace Avenue S to two-way operation. That said, implementation of the proposed truck route to divert truck traffic around downtown Listowel is expected to help relieve congestion at the intersection (see **Section 4.6**).

[10] National Academies of Sciences, Engineering, and Medicine. 2022. *Highway Capacity Manual 7th Edition: A Guide for Multimodal Mobility Analysis*. Washington, DC: The National Academies Press. https://doi.org/10.17226/26432

Given the uncertainty as to where and when growth may occur in North Perth, and specifically Listowel, traffic volumes and operations at these four intersections should be monitored to confirm the need for and timing of any required improvements. The analyses presented herein assume unimpeded traffic volume increases colinear with population growth. In actuality, this growth may be focused in particular areas of the community, or motorists may rely on alternate travel routes to avoid heavily congested corridors.

With the Perth County Official Plan update process still in progress at the time of preparing the TMP, and corresponding updates to the Listowel Ward Official Plan (or a new section of the Perth County Official Plan specific to this urban settlement area) likely to follow, there may be a need to revisit the traffic forecasting component of the transportation plan in the foreseeable future. The magnitude of growth now contemplated for North Perth, and Listowel in particular, is still unlikely to drive the need for road widening and new links from a capacity perspective, but further localized operational improvements, such as the addition of turn lanes and/or traffic signals, are conceivable.

Recommendation 4.7: Continue monitoring traffic conditions at the Wallace Avenue and Main Street, Wallace Avenue and Elizabeth Street, Wallace Avenue and Elma Street, and Wallace Avenue and McDonald Street and the need for transportation network improvements in the future.

Recommendation 4.8: Consider the need to update the traffic forecasting once the New Perth County Official Plan is approved.

4.6 Listowel Truck Route

The **Listowel Truck Route Assessment** in **Appendix D** documents the investigation undertaken to address longstanding concerns about truck traffic on Main Street in downtown Listowel. This section summarizes the findings of the assessment. In this section, the term “truck” applies to all single unit trucks with four or more axles (Category 7 of the U.S. Federal Highway Administration classification system) and combination trucks (tractor-trailers) (Categories 8 to 13).

4.6.1 Problem and Opportunity Statement

Main Street through downtown Listowel regularly experiences traffic congestion, most evidently at the Main Street and Wallace Street intersection as noted in **Section 4.5**. Several factors contribute to this condition, including:

- Frequent, closely spaced intersections and driveways;
- Offset alignment of Wallace Street at Main Street;
- Truck traffic;
- Presence of on-street parking; and
- Pedestrian crossing activity.

Of all factors, trucks using Main Street arguably pose the most significant impact on downtown traffic conditions. Excessive truck volumes, particularly heavy vehicles passing through town and not destined to Listowel, contribute to this bottleneck, posing safety, environmental, human health, and economic impacts on the community.

An origin-destination survey and traffic data collection were carried out to better understand truck travel patterns in Listowel and their impact on downtown traffic conditions. The analysis sought to quantify the proportion of trucks passing through town and specifically the Main Street and Wallace Avenue intersection. Analysis of the survey data identified the following key trends:

- Forty-three percent (43%) of trucks entering Listowel via Highway 23 or Perth Line 86 passed through town;
- Most trucks passing through town likely travelled along Main Street in downtown Listowel for at least a part of their trip, given the station locations and limited route alternatives; and
- A higher volume of through trucks entered Listowel via Perth Line 86 than Highway 23, suggesting a solution for east-west truck traffic would be a slight priority.

Based on the foregoing, the Problem and Opportunity Statement is expressed as follows:

"To preserve and enhance the character of the central area and support a community-focused, pedestrian-oriented, business friendly, and sustainable downtown core, longer-distance through truck traffic is no longer suited to travel through downtown Listowel on Main Street. The narrow right-of-way, on-street parking, and pedestrian activity within the corridor are incompatible with excessive heavy vehicle use. The diversion of truck traffic to a suitable alternative route has the potential to reduce traffic congestion, enhance safety for all road users, help mitigate undesirable environmental effects (like noise and air pollution), and improve the attractiveness and social environment of the downtown core.

4.6.2 Alternative Solutions

The following alternative solutions were identified to address the Problem and Opportunity Statement, with the "do nothing" option providing the benchmark for comparison:

- **Do Nothing** – This alternative would maintain the status quo. Trucks would continue to travel through the central core along Main Street.
- **Alternative 1: Truck Route Along Existing Roads –** This alternative would designate a truck route around downtown Listowel using existing roads. Some/all roads forming the truck route may need to be upgraded to accommodate higher volumes of truck traffic more safely and efficiently.
- **Alternative 2: By-pass –** This alternative would create a by-pass route to divert all vehicular traffic around downtown Listowel. The by-pass would involve constructing a new roadway or part thereof in a separate right-of-way. Existing roads may form part of the route and may need to be upgraded to accommodate higher volumes of traffic more safely and efficiently.

An assessment of the alternatives based on four criteria (technical feasibility, social/cultural environment impacts, natural environment impacts, and economic impacts) identified **Alternative 1: Truck Route Along Existing Roads** as the recommended solution. Routing trucks around Listowel should reduce traffic congestion on Main Street and improve conditions in the downtown. The by-pass option (Alternative 2) would also address the identified problems and opportunities but pose significantly greater environmental impacts, potentially affect local businesses, and cost considerably more than Alternative 1. Although preferred from a natural environmental perspective, the Do Nothing option would not resolve the traffic and safety issues caused by excessive truck volumes and, therefore, does not satisfy the Problem and Opportunity Statement.

4.6.3 Route Selection

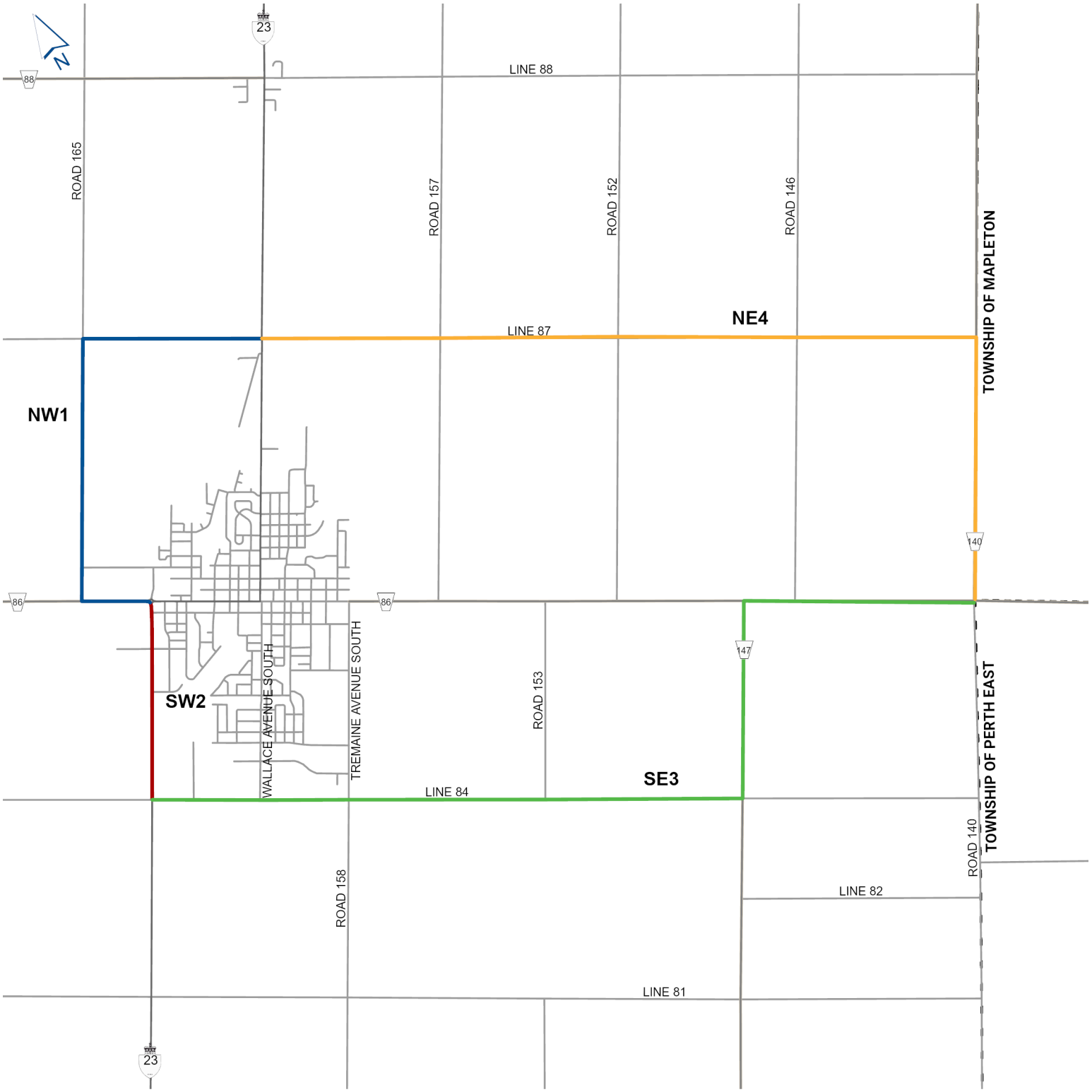
The route selection process identified 14 candidate road sections, each of which could form part of a truck route. Given the long list of route alternatives possible from combinations of the candidate road sections, the study area was divided into four quadrants along Mitchell Road S/Wallace Avenue N (Highway 23) and Perth Line 86 (i.e., southwest (SW), northwest (NW), southeast (SE) and northeast (NE)) to focus the assessment process. This approach allows alternatives to be combined at common points to form continuous routes over longer distances. It also helps in staging and prioritizing implementation of the recommended truck route(s). Within these four quadrants, a total of 11 potential truck route alternatives were generated from the candidate road sections.

The route evaluation involved comparison of the 11 alternatives based on three factors (social and community impact, engineering and safety, and economic considerations) with 13 criteria. These factors and criteria were applied to each of the 11 route alternatives and the findings compared to determine the technically recommended route(s) in each quadrant. **Table 4.4** summarizes the recommended truck route by quadrant with its estimated implementation cost, as prepared by B.M. Ross, the Municipality's engineering consultant. **Map 4.3**: shows the locations of the four route segments.

Table 4.4: Recommended Truck Routes and Indicative Costs

Quadrant (Alternative)	Road Sections Forming Route	Indicative Cost
Southwest (SW2)	• Mitchell Road S/Highway 23 from Perth Line 86 to Line 84	Nil (Relies on Existing Perth County and Provincial Roads)
Northwest (NW1)	• Perth Line 86 from Mitchell Road S to Road 165 • Road 165 from Perth Line 86 to Line 87 • Line 87 from Road 165 to Wallace Avenue N/Highway 23	$ 6,050,000
Southeast (SE3)	• Perth Road 147 from Perth Line 86 to Line 84 • Line 84 from Perth Road 147 to Highway 23	$ 10,495,000
Northeast (NE4)	• Perth Road 140 from Perth Line 86 to Line 87 • Line 87 from Perth Road 140 to Wallace Avenue N/Highway 23	$ 20,350,000

During the comment period for the proposed TMP, residents abutting Mitchell Road S/ Highway 23 between Perth Line 86 to Line 84 expressed concern about the potential implications of the recommended truck route for the southwest quadrant. Residents cited concerns about noise, vibration, safety, and other possible adverse effects arising from more trucks using this road segment.



MAP 4.3: RECOMMENDED TRUCK ROUTES

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 3 km

MUNICIPALITY OF North Perth

paradigm TRANSPORTATION SOLUTIONS LIMITED

GSP group

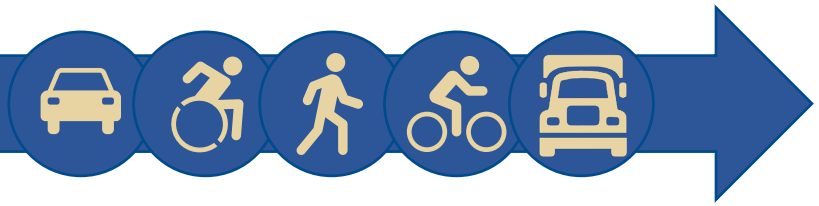
4.6.4 Phasing and Staging

The assessment process identified the recommended truck routes for the four quadrants but did not examine whether all routes needed to be implemented concurrently or could be phased. At a minimum, two of the recommended alternatives would need to be instituted to form a complete north-south or east-west truck route around Listowel; implementing three would create both north-south and east-west by-passes.

The truck origin/destination survey findings suggest the development of an east-west truck route should be the initial priority. After considering cost, impacts, and feasibility, the routing south of Line 86 appears preferable to the north option. Alternative SW2 relies solely on Provincial and County roads to form the truck route in the southwest quadrant, making this option the lowest cost solution and at least as an interim solution pending further consideration of other routes not incorporating the Mitchell Road S/Highway 23 (Perth Line 86 to Line 84) road section. Pairing this option with Alternative SE3 would form a complete east-west by-pass route. While this route is more expensive to implement than Alternative NW1, it would serve the higher through truck movement and address the Problem and Opportunity Statement better.

Feedback received from abutting residents during the comment period for the proposed TMP highlighted the need for further consideration of the recommended truck route in the southwest quadrant, specifically the use of Mitchell Road S/Highway 23 between Perth Line 86 to Line 84 as part of the connection. A more extensive investigation of potential route alternatives should be conducted after monitoring truck travel patterns following implementation of the east-west truck route. The monitoring program will aid in quantifying the magnitude and characterizing the implications of the change in heavy vehicle volumes on this road section. Benchmark statistics/ criteria pertaining to traffic volumes and truck percentages should be collected/ defined and clearly communicated at the beginning of the monitoring process.

The subsequent phase of network expansion should involve Alternative NW1 to provide a complementary north-south truck route. Implementing this route in conjunction with Alternative SW2 and Alternative SE3 will facilitate all potential route choices for truck traffic intending to by-pass Listowel, albeit somewhat circuitous for travel between the north and east (i.e., southbound Highway 23 to eastbound Perth Line 86 and westbound Perth Line 86 to northbound Highway 23). On this basis, the northeast portion of the truck route network should be pursued last (if at all), with the decision to proceed informed by future monitoring of truck travel patterns. Again, benchmark statistics/criteria should be established before commencing monitoring.



If the Municipality decides to pursue a truck route in the northeast quadrant at some future time, Opportunities to connect Highway 23 and Perth Road 140 further to the north, for example using Line 88 as an extension of Perth Road 88, should be further explored to leverage existing infrastructure and potentially reduce costs.
Alternative NE4 should also be reconsidered given the evaluation findings support this option as most preferred based on the information currently available.

4.6.5 Complementary Implementation Actions

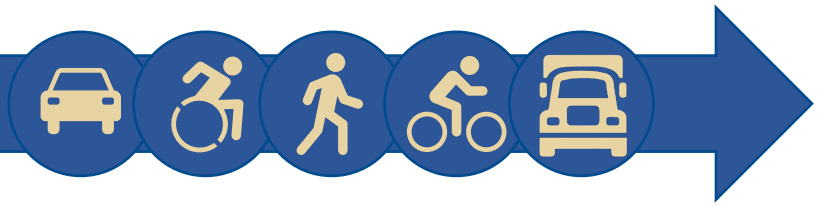
Implementation of the recommended truck route network will require several complementary actions, including:

- **Infrastructure Improvements** – Some roadways forming the recommended truck routes will need to be improved prior to enacting the truck route network. **Section 6.3** discusses phasing and timing for the necessary road works;
- **Truck Route By-law** – A by-law will need to be enacted to enable enforcement of the truck routes;
- **Roadway Signage** – Clear, consistent, and easily identifiable roadway signage demarcating the truck routes will be needed to convey requirements to truck drivers, promote compliance with municipal regulations, and reduce the number of heavy vehicles using Main Street to travel through downtown Listowel; and
- **Education and Enforcement** – An education and communication campaign should be developed to inform residents, businesses, and heavy vehicle operators of the truck routes and their purpose. The recommended truck routes should also be enforced by authorities to the extent possible, recognizing this can prove challenging under the current provisions of the *Highway Traffic Act*.

Recommendation 4.9: Designate an east-west truck route around downtown Listowel via Mitchell Road S/Highway 23 (Perth Line 86 to Line 84) (as an interim solution pending further consideration of other routes (see Recommendation 4.10)), Line 84 (Highway 23 to Perth Road 147), and Perth Road 147 (Line 84 to Perth Line 86).

Recommendation 4.10: Investigate alternatives to the Mitchell Road S/Highway 23 (Perth Line 86 to Line 84) road section for the east-west truck route after monitoring truck travel patterns.

Recommendation 4.11: Designate a north-south truck route around downtown Listowel via Perth Line 86 (Mitchell Road S to Road 165), Road 165 (Perth Line 86 to Line 87), and Line 87 (Road 165 to Mitchell Road S/Highway 23) after implementing the east-west route.



Recommendation 4.12: Monitor truck travel patterns between north and east Listowel (i.e., southbound Highway 23 to eastbound Perth Line 86 and westbound Perth Line 86 to northbound Highway 23) to determine the need for a less circuitous route around downtown Listowel for heavy vehicles travelling in this orientation.

Recommendation 4.13: Undertake the complementary actions described in the **Listowel Truck Route Assessment** in **Appendix D**.

Recommendation 4.14: Consult and collaborate with the Ontario Provincial Police and Ministry of Transportation on enforcement strategies.

4.7 Traffic Management

4.7.1 Traffic Management Protocol

The **Traffic Management Protocol** in **Appendix E** sets out the Municipality's process and procedures for responding to traffic-related queries and concerns received from citizens about streets in North Perth. The protocol features:

- A consistent, objective, and transparent process for reviewing and assessing requests for traffic management measures, with a flowchart illustrating the steps to be followed in responding to reported concerns;
- A range of potential traffic management measures for use in North Perth, including both traffic control devices (i.e., traffic control signals, all-way Stop signs, speed control signs, pedestrian crossovers, Community Safety Zones) and traffic calming treatments;
- A methodology and criteria/warrants for determining the most appropriate traffic management measure(s) to use on roads under the Municipality's jurisdiction; and
- A procedure for monitoring and evaluating the effectiveness of traffic management measures after installation.

The following subsections outline the different traffic management measures used in North Perth and provide policy direction on their application. Following the guidance outlined below and set out in the referenced guidebooks, particularly the Ontario Traffic Manual (OTM) Books, will ensure consistent assessment and application of all traffic-related requests in the Municipality.

In most instances, the installation of a traffic management measure(s) will be precipitated by a citizen or other community request. While the Traffic Management

Protocol is intended to address these situations, proactive monitoring the need for traffic management measures should form part of a wider traffic counting program.

4.7.2 Pedestrian Crossings (especially Pedestrian Crossovers)

The *Highway Traffic Act* (HTA) provides the legal framework for pedestrian crossing treatments in Ontario. The HTA defines two categories of crossings:

- **Controlled**: A crossing supported by one of three control measures: Stop/Yield signs, Pedestrian Crossovers (PXO), or traffic control signals. Vehicles are required to stop or yield to pedestrians within a controlled crossing per the HTA; and
- **Uncontrolled**: All other crossings including unmarked crosswalks at intersections, marked crossings that are unsigned or unsignalized, and school crossings where the designated crossing guard is not present. Pedestrians must yield to traffic and wait for a safe gap to cross prior to entering the roadway at these locations as they do not have the right-of-way.

Controlled crossings rely on traffic control devices to establish and convey to motorists that pedestrians have the right-of-way to cross the road at that location under the control conditions. Assigning right-of-way priority encourages pedestrians to cross at defined locations and reduces the number of uncontrolled crossings.

OTM Book 15 – Pedestrian Crossing Treatments[11] recommends warrants and guidelines for the application of controlled crossings in Ontario. Per OTM Book 15, the current treatment systems include:

<u>Traffic Control Signals:</u>

- Full Traffic Signals
- Intersection Pedestrian Signals (IPS)
- Midblock Pedestrian Signals (MPS)

<u>Pedestrian Crossovers (PXOs):</u>

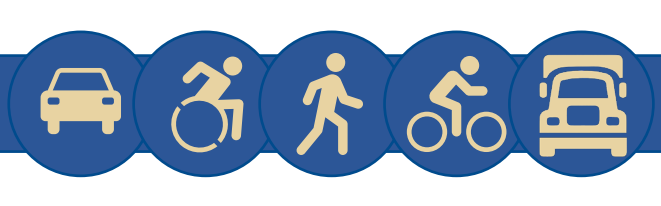
- Level 1 Type A PXO
- Level 2 Type B PXO
- Level 2 Type C PXO
- Level 2 Type D PXO

<u>Signs and Supervised:</u>

- STOP/All-Way STOP
- YIELD
- Supervised School Crossings

OTM Book 15 provides a Decision Support Tool (DST) to aid in determining the need for a pedestrian crossing treatment and selecting the appropriate treatment. The DST features a two-stage process. The first stage involves a Preliminary Assessment to

[11] Ontario Ministry of Transportation, *Ontario Traffic Manual Book 15: Pedestrian Crossing Treatments.* Queen's Printer of Ontario, 2016.



screen the location for suitability. If initial screening requirements are fulfilled, the process progresses to the second stage of Pedestrian Crossing Selection.

Policy:

The Municipality will only install pedestrian crossovers at locations satisfying the screening criteria specified in the **Traffic Management Protocol** and the warrants contained in *Ontario Traffic Manual Book 15 – Pedestrian Crossing Treatments*.

The Municipality will not install pavement markings at unprotected crossings (i.e., those locations not controlled by Stop or Yield signs, Pedestrian Crossovers, or Traffic Control Signals).

4.7.3 All-Way Stop Control

Stop signs are regulatory traffic control devices intended to assign right-of-way between vehicles approaching an intersection from different directions. The stop sign requires the advancing driver to stop their vehicle before entering the intersection, yield to any traffic in or approaching, and then proceed when safe to do so.[12]

Stops signs are generally installed to create either two-way stop control (or one-way at a three-leg intersection) or all-way stop control. When used at the intersection of two roads having similar traffic volumes and operating characteristics, all-way stop control can be effective at providing gap opportunities for minor street traffic that would not otherwise be available. However, many communities commonly use this form of control at locations that do not meet recommended thresholds in response to neighbourhood traffic concerns.

The use of all-way stops to address resident concerns with vehicle speeds, traffic infiltration, and pedestrian safety has received considerable attention in communities across North America. The "ease" and low cost of implementation make this form of control an attractive remedial solution to many common traffic issues. However, this practice has led to a proliferation of unwarranted installations, causing several unintended consequences, such as traffic noise, motor vehicle pollution, poor compliance, enforcement issues, and inappropriate driver behaviours like midblock speeding and shortcutting.[13] These adverse impacts have diminished safety for all road users, especially vulnerable pedestrians and cyclists, uncertain whether approaching motorists will stop.

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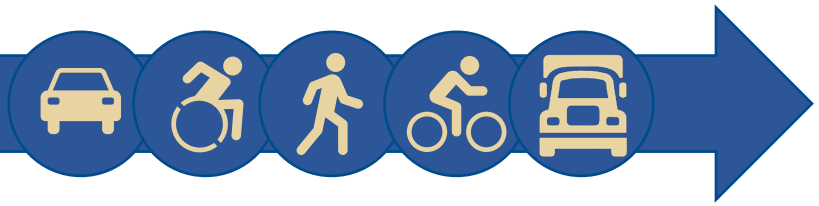
12 Ontario Ministry of Transportation, *Ontario Traffic Manual Book 5 – Regulatory Signs.* (Toronto: Queen's Printer for Ontario, 2021), 22.

13 Bretherton, W. Martin Jr. *Multi-way Stops – The Research Shows the MUTCD is Correct!*



OTM Book 5 – Regulatory Signs[14] recommends warrants and guidelines for the application of all-way stop control in Ontario.

Policy:

The Municipality will only install all-way stop control at locations satisfying the screening criteria specified in the **Traffic Management Protocol** and the warrants contained in *Ontario Traffic Manual (OTM) Book 5 – Regulatory Signs*.

4.7.4 School Zones and Community Safety Zones

Improving safety on roads adjacent to schools and other community facilities is a key priority for municipalities given the higher volumes of pedestrians and cyclists present, particularly children who are more vulnerable due to their lack of experience with traffic. This concern is often heightened in rural communities where prevailing operating speeds on roads tend to be higher and can vary within the traffic stream. In School Zones, safety concerns are further compounded as these areas can become hectic (and in some instances overwhelming) around bell times, with busses arriving and leaving, parents and guardians dropping off and picking up their children, and students walking or biking to school.

Under the HTA, the Municipality has the authority to designate two types of "zones" for heightened safety and enforcement emphasis:

- **School Zones**, which indicate to motorists they should reduce their speeds at certain times because they are entering an area where school children are present and may be crossing the road; and
- **Community Safety Zones**, which inform drivers they are entering an area the community has deemed paramount to the safety of its children and other citizens. These sections of roadway are typically near schools, day care centres, playgrounds, parks, hospitals, senior citizen residences, but may also be used for collision-prone areas in a community. Traffic-related offences committed within these zones are subject to increased fines, with set fines for speeding and traffic signal-related offences doubled.

Designating a School Zone or Community Safety Zone enables the Municipality to focus resources and attention on specific locations where safety risk to vulnerable road users is highest. However, experience from other communities suggests that

[14] Ontario Ministry of Transportation, *Ontario Traffic Manual Book 5: Regulatory Signs.* Queen's Printer of Ontario, 2021.

signs alone typically become ineffective over time and long-term benefits are not commensurate with the enforcement effort required.

The OTM Books offer no warrants or guidelines for the application of School Zones and Community Safety Zones, albeit OTM Book 5 and *OTM Book 6 – Warning Signs*[15] provide some guidance pertaining to sign installation and placement. For this reason, the Traffic Management Protocol provides specific criteria and direction on their use. As a general consideration, if designating a:

- School Zone, the speed limit should be set at no lower than 30 kilometres per hour and supplemented with the flashing signal indication and "When Flashing" tab. School Zones across the Municipality should also be in effect between the hours of 7:00 AM and 9:30 AM and 2:00 PM and 5:00 PM during school days to promote consistency and uniformity of operation.
- Community Safety Zone, the zone should be in effect 24 hours a day to assist the Ontario Provincial Police with enforcement and only used in conjunction with other traffic safety and police enforcement measures.

Policy:

The Municipality will only install School Zones and Community Safety Zones at locations satisfying the screening and warrant criteria specified in the **Traffic Management Protocol**.

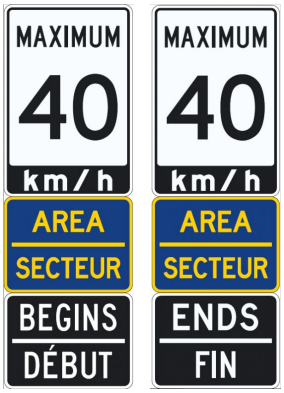
4.7.5 Speed Limits

Speed regulations help motorists select operating speeds that are safe for the prevailing conditions. The maximum safe speed at any location will vary as road geometry, traffic demands, and the road environment change.

Selecting a posted speed limit for a specific location must take into consideration legislative regulations, public recognition and understanding, ease of implementation, capital and maintenance costs, and adherence to recognized engineering standards and practices. In Ontario, speed regulations are primarily defined in the HTA, which states "no person shall drive a motor vehicle at a rate of speed greater than 50 kilometres per hour on a highway within a local municipality or within a built-up area." This provision is commonly known as the Statutory Speed Limit.

[15] Ontario Ministry of Transportation, *Ontario Traffic Manual Book 6: Warning Signs*. Queen's Printer of Ontario, 2001.

Other studies have reported that a reduction in vehicle operating speeds from 50 kilometres per hour to 40 kilometres per hour increases the chance of survival from 15% to 70% for a vulnerable road user struck by a vehicle. This rate is further increased to 90% for operating speeds of 30 kilometres per hour[16].



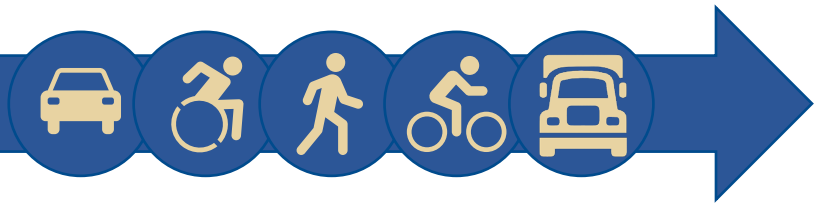
The HTA allows municipalities to designate entire areas with a posted speed limit lower than 50 kilometres per hour by posting the Gateway Speed Limit Signs (shown at right) at all entrance and exit points to the area. All streets that fall within the posted signs are designated with the same speed limit denoted on the gateway signs.

In its ongoing efforts to enhance community safety, the Municipality should consider implementing 40 kilometre per hour speed limits on all local and collector roads in settlement areas. The Municipality should also consider further reducing the posted speed limit on roads within School Zones to 30 kilometres per hour. Reducing speed limits in these locations would reinforce to motorists that they are entering areas with a higher number of vulnerable road users and must exercise extra caution as they are more likely to encounter pedestrians in the road, especially young children.

Lowering the posted speed limit alone is typically not enough to achieve a sustained reduction in vehicle operating speeds. Police enforcement can be an effective measure to achieve compliance, but without constant and rigorous attention drivers tend to return to operating their vehicles at the speed they feel most comfortable regardless of the posted limit. Implementing traffic calming measures (per **Subsection 4.7.6**) to force motorists to slow down is one option to reduce the potential burden on the Ontario Provincial Police to enforce the reduced speed limit on all residential roads.

The Municipality should develop a comprehensive Speed Management Program in concert with a policy of area-wide speed limits on neighbourhood streets and in School Zones (per **Subsection 4.7.4**). The program should set out the speed management measures for use in North Perth, including tools such as education, enforcement, and communication, and define funding requirements and sources, and identify potential partners, such as the Ontario Provincial Police and Huron Perth Public Health. Initiatives should focus primarily on local and collector roads within residential communities. Most higher order roads in the Municipality fall under the jurisdiction of Perth County or MTO, with the few arterial facilities under Municipal control intended to facilitate the movement of large volumes of people and goods, including truck traffic, at higher speeds.

[16] City of Toronto. *Toronto Complete Streets Guidelines*. 2016. Figure 8-5.



Outside settlement areas and on arterial roads under North Perth jurisdiction, the statutory speed limit should be maintained unless the location satisfies the criteria set out in the Traffic Management Protocol for a posted speed limit change. The OTM Books also offer no warrants or guidelines for modifying speed limits, albeit OTM Book 5 provides some guidance pertaining to sign installation and placement. The Transportation Association of Canada *Canadian Guidelines for Establishing Posted Speed Limits* should be referenced in this case.

Policy:

The Municipality will establish a uniform 40 km/h speed limit on all residential Local Roads and Collector Roads within the settlement areas designated on Schedule A of the Perth County Official Plan. The Municipality may further reduce the posted speed limit to 30 km/h on road sections adjacent to a designated School Zone.

The Municipality will retain the statutory speed limit on all other roads.

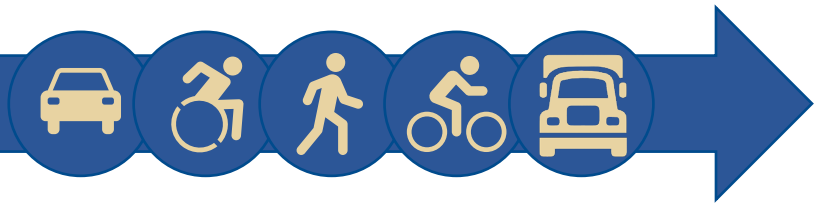
The Municipality may consider changing the posted speed limit at locations satisfying the screening criteria specified in the **Traffic Management Protocol**, if justified by analysis pursuant to the Transportation Association of Canada *Canadian Guidelines for Establishing Posted Speed Limits*. The Municipality will specify transition zones between one speed limit and another of no less than:

- 500 m apart for Arterial Roads and 250 m apart for Local Roads and Collector Roads inside the settlement areas designated on Schedule A of the Perth County Official Plan; or
- 1.0 km apart for Arterial Roads and 500 m for Local Roads and Collector Roads outside the settlement areas designated on Schedule A of the Perth County Official Plan. The differential between speed limits within the transition should be no greater than 20 km/h.

4.7.6 Traffic Calming

Traffic calming is defined as the implementation of physical or physiological changes to the roadway to reduce traffic speeds and/or volumes and improve safety and overall "quality of life" in a neighbourhood. The Transportation Association of Canada *Canadian Guide to Traffic Calming* identifies a broad range of potential traffic calming techniques for use in Canada, categorizing the measures into two general groups:

- **Physical Measures**, which consist primarily of vertical and horizontal deflections in the roadway. This group also includes treatments that narrow the roadway, alter the road surface, or restrict access. Physical measures are intended to



influence motorist perceptions, thereby altering driver behaviour, and forcing motorists to travel at lower speeds and/or to select alternative routes; and

- **Non-Physical Measures**, which include tools and strategies intended to influence or modify driver behaviour, often described as education and enforcement.

Physical traffic calming aims to modify driver behaviour by influencing motorists to travel at lower speeds, make certain manoeuvres, and/or select alternate routes through the placement of vertical and/or horizontal deflections in the roadway and/or other treatments to narrow the street, alter its surface, or restrict access. This category of traffic management measures needs minimal enforcement to be effective ("self-enforcing") but can cause unintended consequences, like:

- Increased emergency vehicle response times;
- Reduced or impeded access and egress by motor vehicle;
- Shifting traffic concerns to other streets;
- Increased maintenance costs, including snow clearing and curbside waste collection; and
- Increased vehicle emissions and/or noise pollution.

Physical traffic calming is usually appropriate for local residential and minor collector roadways, although some traffic calming measures can also be applied to major collector or arterial roadways. Measures on higher-order roads are typically designed to limit impacts to the function or capacity of the roadway, and instead change the driver's perception of the adjacent road environment (i.e., landscaped boulevards, streetscaping, rural-to-urban gateway treatments, etc.).

It is recognized that in certain situations, an alternative solution may not exist or be considered feasible. Under such circumstances, staff shall consider potential speed reduction techniques and the installation of warning signage and/or flashing lights when recommending against the installation of all-way stop control at an intersection.

The Traffic Management Protocol includes detailed guidance on the application of physical and non- physical traffic calming measures based on information contained in the *Canadian Guide to Traffic Calming*.

Policy

The Municipality will only install physical traffic calming measures at locations satisfying the screening and warrant criteria specified in the **Traffic Management Protocol**.

Recommendation 4.15: Adopt and apply the **Traffic Management Protocol** in **Appendix E**.

Recommendation 4.16: Establish a uniform 40 km/h speed limit on all residential Local Roads and Collector Roads within the settlement areas designated on Schedule A of the Perth County Official Plan and further reduce the posted speed limit to 30 km/h on road sections in these areas adjacent to a designated School Zone.

Recommendation 4.17: Develop a Speed Management Program focusing primarily on Local Roads and Collector Roads in residential communities and assess the effectiveness of the program in achieving compliance with lower area-wide and School Zone limits.

Recommendation 4.18: Develop and post public education and communication material pertaining to traffic control devices, warrants, and frequently asked questions on the Municipality's website.

4.8 Parking

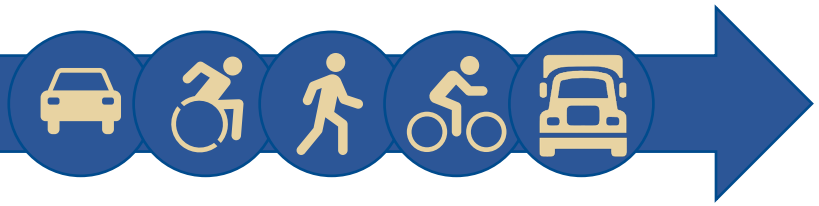
Parking is an integral element of the transportation system. An appropriate balance of parking supply and demand is necessary to support business viability and maintain residential neighbourhood integrity. Managing the supply, location, and price of parking can also be an effective way to influence travel behaviour.

4.8.1 On-Street Parking and Stopping Regulations

On-street parking has an important relationship to pedestrian and motorist safety, the capacity and level of congestion on roadways, and the economic well-being of adjacent businesses. It can create a buffer, separating pedestrians on the sidewalk from motor vehicle traffic on the adjacent roadway. It may also help reduce vehicle speeds, further enhancing pedestrian safety and comfort.

On the other hand, on-street parking can limit visibility of pedestrians for motorists. The "dart out", often by a child, is one of the most common types of midblock pedestrian collision in residential areas. For this reason, the restriction of on-street parking in areas with higher pedestrian activity can improve safety and enhance visibility between street users.

By-law No. 47-PW-2000 sets out the on-street parking and stopping regulations in North Perth. The following guidance should be applied when interpreting or considering requests for changes to the by-law provisions. Each situation should be evaluated on a case-by-case basis:



- **In the Vicinity of Elementary Schools**, prohibit stopping on the opposite side of the street and parking along the frontage. These prohibitions should be signed;
- **In the Vicinity of Pedestrian Crossovers**, prohibit parking within 30 metres of any crosswalk that is not located at an intersection. These prohibitions should be signed;
- **In the Vicinity of Intersections**, prohibit parking within 10 metres of an unsignalized intersection and 15 metres of a signalized intersection. These prohibitions should be signed in locations with recurring issues. The primary purpose of restricting parking at intersections is to improve sight distance;
- **On Streets with High Parking Activity**, adjust regulations to increase turnover if there is a demand issue, prohibit parking or stopping if there is a sight visibility concern, or implement permit parking if there is undesired long duration parking, such as during the daytime near employment uses; and
- **On Shoulder Areas/Edges of Pavement Reserved for Pedestrians and Cyclists**, prohibit parking in conjunction with the design of active transportation facilities. Depending on the characteristics of the roadway, the prohibition could be limited to certain times of the day and days of the week, with the limitations tailored to the specific location in consultation with abutting property owners. These prohibitions should be signed.

The by-law, originally enacted in 2000, is somewhat dated. A review should be considered to ensure the regulation reflects current provisions of the HTA, embodies prevailing practices and the TMP recommendations, and accurately captures the limits and conditions of location-specific parking and stopping restrictions.

4.8.2 Off-Street/On-Site Parking Requirements

Zoning By-law No. 6-ZB-1999 governs the supply of off-street/on-site parking in the Municipality. The by-law stipulates the minimum number of parking stalls required for a development but does not specify a maximum number of spaces.

With changes in parking behaviour and community expectations in recent years, the parking provisions set out in the zoning by-law should be reviewed and updated to ensure alignment with contemporary regulations and the TMP recommendations. Specific items to consider include:

- Parking requirements for residential intensification areas;
- Opportunities for shared parking in commercial areas;
- Parking provisions for bicycles, rideshare, and carshare; and
- Parking implications of new mobility and emerging trends and technologies, such as work at home.

4.8.3 Parking in Downtown Listowel

Parking is often viewed as one of the basic elements in sustaining a healthy downtown and expanding commercial activity within the central core. The supply, location, and price of parking are very sensitive issues for downtown businesses and neighbouring residents. Inadequate supply or high parking prices can serve as deterrents to patron visits, hinder the attraction of new businesses to downtown areas, and adversely impact adjacent neighbourhoods.

The parking systems in downtown Listowel comprises:

- **Public On-street Parking (On-street)**, which is intended to provide close and convenient parking for patrons visiting the downtown area. It facilitates customer access to businesses and allows dome delivery and pick-up of goods. In this context, on-street parking is typically shorter term and turnover of vehicles is encouraged through time-limited parking and loading zones;
- **Municipally Controlled Off-street Parking (Municipal Lot)**, which is typically shared between short-term (customers) and longer duration users (employees); and
- **Privately Owned, Publicly Accessible Off-Street Parking (Private Off-Street)** provided throughout the downtown area, generally as part of, or adjacent to the businesses and residences it serves.

Currently, the Municipality does not charge for parking in any lot or on-street location.

The Municipality completed the Listowel Downtown Core Area Parking Study in 2016 to confirm demands and identify deficiencies with the parking system, as well as to develop alternatives to provide additional parking supply, support local development, and enhance the experience for patrons and visitors to the area. The study identified several potential enhancements to improve, to varying degrees, parking conditions in the downtown area, some of which have been implemented.

The Municipality should update the study to provide more current direction for planning and implementing future parking system modifications. The study should update the assessment of current parking conditions and reassess future requirements and actions.

Recommendation 4.19: Adopt and apply the guidance in **Subsection 4.8.1** in responding to requests for on-street parking and stopping regulation changes.

Recommendation 4.20: Review and update the on-street parking and stopping regulations in By-law No. 47-PW-2000.

Recommendation 4.21: Review and update the parking standards in Zoning By-law No. 6-ZB-1999.

Recommendation 4.22: Update the Listowel Downtown Core Area Parking Study.

4.9 Gravel Roads

Approximately 60% of the Municipality's road network (by centreline distance) is gravel surfaced. Nearly all north-south roads (under North Perth jurisdiction) between the southern municipal boundary and Line 81, and between Line 86 and County Road 178/County Road 93 fall into this category. In the southern half of the Municipality (south of Line 86), all east-west roads, except for parts of Line 81 and Line 84, are also loose top.

The *2019 Asset Management Plan*, which reflected information from the *2017 Roads Inspection Report*, provided asset condition ratings for the Municipality's urban and rural paved roads. The plan did not address gravel road conditions because they were considered to "vary widely over time based on weather and traffic conditions."[17]The decision to hard surface a gravel road is a matter of trade-offs. Paving helps to seal the surface from rainfall, and thus protects the base and subgrade material. Hard topping also eliminates dust problems, has high user acceptance because of increased smoothness, and can accommodate many types of vehicles such as tractor-trailers that do not operate as effectively on unsurfaced roads.

Despite the benefits of paving a road, a well-maintained gravel road can offer several benefits. Loose top roads have the advantage of lower construction and sometimes lower maintenance costs. They may be easier to maintain, requiring less equipment and possibly lower operator skill levels. Potholes can be patched more effectively. Gravel roads also generate lower speeds than paved surfaces.

Properly maintained, a gravel road can serve general traffic adequately for many years. But in some instances, the need to reduce maintenance costs, provide a smooth riding surface, and/or accommodate higher volumes or larger vehicles necessitates consideration of conversion of the road from gravel surfaced to paved. As noted above, this decision depends on several factors and ultimately trade-offs. To ensure the Municipality has relevant guidance, a Gravel Roads Conversion Policy should be developed to clearly articulate guidelines and criteria for considering upgrading a gravel road to a hard surface. Typical criteria include average annual daily traffic volumes (AADT), road classification, truck volumes, and other factors such as existing pavement condition (e.g., PCI), existing and forecast maintenance expenditures,

[17] Municipality of North Perth and Hemson Consulting, *Asset Management Plan*, 2019, 73.

network connectivity, and drainage considerations. Financial implications should be one but not the only factor in the decision-making process.

Recommendation 4.23: Develop a Gravel Roads Conversion Policy.

4.10 Automated, Connected, and Electric Vehicles

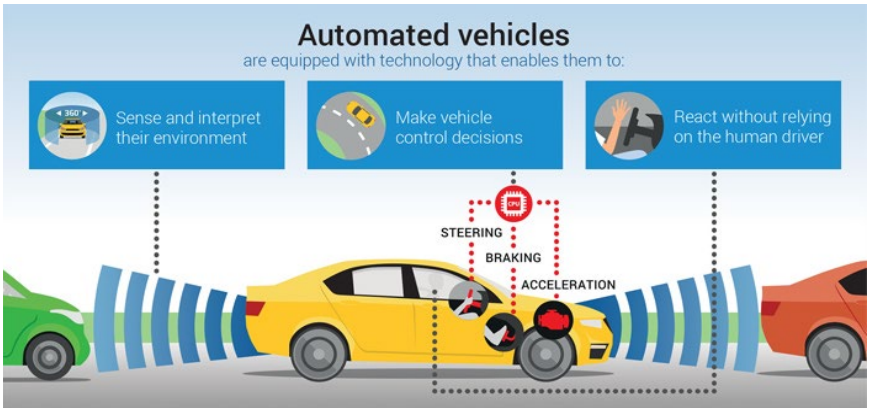
Over the past decade, the automotive industry has made considerable technological advances in the fields of:

- **Automated Vehicles (AVs)**, which have at least some aspects of a safety-critical control function (e.g., steering, throttle, or braking) occur without direct driver input. There are six levels of vehicle automation, ranging from Level 0 (No Automation) to Level 5 (Full Automation or Autonomous), as defined by the Society of Automated Engineers (SAE) International;
- **Connected Vehicles (CVs)**, which rely on different wireless communication technologies to communicate with the driver, other cars on the road (vehicle-to-vehicle [V2V]), roadway infrastructure (vehicle-to-infrastructure [V2I]), and the "Cloud" [V2C], and
- **Electric Vehicles (EVs)**, which use one or more electric or traction motors for propulsion. An EV may be powered through a collector system by electricity from off-vehicle sources, or may be self-contained with a battery, solar panels, or an electric generator to convert fuel to electricity.

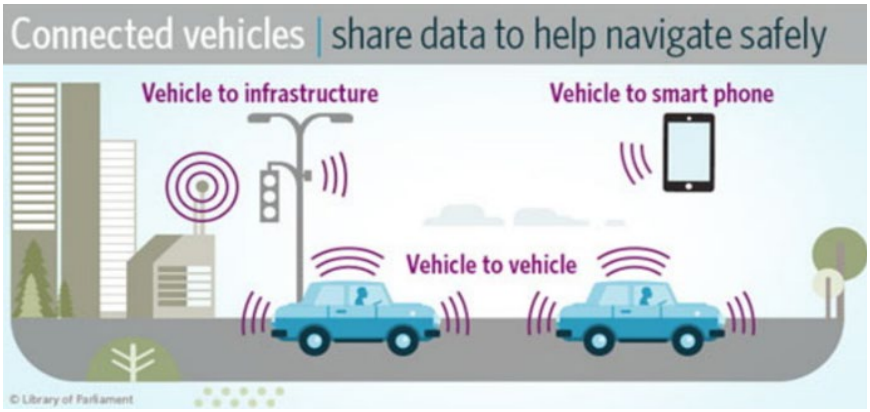
Automated, connected, and electric (ACE) vehicles, as illustrated in **Figure 4.2**, offer opportunities to improve transportation system safety and efficiency in both rural and urban communities. From a positive perspective, they have the potential to reduce collisions, traffic congestion and emissions, improve mobility and equity (particularly for youth, seniors, and individuals with disabilities), and lessen the need for roadway expansion and on-site parking. At the same time, if not deployed and managed properly, these technologies could lead to more traffic, inequitable access to mobility, and adverse environmental impacts.

The future of ACE vehicles, especially AVs and CVs (collectively referred to as CAVs), could be highly disruptive, for better or worse. Gaining a better understanding of the likely outcome is complex and difficult to fully grasp at this time given:

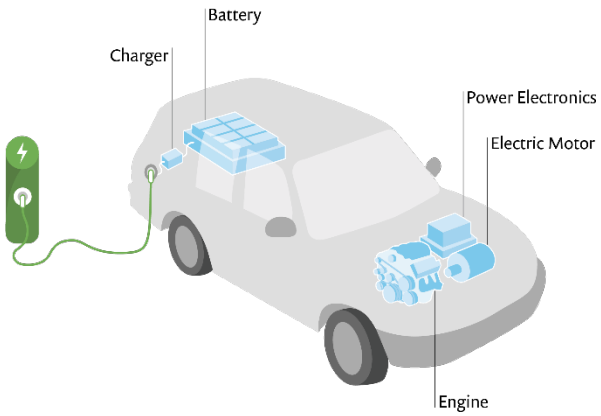
- CAVs may have a broad range of economic and social impacts, many of which extend beyond transportation and are unknown or dependent on further information;
- The potential effects of widespread CAV use are both positive and negative;



(Source: https://www.autonomousvehicleinternational.com/news/business/eu-auto-makers-publish-automated-driving-checklist.html#prettyPhoto/0/)

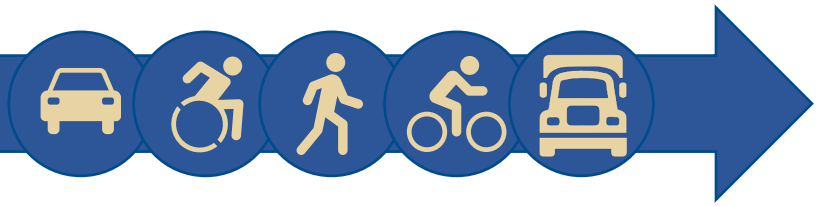


(Source: https://startupheretoronto.com/partners/mentor-works/connected-vehicles-innovative-technology-driving-market/)



(Source: https://www.kindpng.com/downpng/hhomibb_transparent-electric-car-png-city-car-png-download/)

Figure 4.2: Automated, Connected, and Electric Vehicles



- Timelines for the arrival of CAVs are uncertain; and
- The impacts of accommodating CAVs on transportation infrastructure are not well understood, especially implications for design and standards.

Capitalizing on opportunities and effectively addressing risks will require governments to prepare carefully. The *Automated and Connected Vehicles Policy Framework for Canada*[18] sets out the following six guiding principles for initiatives and policies related to the introduction of CAVs on public roads:

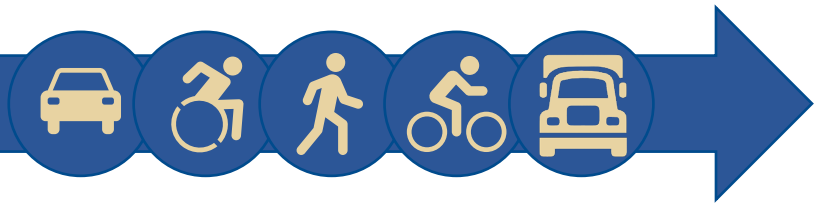
- **Prioritize safety** – While there is pressure to adapt quickly to emerging technologies, safety is a top priority for testing and deploying these vehicles;
- **Exchange information to ensure CAVs are safe and secure** – Data needs to be shared with governments and law enforcement while protecting privacy;
- **Align CAV policies and regulations** – A common, coordinated approach within Canada (and outside the county) is essential;
- **Raise public awareness of the capabilities and limitations of CAVs** – Governments, as well as industry, will play an important role in education and outreach;
- **Prepare proactively for the deployment of CAVs on public roads** – All levels of government must ready themselves for the potential safety, mobility, and land use planning implications of these technologies; and
- **Collaborate continually with those involved in the CAV sector** – A culture of cooperation and collaboration will be essential to successful implementation.

Consistent with these principles, the roles, and responsibilities for municipalities in the introduction of ACE vehicles can include[19]:

- Enacting and enforcing traffic and parking by-laws;
- Facilitating trials and deployment on municipal roads. In 2016, the province launched a ten-year pilot program allowing the testing of AVs on Ontario roads;
- Adapting and implementing infrastructure to support deployment;
- Implementing curb management strategies to organize operation and designate areas for vehicle dwelling;

[18] Council of Ministers of Transportation and Highway Safety, Policy and Planning Support Committee (PPSC) Working Group on Automated and Connected Vehicles. *Automated and Connected Vehicles Policy Framework for Canada*. 21 January 2019.

[19] Ontario Ministry of Transportation. *CAV Readiness Plan, Final Report*. March 2020.



- Implementing or modifying policies pertaining to the supply and management of on-street, municipal lot, and private, off-street parking;
- Developing strategies to repurpose infrastructure and land no longer required for parking;
- Managing and regulating passenger transportation impacted by deployment (including public transit, taxis, and shared mobility services);
- Creating and managing new logistics, regulations, and revenue structures for traffic and parking control;
- Engaging, educating, and raising awareness with the public; and
- Establishing funding streams for related initiatives.

The installation of EV charging stations in municipal parking lots and on-street is another action being taken by municipalities to support ACE vehicle use. By helping to make electric vehicles more convenient, municipalities hope to encourage greater ACE use to lower their overall carbon footprint. Some municipalities are partnering with private companies (such as Tesla) to implement the stations at public facilities and on-street. At present, North Perth has three EV charging stations[20] (all in Listowel). Other locations in the Municipality should be considered, particularly public facilities allowing broad community access. Government funding to finance implementation may also be available.

Recommendation 4.24: Develop an action plan identifying the tasks required to prepare the Municipality for the introduction of automated, connected, and electric vehicles, which include changes to by-laws, policies, and guidelines pertaining to testing, infrastructure design, parking, curb management, traffic control, vehicles, and other items.

Recommendation 4.25: Pursuant to the action plan, permit the testing and deployment of automated and connected vehicles on Municipal roads.

Recommendation 4.26: As part of the action plan, expand the availability of electric vehicle charging stations, beginning with installations at the Municipal Office, and at the Listowel and Atwood North Perth Public Libraries.

Recommendation 4.27: As part of the action plan, develop an automated, connected, and electric vehicle public education program.

[20] According to the website PlugShare https://www.plugshare.com/ [Accessed December 9, 2020].

5 Active Transportation and Shared Mobility Strategy

5.1 Overview and Context

Active transportation refers to all forms of human-powered travel – mostly walking and cycling but also in-line skating, skateboarding, and the use of mobility aids such as wheelchairs. As a strategy, active transportation meets multiple community and transportation objectives, providing myriad public health, safety, environmental, sustainability, economic/financial, quality of life, societal, and connectivity benefits.[21] The Perth County and Listowel Ward Official Plans recognize the importance of promoting walking, cycling, and other forms of active travel from a land use perspective, as both support and encourage compact urban forms and building siting to "encourage and facilitate active transportation."

Shared mobility can be described as the sharing of transportation services and resources among users, either concurrently or one after another. The services and resources comprise a continuum of choices that includes public transit, micromobility (i.e., bikesharing, scooter sharing), automobile-based modes (i.e., carsharing, rides on demand, and microtransit), and commute-based modes or ridesharing (i.e., carpooling and vanpooling).[22]

Many Canadian jurisdictions have recognized the positive impact of facilitating options for active travel and developed strategies to guide future infrastructure investments and program delivery supportive of these objectives. By contrast, shared mobility is a more emerging field, with most municipalities just beginning to realize the benefits and implications for their communities. In the case of North Perth, offering a range of mobility options will help shape a more sustainable and progressive transportation future for the Municipality. These services can have many positive impacts on overall community and individual well-being, social cohesion, community identity, and equity.

This chapter describes the recommended **active transportation and shared mobility strategy** for the Municipality of North Perth, outlining and summarizing the active transportation network development process and proposed network resulting from the assessment. Recommended policies and guidelines to support active transportation use and promotion are also provided. Shared mobility opportunities for the Municipality are presented, as well.

[21] Transport Canada, *Active Transportation in Canada – A Resource and Planning Guide*. Ottawa, 2011
[22] https://sharedusemobilitycenter.org/what-is-shared-mobility/

5.2 Walking

Pedestrian networks must be safe, accessible, and comfortable. Compared to other transportation modes, pedestrians cannot travel as fast or as far and their experience is more easily impacted by factors outside their control, especially the road environment. Pedestrians are also the most vulnerable road users and must rely on all senses to safely navigate their trip.

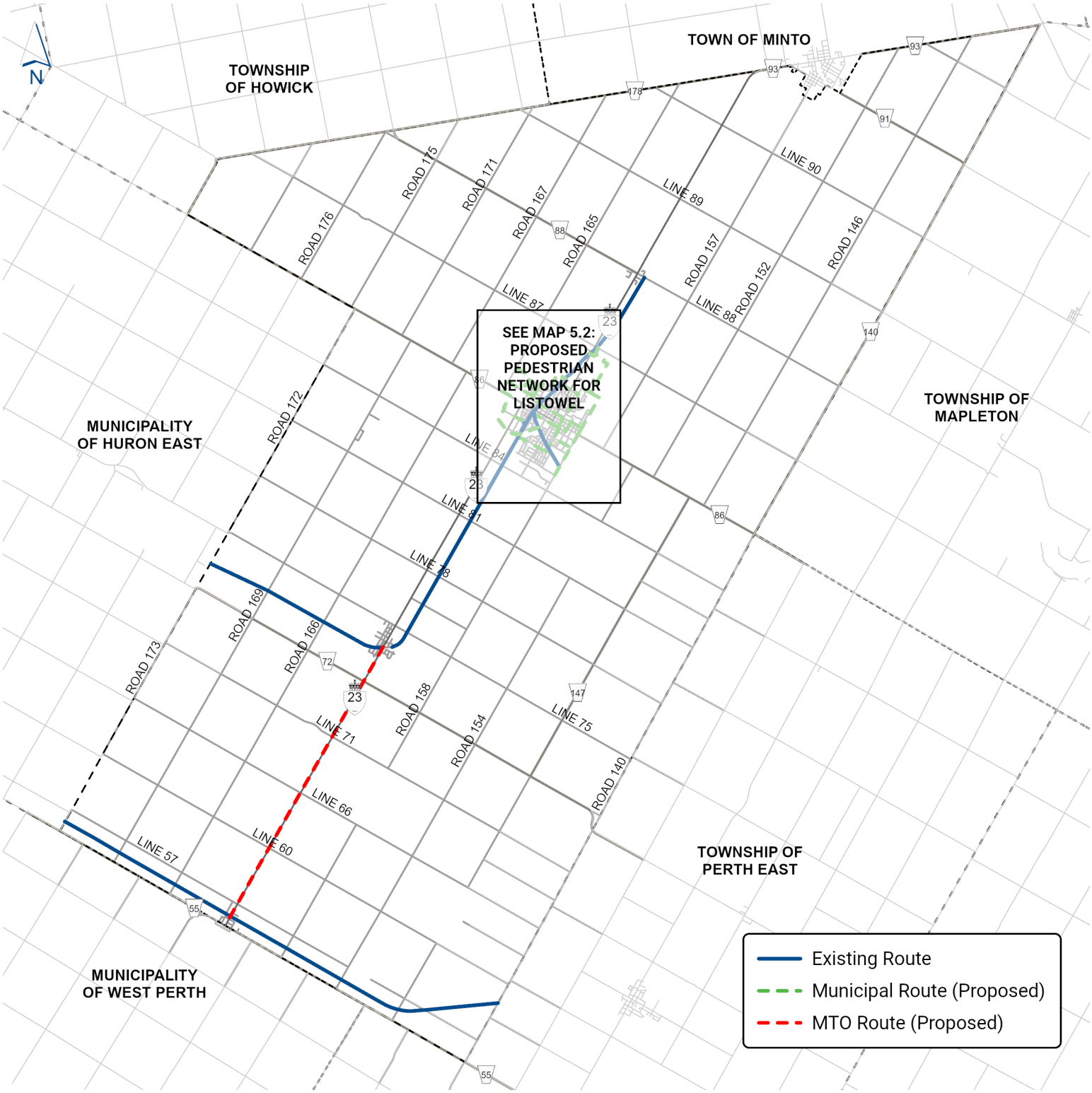
Map 3.2 (in **Chapter 3**) shows existing sidewalk facilities on many roads in Listowel, Atwood, and Monkton. A few multi-use trails supplement the pedestrian network, as **Map 3.3** (also in **Chapter 3**) depicts. However, many roads in the Municipality currently lack suitable facilities, creating connectivity challenges and safety concerns for pedestrians.

The pedestrian network development process focused on the communities of Listowel, Atwood, and Monkton, relying on the broader trail network shared with cyclists and other users (see **Section 5.3**) to serve pedestrian travel between settlement areas. The assessment identified gaps in the existing network shown in **Map 3.2** based on the principle that sidewalks should be provided on both sides of Arterial and Collector Roads, and at least one side of Local Roads. In planning the network, consideration was given to ensuring pedestrian routes were:

- **Connected and Permeable** – Provided continuous routes serving pedestrian desire lines;
- **Accessible and Comfortable** – Minimized impediments to barrier-free travel;
- **Safe** – Situated in appropriate locations and limited road crossings;
- **Relevant to Context** – Suited to the Municipality and leveraged existing facilities.

Map 5.1 illustrates the proposed pedestrian network for the Municipality. **Map 5.2** shows the detailed plan for the Listowel Urban Area. The network consists primarily of sidewalk and multi-use trail facilities, with several elements shared with the proposed cycling network illustrated in **Map 5.3** (later in this chapter).

Recommendation 5.1: Adopt the proposed pedestrian networks illustrated in **Map 5.1** and **Map 5.2**.



MAP 5.1: PROPOSED PEDESTRIAN NETWORK

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 3 4 5 6 7 8 9 10 11

km

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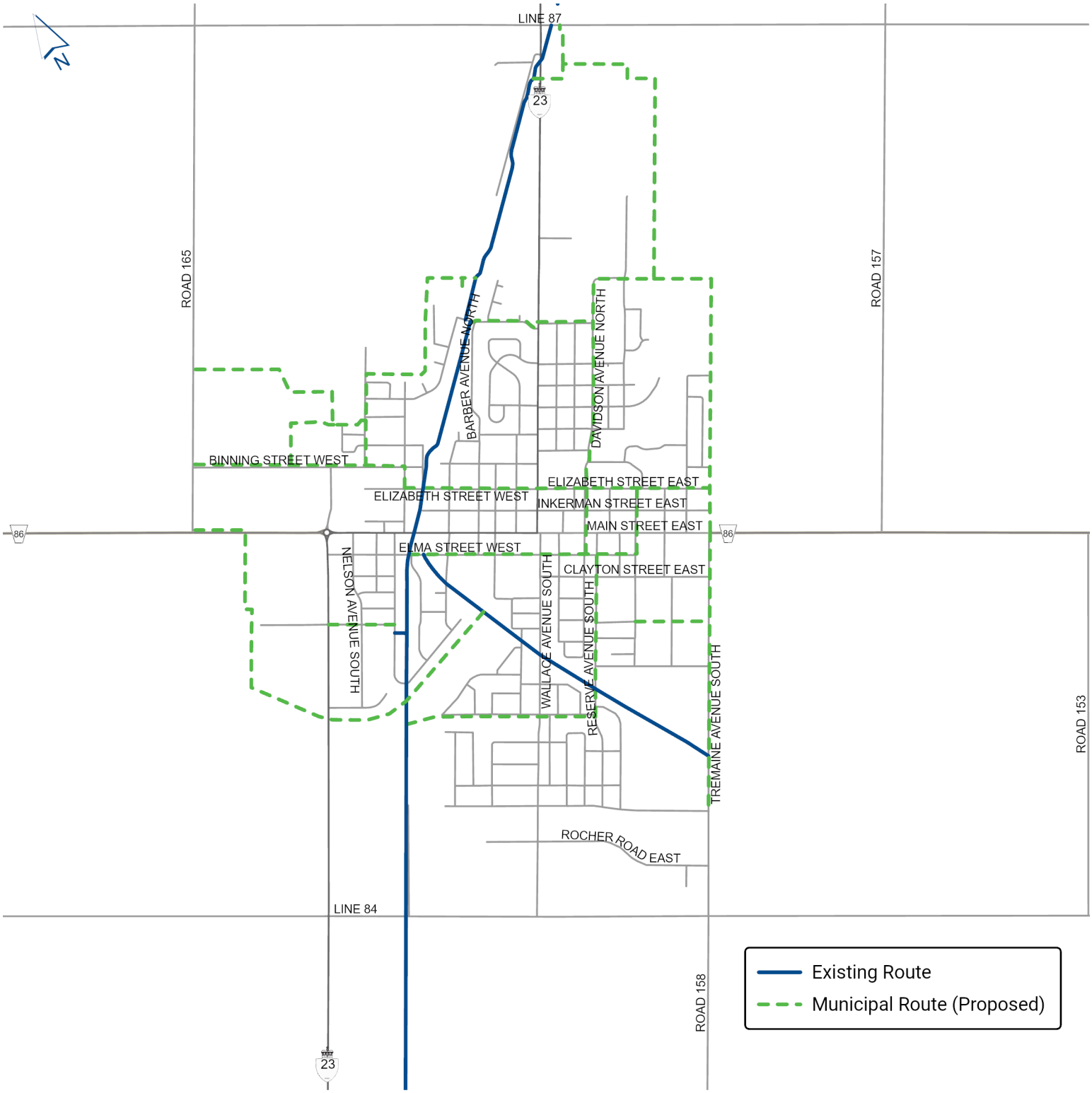

MAP 5.2: PROPOSED PEDESTRIAN NETWORK FOR LISTOWEL

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 km

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5.3 Cycling

5.3.1 Cycling Network

Like pedestrian systems, cycling networks must be safe, accessible, comfortable, and enjoyable to users. Networks must also be comprehensive and connected to appeal to the "interested but concerned" design user.

The following summarizes the four-step process used to develop the proposed cycling network for North Perth. The process applied the guidance contained in *OTM Book 18 – Cycling Facilities*[23] and considered input gathered through the Engagement Program (see **Chapter 2** and **Appendix A**). The network development process does not include recommending a cycling facility type or design for each route. This will occur closer to implementation.

Step 1 – Existing Cycling Network Assessment

The existing cycling network depicted in **Map 3.3** (in **Chapter 3**) served as the starting point for the network development process. The current network of predominately unpaved (crushed limestone) multi-use trails links several destinations and pedestrian generators in Listowel, with connections to Gowanstown and Atwood.

The review included an inventory of Municipality road surfaces to identify opportunities and constraints for on-road and off-road cycling facilities.

Step 2 – Identification of Spine Cycling Network

The next step in determining the proposed cycling network was to identify primary east-west and north-south routes through Listowel and the rural area of the Municipality that best satisfy the objectives listed in **Table 5.1**. Offering a (predominately) grid network of (largely) continuous routes in both orientations improves network connectivity and coverage, thereby providing greater options for cyclists. The following resources aided in identifying the spine cycling network:

- Current ridership based on the Strava Global Heatmap;
- Existing road surface (e.g., paved versus unpaved);
- Connectivity to other municipal roads, specifically those that offer parallel routes to the Perth County and provincial arterial road network; and
- Consultation with Municipality staff.

[23] Ontario Ministry of Transportation, *Ontario Traffic Manual Book 18: Cycling Facilities*. Queen's Printer of Ontario, 2021.

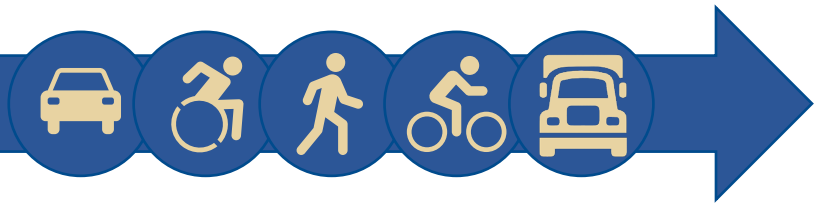


Table 5.1: Cycling Route Objectives

Objective	Description
Continuous and Direct	The route should provide a complete connection, linking to other routes, places of interest, and other modes of transportation. The shortest routes to key destinations are preferred, although less direct routes may be necessary to improve safety, accessibility, and comfort and/or avoid physical barriers.
Safe, Accessible and Comfortable	The route should minimize risk, provide adequate space to develop a facility that meets AODA requirements, and be comfortable for a broad range of users, regardless of differences in capabilities and socio-economic circumstances. Routes in roadway corridors with higher vehicle speeds and volumes should separate vehicles from cyclists (and pedestrians). Routes without street parking are preferred. Protection from or removal of street parking should be considered if possible. Other considerations include surface quality, sightlines, and maintenance.
Potential Use and Future Demand	The route should serve the highest concentrations of development and key points of interest. Potential future connections based on planned development should also be considered.
Context Sensitive and Cost-Effective	The route should build on existing infrastructure where possible with higher volume routes given priority. Routes and corresponding facilities should suit the expected volume and type of cyclist (and pedestrian) traffic (tourist versus commuter). Cycling infrastructure should be coordinated with construction and other road works.

Table 5.2 summarizes the assessment of potential cycling roues for the rural area of the Municipality based on the sources noted above. The table details key opportunities and challenges for each segment.

The key east-west and north-south routes generally correspond to sections of paved municipal road. A limited number of routes were identified in the areas south of Perth Line 72 due to a lack of paved local roads. Connectivity is strongest in the areas north of Perth Line 86 where paved roads in both the east-west and north-south directions are more frequent. These existing roads provide the foundation for the cycling network across most of the Municipality.

Table 5.3 summarizes the assessment of potential cycling routes in the Listowel Urban Area. The table details key opportunities and challenges of each segment.

Table 5.2: Cycling Route Assessment – Rural Area

Route	Opportunities	Challenges	Carry Forward
East-West Corridors			
Line 90 from Road 157 to Road 147	• Cyclists already frequent route • Parallel alternative to Perth Line 91 • Segment paved for its entire length	• Route does not connect to other corridors frequented by cyclists	No
Line 89 from Perth Road 178 to Road 165	• Cyclists already frequent route • Parallel alternative to Perth Line 88 • Segment paved for its entire length	• Route does not connect to routes outside of North Perth	Yes
Line 87 from Road 176 to Perth Road 140	• Route connects to existing Listowel-Gowanstown Trail • Parallel alternative to Perth Line 86 and Perth Line 88 • Cyclists already frequent route • Segment paved for its entire length	• Portion of road identified as part of proposed truck route • Limited connectivity to north-south routes	Yes
Line 84 from Listowel-Henfryn Trail to Perth Road 147	• Parallel alternative to Perth Line 86 • Cyclists already frequent route • Segment paved for its entire length	• Portion of road identified as part of proposed truck route	Yes
Line 81 from Road 172 to Perth Road 147	• Parallel alternative to Perth Line 86 • Cyclists already frequent route • Route paved between Road 172 and Perth Road 140	• Parallel connectivity to Line 78	Yes

Table 5.2: Cycling Route Assessment – Rural Area

Route	Opportunities	Challenges	Carry Forward
Line 78 from Listowel-Henfryn Trail to Perth Road 147	• Parallel alternative to Perth Line 86 • Cyclists already frequent route	• Segment gravel surfaced • Parallel connectivity to Line 81	No
North-South Corridors			
Road 158 from Perth Line 72 to Perth Line 86	• Cyclists already frequent route • Parallel route to Highway 23 • Segment paved for its entire length • Alternative to Listowel-Henfryn Trail for cyclists looking to avoid pedestrians	• Parallel route to Listowel-Henfryn Trail (may be a redundant connection)	Yes
Road 165 from Perth Line 86 to Line 89	• Connects to potential routes in Listowel • One of two north-south paved segments north of Line 86	• Portion of road identified as part of proposed truck route (between Perth Line 86 and Line 87) • Portion of segment unpaved (between Perth Line 88 and Line 89)	Yes
Road 157 from Line 90 to Palmerston	• Cyclists already frequent route • Parallel route to Highway 23 • Connects to Line 90, linking Palmerston to Drayton	• Route does not connect to other corridors in North Perth	No

Table 5.3: Cycling Route Assessment – Listowel Urban Area

Route	Opportunities	Challenges	Carry Forward
East-West Corridors			
Krotz Street E from Wallace Avenue S to Tremaine Avenue S	• Connects to other routes and key destinations including schools and residential areas • Minimal on-street parking along route reduces potential cyclist-motorist conflicts	• Route parallel to off-road trail (may not be perceived as a preferred route by users)	No
Elma Street W from Listowel-Henfryn Trail to Nichol Avenue S	• Connects to other routes and key destinations including schools and residential areas • Minimal on-street parking along route reduces potential cyclist-motorist conflicts	• Roadway may not be wide enough to allow separated facilities	Yes
Binning Street W from Road 165 to Albert Avenue N	• Connects to other routes and key destinations including schools and residential areas • Wide road right-of-way west of Louise Avenue allows separated facilities	• No direct route to east side of Listowel (ends at Wallace Avenue)	Yes

Table 5.3: Cycling Route Assessment – Listowel Urban Area

Route	Opportunities	Challenges	Carry Forward
Elizabeth Street W from Albert Avenue to Elm Avenue N	• Connects to other routes and key destinations including schools and residential areas • Signalized crossing at Wallace Avenue N • Wide road right-of-way allows separated facilities	• Parking would have to be removed on south side of road for separated facilities • West of Wallace Avenue N, roadway may not be wide enough for separated facilities	Yes
Rogers Road/ McDonald Street W from Albert Avenue N to Wallace Avenue N	• Connects to other routes and key destinations including retail establishments • Wide road right-of-way allows separated facilities • Minimal on-street parking along route reduces potential cyclist-motorist conflicts	• Improved crossing facility required at offset intersection with Wallace Avenue N	Yes (McDonald Street W segment)
McDonald Street E from Wallace Avenue N to Davidson Avenue N	• Connects to other routes and key destinations including retail establishments • Wide road right-of-way allows separated facilities • Minimal on-street parking along route reduces potential cyclist-motorist conflicts	• Improved crossing facility required at offset intersection with Wallace Avenue N	Yes

Table 5.3: Cycling Route Assessment – Listowel Urban Area

Route	Opportunities	Challenges	Carry Forward
Hutton Street from Listowel-Henfryn Trail Lane to Reserve Avenue S	• East-west connectivity to other routes • All-way stop control at Hutton Street and Wallace Avenue S	• New construction required to connect to Listowel-Henfryn Trail	Yes
North-South Corridors			
Albert Avenue N from Line 84 to Rogers Road	• Connects Binning Street W and Elizabeth Street W • Minimal on-street parking along route reduces potential cyclist-motorist conflicts	• Road ends at Main Street. Connections to/from north Listowel would have to be made via other routes (indirect). • Roadway may not be wide enough to allow separated facilities	Yes (Elizabeth Street W to Binning Street W)
Wallace Avenue S from Line 84 to Line 86	• Main north-south route, south of Main Street; connects to other routes and key destinations. • Minimal on-street parking along route reduces potential cyclist-motorist conflicts	• May require additional safety measures to support cyclists • Cyclists may prefer other north-south routes with lower vehicle volumes	No

Table 5.3: Cycling Route Assessment – Listowel Urban Area

Route	Opportunities	Challenges	Carry Forward
Davidson Avenue N from Elma Street E to Walton Avenue N	• Connects to other routes and key destinations • Provides direct north-south route from north Listowel to south of Main Street • Wide road right-of-way south of Clayton Street and north of Inkerman Street allows separated facilities • Minimal on-street parking along route reduces potential cyclist-motorist conflicts	• Controlled intersection crossing required (e.g., crossride or PXO) at Main Street	Yes
Nichol Avenue S from Bright Street E to Elizabeth Street E	• Connects to key destinations including schools and residential areas • Marked school crossing provided over Main Street	• Segment does not provide direct connections to other routes • Additional controlled intersection crossing may be required at Main Street	Yes (Elma Street to Elizabeth Street)
Reserve Avenue S from Krotz Street E to Elma Street E	• Connects to trail network • Wide road right-of-way south of trail allows separated facilities for part of segment	• Road ends at Main Street. Connections to/from north Listowel would have to be made via other routes (indirect).	Yes (Hutton Street E to Elma Street E)

In general, the potential cycling routes in Listowel coincide with municipal roads providing the strongest connectivity without relying on the arterial road network. Roads such as Elma Street and Elizabeth Street provide good east-west connectivity as parallel routes to Line 86. Davidson Avenue and Reserve Avenue provide good north-south connectivity as parallel routes to Wallace Avenue N.

The Municipality will determine the bicycle facility type and design for each route on a case-by-case basis, contingent on available funding and public consultation. Whenever possible, facilities should be implemented concurrently with road reconstruction projects.

Step 3 – Gap Assessment

The recommended spine cycling network provides the foundation for a connected and generally complete cycling network in North Perth. However, gaps and discontinuities will remain due to topographical barriers, inconsistent road surface conditions, or situations where key connecting roads are governed by different jurisdictions. Resolving these connectivity issues will enhance the bicycle network operation by improving safety and connectivity and encouraging the "interested but concerned" rider to choose cycling.

Table 5.4 summarizes the identified gaps and discontinuities with the proposed cycling routes in North Perth. The table also identifies opportunities and constraints for each gap or discontinuity and potential solutions to resolve missing links.

Key gaps in the network include a lack of connectivity in the northeast area of the Municipality (for example, south of Palmerston and east of Gowanstown). Several segments in this area appear to be popular with cyclists (based on the Strava heatmaps) but do not form a standalone route connected to other proposed corridors. The lack of paved north-south roads further complicates route selection in this area.

Another gap in the network exists between Atwood and Monkton. In Atwood, the Listowel-Henfryn Trail redirects west towards Huron East, paralleling the Goderich to Guelph (G2G) Rail Trail through Monkton. Between Perth Line 55 and Perth Line 72, none of the north-south municipal roads are paved, nor are there any parallel Perth County roads. The Municipality should explore opportunities to provide a dedicated pedestrian and cycling corridor parallel to Highway 23 to support active transportation in the southern area of the Municipality.

Table 5.4: Identified Network Gaps and Discontinuities

Gap/Discontinuity	Opportunities	Challenges	Proposed Solution
Lack of east-west routes east of Highway 23 and north of Line 88	• Cyclists frequent Road 156 between Palmerston and Line 90, and Line 90 between Road 156 and Perth Road 140 • Both roads paved	• Road segments form a standalone cycling route, not connected to other routes in North Perth	Explore opportunities to connect Road 156 and Line 90 to the municipal cycling network
Lack of routes in the southern part of the Municipality (e.g., between Perth Line 55 and Perth Line 72)	• Potential to connect to the Goderich to Guelph (G2G) Rail Trail	• Nearly all local roads unpaved in this area of North Perth	Explore opportunities to connect with other roads in Perth East and West Perth

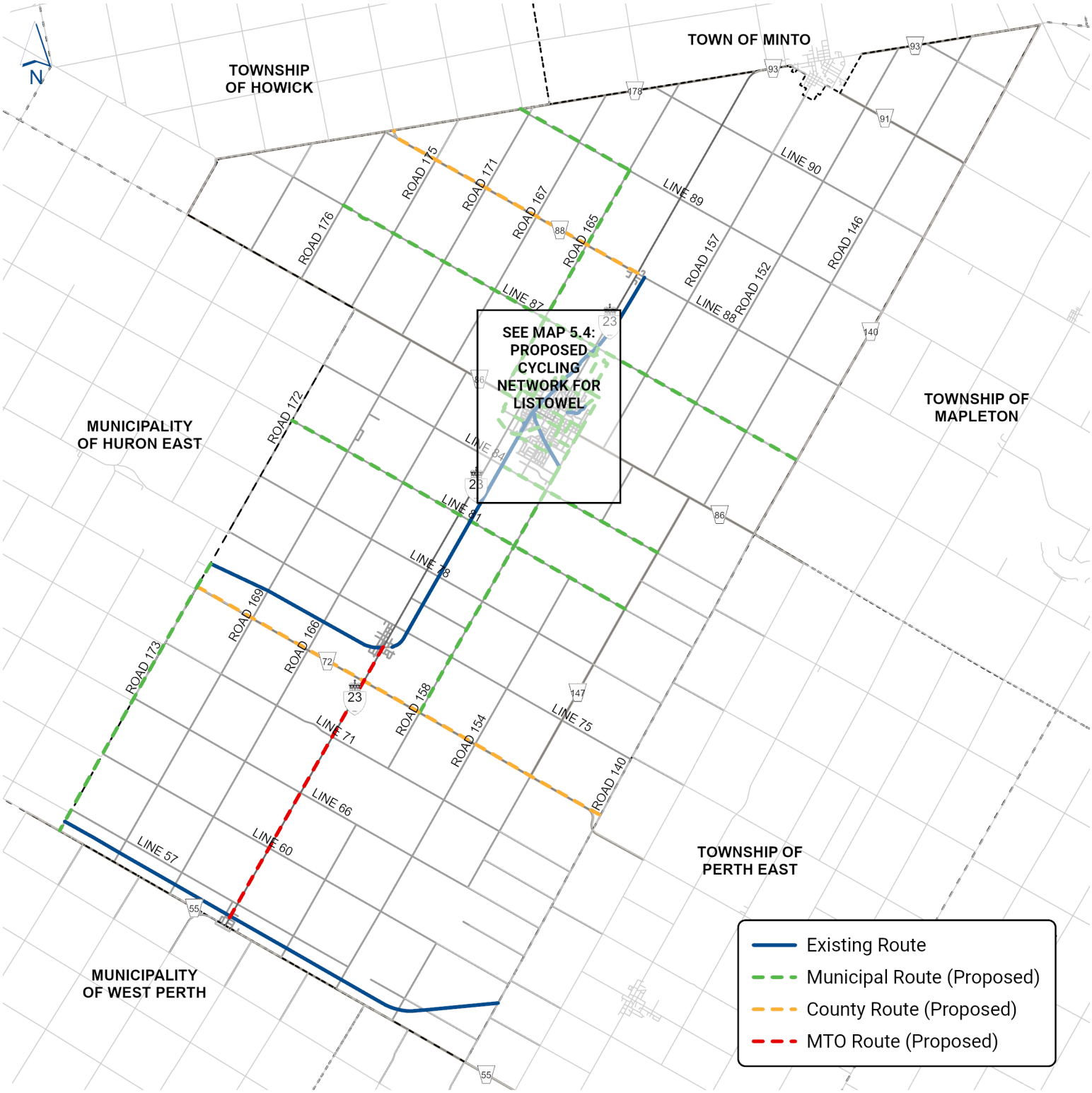
Step 4 –Confirmation of Proposed Cycling Network

Map 5.3 illustrates the proposed cycling network for the Municipality. **Map 5.4** shows the detailed plan for the Listowel Urban Area. These maps reflect the assessments summarized in **Table 5.2** and **Table 5.3** and gap analysis documented in **Table 5.4**. The network plan for Listowel also incorporates input from Municipality staff on other additional connections needed to complete the network. The network features two east-west routes, via Perth Road 88 and Perth Road 72, to enhance connectivity in this orientation.

5.3.2 Bicycle Parking

Cyclists need safe, secure, and accessible bicycle parking at their destination, as the absence of suitable facilities can deter some individuals from cycling.

While numerous locations throughout Listowel already provide bicycle parking, opportunities to expand both the on-site and off-site supply should continue to be pursued. Available spaces should also be inventoried to aid the Municipality in understanding its existing bicycle parking supply, communicate locations to potential users, and provide the foundation for asset management as well as justification for future investments.



MAP 5.3: PROPOSED CYCLING NETWORK

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

0 1 2 3 4 5 6 7 8 9 10 11

km

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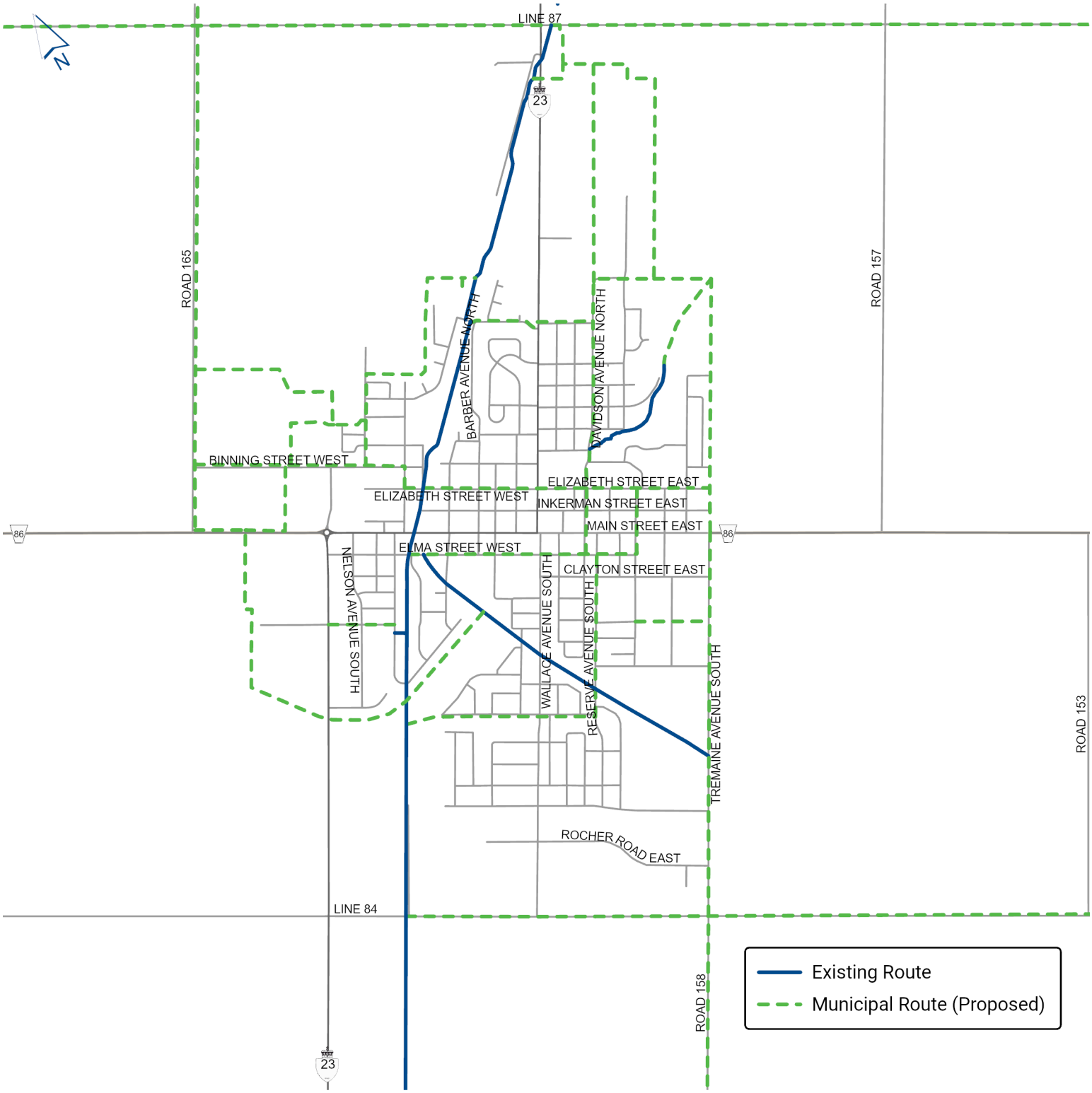
GSP group



MAP 5.4: PROPOSED CYCLING NETWORK FOR LISTOWEL

COORDINATE SYSTEM: NAD 1983 UTM Zone 17N

DATE: May 2024

DATA SOURCES: Municipality of North Perth, Perth County, Land Information Ontario, ESRI

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The following subsections provide general guidance on the planning, design, operation, and maintenance of bicycle parking facilities. The Association of Bicycle and Pedestrian Professionals (APBP) publication *Bicycle Parking Guidelines*[24] is an additional resource to help identify and inform the provision of bicycle parking. The guidance around site planning, bicycle parking rates relative to land use, selection tools, and implementation direction is most applicable to the Municipality.

Types of Facilities

Bicycle parking falls into two categories: short-term and long-term. **Table 5.5** summarizes the typical characteristics of the two types of parking.

Table 5.5: Characteristics of Bicycle Parking Facilities

Criteria	Short-Term	Long-Term
Parking Duration	Less than two hours	More than two hours
Fixture Types	Simple bicycle racks	Lockers, racks in secured areas
Weather Protection	Unsheltered	Sheltered or enclosed
Security	Unsecured, passive surveillance ("eyes on the street")	Secured, active surveillance, either supervised or unsupervised
Typical Land Uses	Commercial/retail, medical/ healthcare, community facilities	Residential, workplace

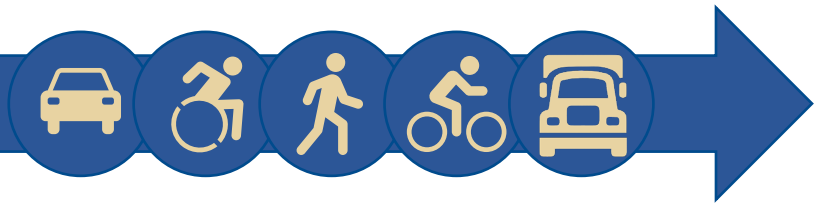
Source: Association of Bicycle and Pedestrian Professionals. *Bicycle Parking Guidelines*, 2019.

Short and long-term parking serve different needs. Users typically parking for two hours or longer likely value security and shelter above the convenience and ease that typically characterizes short-term parking. The following provide further guidance on the application and design of both types of bicycle parking:

<u>Short-Term Parking</u>

Short-term parking facilities are intended to provide a secure, public area for visitors and others to leave their bicycles for a limited time. These facilities usually consist of post and ring, or larger bike racks positioned near building entrances or public spaces. Overhead protection of the area may be offered with little to no surveillance.

[24] Association of Bicycle and Pedestrian Professionals. *Bicycle Parking Guidelines.* 2019.



When designing short-term bicycle parking facilities:

- Place parking spaces in convenient, accessible, and well-lit areas;
- Anchor bike racks securely, preferably to permanent features; and
- Provide aisles at least 1.2 metres wide between bicycle racks and other pedestrian facilities (e.g., sidewalks, entrances).

Long-Term Parking

Long-term parking facilities are usually located in multiple unit residential buildings, schools, office buildings, and transportation hubs. These facilities offer a secure place, such as an enclosed room, locker, or covered and fenced area, for cyclists to leave their bikes for extended periods of time (typically all day or overnight but can be longer).

When designing long-term bicycle parking facilities:

- Provide parking spaces with at least 1.9 metres of vertical clearance and a minimum width of 0.6 metres and length of:
  - 1.8 metres if the bicycle is to be parked horizontally (on two wheels); or
  - 1.0 metres if the bicycle is to be placed vertically (resting on one wheel);
- Provide aisles at least 1.5 metres wide between parked bicycles;
- Anchor bicycle racks/storage lockers securely and to allow the bicycle frame to be locked;
- Enclose the parking area securely with solid opaque walls or in a compound enclosed by a metal fence to maximize security;
- Locate the parking spaces at or within one storey of building grade in an area providing convenient access to main entrances or well used areas (i.e., no more than 50 metres from an elevator or building entrance); and
- Orient at least 50% of the spaces to allow for horizontal bicycle parking, for accessibility purposes.

Supply Rates

Bicycle parking demand depends largely on the trip purpose and destination. Land uses that generate higher than average demands include:

- Schools, colleges, and universities;
- Hospitals;

- Places of assembly and community facilities (e.g., arenas, community centres, public spaces, downtown core etc.); and
- Places of worship.

Table 5.6 provides typical bicycle parking rates by land use for both short and long-term facilities. Development should be encouraged to provide on-site parking consistent with these rates.

Placement and Design

Safe and convenient access to and from bicycle parking is imperative to maximizing its utility and use. Effective parking design should consider the following:

- **Location** – Locate bicycle parking within 30 metres of the trip destination or amenity, with short-term facilities placed closer (e.g., near entrance doors). The location should also provide convenient and safe access to and from nearby bicycle routes and primary entry points.
- **Point of Access** – Delineate and sign the safest and most direct route for users to access bicycle parking, where necessary. Access to facilities via parking lots, loading bays, building entries, internal elevators or other obscured or circuitous access points should be avoided if possible.
- **Access Routes** – Design access routes to bicycle parking to:
  - Provide adequate overhead clearance (mounted cyclists are taller than pedestrians and most motor vehicles);
  - Provide driveways or ramps designed to accommodate bicycle travel for on-sidewalk, short-term parking;
  - Avoid steep ramps, speed humps, catch basins and other hazards to cyclists;
  - Provide appropriate levels of surveillance and lighting;
  - Avoid interference with emergency access, loading bays and other infrastructure;
  - Avoid hazard and impedance to pedestrians.
- **Rack** – Provide properly designed bike racks that support a bicycle that cannot otherwise stand on its own (i.e., provides two points of contact) and allow cyclists to lock the bike frame to the rack. **Figure 5.1** provides examples of more and less desirable rack design.

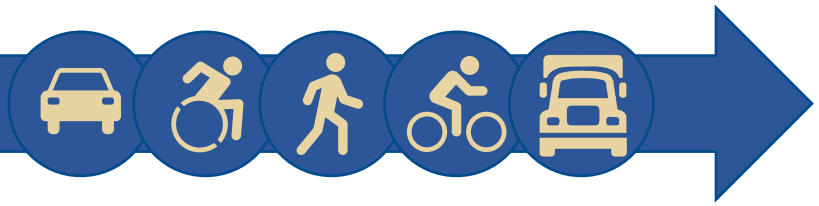


Table 5.6: Typical Bicycle Parking Rates

Land Use	Long-Term Parking	Short-Term Parking
Commercial		
Office	2 spaces plus 2 spaces per 1,000 m^2 of gross floor area (GFA)	At least 3 spaces for any building with 2,000 m^2 or more of GFA
Retail, Service and Other Commercial	2 spaces plus 1 space per 1,000 m^2 of GFA	At least 3 spaces for any building with 1,000 m^2 or more of GFA
Institutional		
Elementary Schools	0.25 spaces per classroom	At least 3 spaces at each public entrance
Secondary Schools	0.5 spaces per classroom	At least 3 spaces at each public entrance
Place of Worship or Assembly	No requirement	At least 3 spaces at each public entrance
Other Institutional	2 spaces plus 1 space per 1,000 m^2 of GFA	A minimum of 6 spaces at each public entrance
Industrial		
All Industrial	2 spaces plus 0.25 spaces per 1,000 m^2 of GFA	At least 3 spaces for any building with 2,000 m^2 or more of GFA
Residential		
Apartment	0.5 spaces per unit	At least 3 spaces for any building with 50 or more units
Other Residential	No requirement	No requirement

More Desirable Design

Less Desirable Design

Figure 5.1: Bike Rack Design

5.3.3 Trip End Amenities

Attractive and conveniently located end-of-trip amenities are essential to a successful cycling system. For some users, the availability of facilities and services (in addition to bicycle parking) can be the determining factor in deciding whether to cycle (longer distances) to work, school, shopping, and other destinations.

Potential trip end amenities to consider include:

- Change rooms and lockers;
- Showers and washrooms;
- Courtesy items such as hairdryers, irons and ironing boards, washing machines and dryers, towel service, clothing hooks, fans, and electrical outlets;
- Repair equipment and supplies such as pumps, plyers, wrenches, oil, and puncture repair kits. Often this will take the form of a bicycle repair (or "fix-it") station (illustrated at right); and
- Parcel delivery service.

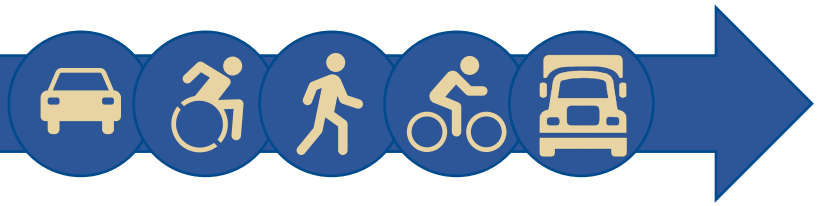


Table 5.7 summarizes the types of amenities recommended for different trip end locations. Opportunities to expand the supply should continue to be pursued. Available amenities should also be inventoried for the same reasons as bicycle parking.

Table 5.7: Trip End Amenities by Land Use

Amenity	Location		
	Workplace	School	Commercial[1]
Change Rooms	●		
Lockers	●	●	
Showers	●		
Washrooms	●		●
Courtesy Items	●		
Repair Equipment	●		●
Delivery Service			●

Notes:

1. Includes retail stores and shops, shopping centres, business centres, customer service centres, etc.

The selection and design of other trip end amenities should consider:

- **Location** – Amenities should be located to close to bicycle parking and/or primary building entrances. Certain amenities, particularly bicycle repair stations, should be publicly available, whether provided by the Municipality, a community group, and/or a private entity.
- **Segregation** – Separate, individual change rooms, lockers, showers and/or washrooms should be available. Unisex design allows for greater inclusivity and flexibility.
- **Safety and Security** – Well-designed facilities have non-slip surfaces, hooks and/or benches to keep belongings off the floor, adequate lighting and ventilation and regularly cleaned and maintained. Facilities that can be locked and/or are access controlled are preferred.

Table 5.8 provides guidance on the number of change rooms and showers to include in a development based on projected staffing. If it is not possible to provide these amenities on-site, access to facilities within an adjoining building or a nearby gym should be considered. If provided, lockers should be placed in change rooms

(preferably) or adjacent to bicycle parking. Alternatively, additional storage space can be provided within bicycle lockers.

Table 5.8: Number of Change Rooms and Showers

Total Staff	Number of Change Rooms and Showers
0-19	1
20-49	2
50-149	4
150-299	6
300-500	8
>500	Additional showers at a rate of 2 showers for every 250 staff

5.3.4 Vehicle Parking at Destinations and Trailheads

Providing (additional) public motor vehicle parking areas near popular destinations and trailheads can help promote cycling network use. The parking lots should be placed strategically at locations further removed from residential areas or other generators where cyclists usually start their trip. It is also beneficial to provide toilets and/or garbage receptacles at these locations if there are none nearby.

Recommendation 5.2: Adopt the proposed cycling network illustrated in **Map 5.3** and **Map 5.4.**

Recommendation 5.3: Develop and implement guidelines for the provision and design of on-site bicycle parking, with implementation primarily through the development approval process.

Recommendation 5.4: Expand and inventory the supply of publicly available bicycle parking in North Perth.

Recommendation 5.5: Develop and implement guidelines for the provision of on-site trip end amenities, with implementation primarily through the development approval process.

Recommendation 5.6: Expand and inventory the supply of publicly available trip end amenities, particularly bicycle repair stations, available in Listowel.

Recommendation 5.7: Investigate areas along the proposed cycling routes for public parking lots.

5.4 Outreach Strategy

The proposed network plan needs to be accompanied by a complementary and comprehensive active transportation outreach strategy aimed at promoting walking and cycling and fostering community support for related initiatives. The strategy should:

- Raise community awareness of active transportation and promote walking and cycling as a normal, convenient option for individuals of all ages and abilities;
- Develop consistent messaging that can be used across a variety of platforms and audiences;
- Illustrate the value (e.g., health, tourism, environmental, safety) of walking and cycling to the community; and
- Educate individuals about their responsibilities as cyclists, pedestrians, and motorists when interacting with other travel modes.

Share the Road Cycling Coalition's **Bicycle Friendly Communities (BFC) Award Program** helps communities evaluate how bicycle friendly their community is, celebrate progress, and work toward achieving higher-level awards over time. Interested communities can apply for the designation, which is assessed based on four criteria commonly referred to as the four "E's"[25]:

- **Engineering** – Physical infrastructure and hardware to support cycling;
- **Education** – Programs and campaigns that give people on bikes and in cars the knowledge, skills, and confidence to share the road safely;
- **Encouragement** – Incentives, promotions and opportunities that inspire and enable people to ride; and
- **Evaluation and Planning** – Processes that demonstrate a commitment to measuring results and planning for the future.

While the BFC program specifically caters to cycling, many actions aimed at improving the environment for cyclists can also make a community more pedestrian friendly. For this reason, the program provides a great starting point for structuring a comprehensive Active Transportation Outreach Strategy. The Municipality should also pursue designation as a BFC to further demonstrate its commitment to promoting active travel and provide incentive to pursue the recommended actions and recognition upon achieving the desired outcomes.

[25] https://www.sharetheroad.ca/bicycle-friendly-communities-p138264 [Accessed January 18, 2023]

The following outlines the potential foundations of an active transportation outreach strategy based on the 4 E's:

Engineering

Providing the physical infrastructure to support cycling (and walking) is an essential starting point. Ensuring that the infrastructure is intuitive and comfortable will foster a cycling and walking environmental suitable for all ages and abilities.

The following actions related to engineering could form part of an outreach strategy:

- Provide wayfinding signs to popular destinations;
- Prioritize key cycling routes for winter maintenance;
- Expand availability of bike parking; and
- Improve safety and visibility of pedestrian/bicycle crossings.

Education

Ongoing education will be a critical element of the Active Transportation Outreach Strategy, especially regarding cyclist/pedestrian and motorist interactions. An education program could help cyclists and pedestrians gain confidence and provide motorists with a better understanding of how to interact with active travellers on the road. Education on proper use of cycling and pedestrian facilities for all roadway users should be included in the program.

The following actions related to education could form part of an outreach strategy:

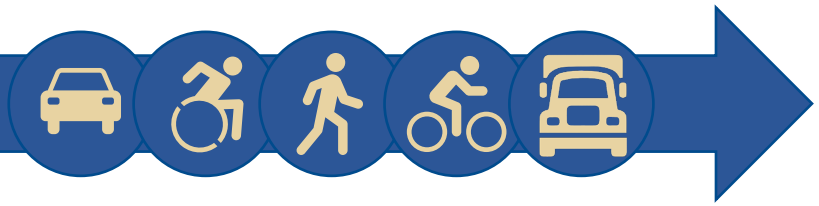
- Initiate an Active and Safe Routes to School program; and
- Expand education programs and campaigns in partnership with local groups and organizations.

Encouragement

Encouragement efforts can help to shift attitudes towards a safer, more sustainable community for all. The initiatives should focus on creating a culture that celebrates cycling and walking, inspiring and motivating people of all ages to travel by active modes more.

The following actions related to encouragement could form part of an outreach strategy:

- Develop marketing campaign and promotion materials;



- Create an active transportation page on the Municipality's website; and
- Form an Active Transportation Committee.

Evaluation and Planning

Collecting data, assessing change, and planning future improvements is key to understanding how the community is responding and evolving to the actions taken to promote active travel.

The following actions related to evaluation and planning could form part of an outreach strategy:

- Prepare "State of Active Travel" Reports; and
- Install permanent bike counters at key locations.

Recommendation 5.8: Develop and implement a robust Active Transportation Outreach Strategy considering the elements noted in **Section 5.4**.

Recommendation 5.9: Upon further development of the proposed cycling network and implementation of the Active Transportation Outreach Strategy, actively pursue designation from Share the Road as a Bicycle Friendly Community.

5.5 Shared Mobility

5.5.1 Concepts

Technological, socio-demographic, and behavioural changes are impacting travel behaviour and mode choice across Canada and around the world[26]. Interest in new and different approaches to transportation services, such as bikesharing, carsharing, and ridesourcing, has grown tremendously in recent years as society seeks alternatives to the private automobile.

The evolution in mobility can be traced to the emergence of the sharing economy. Defined as a peer-to-peer (P2P) based activity of acquiring, providing, or sharing access to goods and services, the modern sharing economy is typically facilitated by a community-based online digital platform[27]. The rapid advancement of technology over this period, particularly in smartphones and mobile applications, has contributed to

[26] National Academies of Sciences, Engineering, and Medicine 2019. *Foreseeing the Impact of Transformational Technologies on Land Use and Transportation*. Washington, DC: The National Academies Press. https://doi.org/10.17226/25580.

[27] https://www.investopedia.com/terms/s/sharing-economy.asp [Accessed May 29, 2020]

this evolution, with real-time information about where, when, and how to access or connect between different modes now readily available.

The following describes key shared mobility concepts:

Mobility as a Service/Mobility on Demand

Through the sharing economy rose mobility on demand (MOD) and mobility as a service (MaaS). MOD is often referred to as how people or goods move from point A to point B, and which mode(s) are selected based on time, cost, and convenience. It emphasizes the commodification of passenger mobility, goods delivery, and transportation systems management. The term MaaS is typically used when discussing the software applications people use to make travel decisions and data applied to study that travel. It primarily emphasizes passenger mobility allowing travellers to seamlessly plan, book, and pay for a multimodal trip on a pay-as-you-go and/or subscription basis. The concepts are similar because they both involve integration of transportation modes through fares, a digital interface, and the physical mobility options[28],[29]. **Figure 5.2** illustrates the relationship between MOD and MaaS.

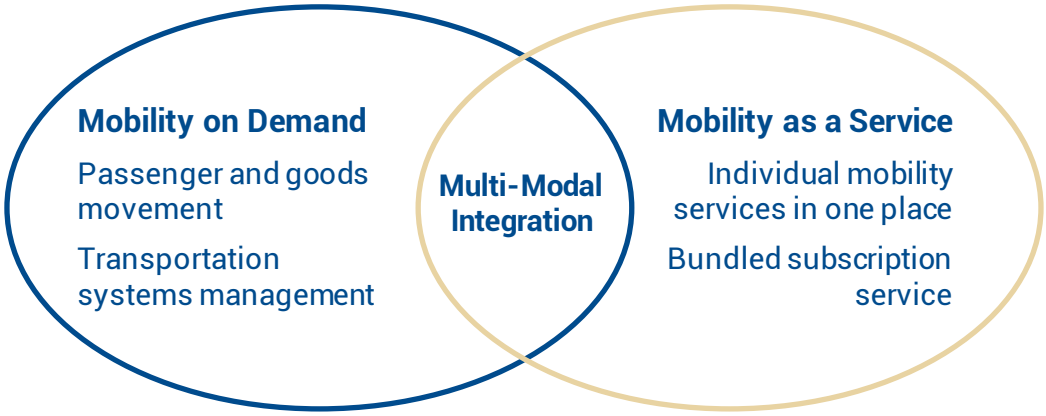


Figure 5.2: Relating Mobility on Demand and Mobility as a Service

New technologies and ideas in shared mobility continue to grow. In the broad sense, most forms can be categorized as either a transportation network company (TNC) or mobility service provider (MSP). Both rely on a smartphone application to connect individual users with a travel mode.

[28] Abel, Sarah." Mobility and the Public Right of Way". *ITE Journal*. Institute of Transportation Engineers. Washington, DC. June 2019.

[29] Shaheen, Susan and Adam Cohen. "Similarities and Differences of Mobility on Demand (MOD) and Mobility as a Service (MaaS)". *ITE Journal*. Institute of Transportation Engineers. Washington, DC. June 2020.

Forms of Shared Mobility

Figure 5.3 illustrates common examples of shared mobility options. The most prominent forms currently include carshare, bikeshare, scooter share, ridesharing, and microtransit. Bikeshare and scooter share would also be characterized as forms of **micromobility**, which can be defined as transportation using lightweight vehicles, especially electric ones, that may be borrowed as part of a self-service rental program in which people rent vehicles for short-term use.

Figure 5.3: Examples of Shared Mobility

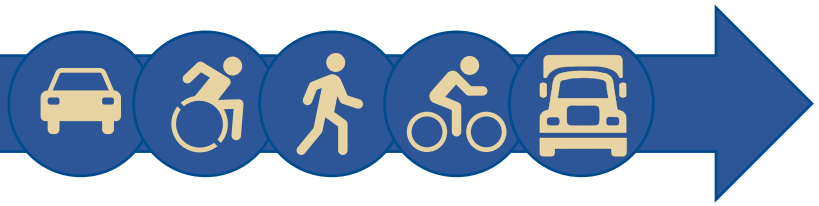
Carsharing offers members access to vehicles joining an organization that provides a fleet of cars and/or light trucks. Two main models exist:

- *Fleet operations*, where a company supplies and maintains a fleet of vehicles in pre-positioned locations (i.e., pick-up and drop-off at same location) or "floating" within a defined boundary (i.e., pick-up and drop-off at different locations). Current examples include Zipcar and Communauto; and
- *Peer-to-peer operations*, where individuals share their personal vehicles directly with other carshare subscribers. Turo is a current example.

Carsharing services alleviate the need for users to privately own a vehicle, offering mobility options for individuals without automobiles. The prevalence of privately-owned vehicles, abundant parking, and smaller pools of potential members can present challenges to their viability in smaller communities like North Perth though.

Bikesharing provides users with on-demand access to bicycles at a variety of pick-up and drop-off locations. Two main models exist:

- *Docked systems*, where bicycles are rented from an automated station (locked "docking stations" or "docks") and returned to a station belonging to the same system. Bike Share Toronto and BIXI Montreal are current examples; and



- *Dockless systems*, where self-locking and free-floating bicycles are rented and returned anywhere within a specified zone. Although not prevalent in Canada, current examples include Lime and Bird.

With its compact urban form and grid street network, Listowel tends to experience more short distance trips, which could lend favourably to bikesharing.

Scooter Sharing allows individuals access to scooters by joining an organization that maintains a fleet of devices at various locations. Scooter sharing models can include motorized and non-motorized types and are typically "dockless", like some bikesharing services. Although not prevalent in Canada, current examples include Lime and Bird. On January 1, 2020, the province launched a pilot program to permit electric kick-style scooters (e-scooters) on Ontario roads.

Like bikesharing, the tendency for short distance trips in Listowel may be conducive to scooter sharing.

Ridesharing (also known as carpooling and vanpooling) is defined as the formal or informal sharing of rides between drivers and passengers with similar origin-destination pairings. *Ridesourcing*, like Poparide, offers prearranged and on-demand transportation services for compensation in which drivers and passengers connect via digital applications. These forms of shared mobility differ from *ridehailing* services offered by TNCs like Uber and Lyft, which feature one paid driver and one paying passenger more akin to traditional taxi services.

There may be a role for ridesharing and ridesourcing services to serve local travel demand in Listowel and rural North Perth, including longer distance, intermunicipal trips.

Microtransit is a tech-enabled private or public shared transportation service that uses multi-passenger vehicles to provide mobility within a defined area. Two common forms exist:

- *Fixed schedule microtransit* carries passengers for short trips along a fixed route to/from specific destinations and designated locations such as transit stops, offices, shopping, and community facilities; and
- *Demand-responsive microtransit* transports passengers, often door to door, in vehicles that alter their routes based on demand rather than following a fixed timetable or route.

Like ridesharing, microtransit could play a limited role serving inter-settlement trips or trips between Listowel and Waterloo if interest exists.

5.5.2 Recommended Approach

While more common in urban areas, shared mobility services could potentially address some transportation challenges of a smaller community like North Perth. These services can form the basis of a "transit" system in the community, offering an alternative to single-occupant vehicle travel and an option for individuals without an automobile.

Municipalities typically use by-laws, policies, guidelines, incentives, and/or investments to influence the availability, viability, and delivery of shared mobility services. The most common matters addressed include the allocation of public rights-of-ways (e.g., parking, curb space), development and zoning regulations, insurance, and for-hire vehicle regulations (e.g., licensing), and taxation and fees.

Before deciding on the type of service(s) to pursue and/or permit, a shared mobility strategy should be developed for the community. The strategy should identify the specific transportation needs to be addressed and articulate a case for the service(s) that best suits requirements. Tools such as surveys, pilot projects, and incentives could be used as part of the strategy to gauge local interest. The study should engage a cross-section of local stakeholders and potential partners to fully understand potential consequences, ensure broad support for the initiative, and ultimately facilitate implementation if feasible.

The shared mobility strategy should consider the merit of introducing/piloting a Mobility Hub in North Perth, possibly in downtown Listowel around the Municipal Office. These hubs serve as one-stop service points for multimodal systems and typically feature a range of shared mobility services including bike share, ride share and car share facilities. **Figure 5.4** illustrates the concept.

Recommendation 5.10: Develop a shared mobility strategy in collaboration with local stakeholders and potential partners.

5.6 Off-Road Vehicle Use of Multi-Use Trails

Off-road vehicles (ORVs) are a popular form of recreation for outdoor enthusiasts in Ontario. These vehicles can also serve an important utilitarian function in rural and remote communities, especially in case of emergencies, provided users obey the law and follow safety precautions.

Figure 5.4: Mobility Hub Concept
(Source: Multi Mobility, Sophia von Berg, 2014)

In Ontario, the *Highway Traffic Act* regulates the operation of ORVs on public highways. Under the legislation and related Ontario Regulation 316/03, municipalities have the authority to pass by-laws to define if, where, and when ORVs can travel on their roads. By-law No. 77-2021 defines the requirements for ORV use on roads under the Municipality's jurisdiction, including a short list of roads prohibited for travel with these types of vehicles.

Recently, the Municipality has been requested to consider allowing ORVs to operate on multi-use trails as well. While ORV travel can serve utilitarian purposes, offer a form of recreation for a broad range of users, provide health benefits, and contribute to the local economy, several factors need to be considered before allowing these vehicles to operate on trails, including[30]:

- Private property damage and trespassing;
- Public property damage;
- Financial impacts on policing and education;
- Potential need for specialized enforcement equipment;
- Increased municipal maintenance requirements;
- Increased municipal liability;
- Increased staff resources to maintain the trails and enforce the rules; and
- Need for safety assessments to address the risks/threats of allowing ORVs to operate alongside pedestrians, cyclists, and other active travellers.

Other these factors, safety and liability, enforcement, and infrastructure impacts tend to be the most prevalent (and significant) concerns.

Some municipalities have been reluctant to allow ORVs to operate on multi-use trails in urban areas given the higher incidence of pedestrian, cyclist, and other active travel and associated hazard and risk. Urban communities also tend to be more sensitive to the less desirable potential consequences of ORV use, such as noise, poor operator behaviour, and property damage. Outside urban areas, where these factors are less prominent or concerning, ORV use of trails is more common. A hybrid solution, reflecting the difference between the two operating environments and/or permitting use on select facilities, could be an option.

Recommendation 5.11: Consider allowing off-road vehicles to operate on multi-use trails outside and/or select trails within the Listowel Urban Area.

[30] Frank Cowan Company. Risk Management Considerations for ORV/ATVs on Municipal Roads.

6 Implementation

6.1 Overview

This chapter outlines the process and tools to implement the **roads strategy** and **active transportation and shared mobility strategy** described in **Chapters 4 and 5**, respectively. Phasing and cost estimates for the recommended infrastructure and program investments are also provided.

6.2 Implementation Tools

6.2.1 Official Plan Amendments

The TMP introduces key themes and principles that should be incorporated into the Listowel Ward Official Plan. **Table 6.1** summarizes the proposed policy and schedule changes that will inform a future Official Plan Amendment pursuant to the *Planning Act*.

6.2.2 Municipal Class Environmental Assessment Studies

Most initiatives recommended in the TMP can proceed to implementation without further study under the MCEA. However, a few projects will require more detailed investigation, primarily the infrastructure improvements associated with the proposed truck route around Listowel. For those initiatives, the TMP can be relied upon for Phase 1 (identify the problem) and Phase 2 (identify alternative solutions to the problem) of the five-phase MCEA planning and design process. It is assumed that these studies will not result in the need to reevaluate or reconsider the underlying basis for the project, but rather detail its implementation and adaptation.

6.2.3 Development Approval Process

As part of the approval process, the Municipality may require proponents to submit a Transportation Impact Study with their development application. The study will assess the impacts of the proposed development on the existing and future transportation network and identify the on and off-site measures required to align performance of the system with Municipal goals and objectives. The TMP will serve as a foundational document for these studies, setting out base information and the transportation improvements and policies to be considered in assessing impacts.

Table 6.1: Proposed Official Plan Policy and Schedule Changes

Section	Proposed Revision
Policies	
14.0 Healthy Communities (Proposed Official Plan Policy 4.7.10.1 Municipal and Community Trails)	Add or modify objectives to state the Municipality will apply a Complete Streets approach in the design, rehabilitation, and construction of existing and planned roads. Add or modify policy to recommend or promote connection to Commercial and Employee areas in Industrial business as a means of transportation.
16.3 Roads (Proposed Official Plan Policy 4.7.6 Transportation System)	Add or modify policies to reference, where appropriate, the relationship of active transportation and roads. Add or modify policies to incorporate Complete Streets principles and additional road safety considerations. Add policies to acknowledge shared mobility and automated, connected, and electric vehicle use.
16.3.1.2 Classification	Update the road classifications based on the recommendations detailed in **Section 4.3**.
Schedules	
Schedule B	Update Schedule B (Roads Plan for Listowel Ward) to incorporate the recommended road classifications detailed in **Section 4.3**.

The Municipality should develop guidelines for the preparation of Transportation Impact Studies to provide direction and greater clarity on the methodology for completing these assessments. The guidelines should implement and connect the policies and requirements in the TMP, particularly access management provisions, to ensure the studies completed align with municipal expectations. Guidance for the consideration of active transportation, justification of parking variances, and integrating with studies requested by Perth County and/or MTO should be included.

The development approval process can also be used to implement specific transportation infrastructure and/or policies identified in the TMP. The *Planning Act* authorizes municipalities to impose conditions on development approvals to secure compliance. From a transportation perspective, typical conditions imposed include:

- Dedication of property for roadway and other transportation rights-of-way described in the Perth County and Listowel Ward Official Plans at no cost;
- Requirements and design conditions for off-street loading and parking facilities;
- Design conditions for access to/from the subject development, such as traffic controls, turn lanes, and channelizing islands; and
- Design conditions for sidewalks, walkways, cycling facilities, and other means of pedestrian and cyclist access.
- Actions to promote safe, accessible, well-designed trail systems for recreational and utilitarian purposes, with trail systems connected to natural assets including watercourses, parks, and natural features where possible.

Recommendation 6.1: Amend the Listowel Ward (or other appropriate) Official Plan to incorporate the proposed policy and schedule changes listed in **Table 6.1**.

Recommendation 6.2: Prepare Transportation Impact Study Guidelines in conjunction with introducing access management guidelines (see Recommendation 4.6).

6.3 Cost Estimates and Implementation Phasing

6.3.1 Roads

Table 6.2 summarizes the proposed phasing and indicative costs of the recommended road improvements identified in **Chapter 4**. The program comprises solely works needed to implement the proposed truck route around Listowel as the network assessment in **Section 4.5** did not identify any other necessary road improvements. Overall, the investment totals approximately:

- $10,495,000 in the short-term (0 to 5 years); and
- $6,050,000 in the long-term (5+ years).

Typical ongoing maintenance and rehabilitation costs are not included in these estimates.

Implementation timing and final extent and configuration of the proposed works will be confirmed prior to construction. The relatively high cost of the road improvements to implement the truck route may necessitate extending the financing and construction timetable over several years and beyond the short-term horizon proposed for the initial stage along Line 84.

Table 6.2: Recommended Phasing and Indicative Costs of Proposed Road Improvements for Listowel Truck Route

Road	Limits/Description	Indicative Cost
Short-Term (0-5 years)		
Line 84	Perth Road 147 to Highway 23 (route SE3)	$10,495,000
Long-Term (5+ years)		
Road 165	Perth Line 86 to Line 87 (route NW1)	$1,486,000
Line 87	Road 165 to Wallace Avenue N/Highway 23 (route NW1)	$4,564,000

6.3.2 Active Transportation

The costs of implementing the proposed cycling and pedestrian facilities identified in **Chapter 5** were estimated based on indicative benchmark unit costs obtained from other recently completed active transportation plans in Ontario.[31,32] Unit cost rates from earlier years were indexed to 2023 dollars by applying an assumed rate of 5% per annum.

Table 6.3 summarizes the unit costs used for linear facilities. **Table 6.4** provides the unit costs for crossings and other features. The following assumptions were made in applying the unit costs:

- Normal/average construction conditions;
- Bi-directional routes for on-road cycling facilities, unless otherwise stated; and
- Costs for property acquisition, utility relocations, engineering design, contingency, and taxes are not included.

Implementation of the proposed active transportation projects was prioritized based on the following criteria:

- **Close Gaps** in the network, especially ones that create a safety risk or cause uncomfortable conditions for pedestrians or cyclists (e.g., discontinuous sidewalks);
- **Establish a Network** by creating key north-south and east-west connections;

[31] Township of Scugog, *Township of Scugog Active Transportation and Transportation Master Plans*, June 2021.
[32] Town of Lincoln, *Town of Lincoln Transportation Master Plan and Active Transportation Strategy*, September 2019.

- **Respond to Demand** by focusing on areas with higher existing or projected pedestrian and/or cyclist volumes (e.g., routes that lead to/from major pedestrian generators such as schools, parks, retail establishments, or employment districts);
- **Achieve Quick Wins** by implementing short-duration, easily achievable, and cost-effective measures first (e.g., signed routes); and
- **Align Facilities with Road Classification** by prioritizing pedestrian facilities on collector and arterial roads without existing facilities.

Table 6.5 summarizes the recommended phasing and indicative costs to implement the proposed pedestrian improvements. The table lists the locations alphabetically by urban area for each horizon (short and long-term). **Table 6.6** (Rural Area) and **Table 6.7** (Listowel) outline the proposed cycling improvements identified in the rural areas of the Municipality and Listowel, respectively. **Appendix F** details the **Costing of the Proposed Active Transportation Facilities.**

Table 6.8 summarizes the total estimated cost for the active transportation initiatives. Overall, the total investment totals approximately:

- $4,847,200 in the short-term (0 to 5 years); and
- $1,926,200 in the long-term (5+ years).

The indicative costs do not include proposed facilities on or adjacent to County roads or Provincial roads. Facilities along these corridors would be subject to cost sharing between the Municipality, the County, and the Ministry of Transportation, as applicable.

6.3.3 Policies and Studies

Table 6.9 details the recommended phasing and indicative costs of the transportation policies and studies proposed in the TMP. The total cost for the nine initiatives is estimated at approximately $360,000, with recommended expenditures of:

- $230,000 in the short-term (0 to 5 years); and
- $130,000 in the long-term (5+ years).

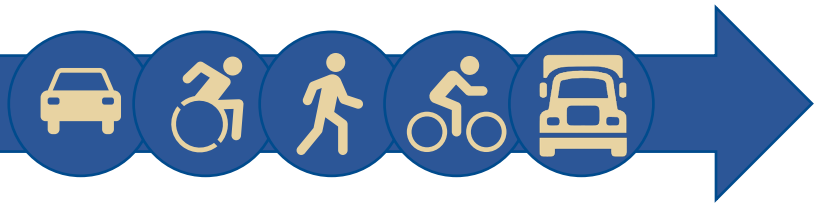


Table 6.3: Unit Costs for Linear Active Transportation Facilities

Route Type	Cost (per km)	Comments
On-Road Routes		
Signed on-road bike route – urban area	$4,000	Route signs every 350 metres (approximately), both sides of the road
Signed on-road bike route – rural area	$3,000	Route signs every 600 metres (approximately), both sides of the road
Shared on-road bike route ("sharrows")	$12,000	Route signs every 350 metres (approximately), and sharrow pavement markings every 75 metres (approximately). Assumes conventional paint.
Marked on-road bike route with edge line ("urban shoulder")	$17,000	Route signs every 350 metres (approximately) and longitudinal pavement markings. Assumes conventional paint.
On-road bike lane (1.5 to 1.8 metres) without edge line	$26,000	Bike lane signs, bike lane stencils, and longitudinal pavement markings both sides of road. Assumes conventional paint
Paved shoulder (1.5 metres) on scheduled resurfacing of existing road	$182,000	Asphalt shoulder and route signs. Assumes road project already includes other costs (e.g., granular shoulder, any ditch/drainage works, longitudinal pavement markings, etc.)
On-road bike lane (1.5 to 1.8 metres) by retrofitting/widening existing road	$851,000	Excavation, catch basin adjustments, lead extensions, new curb/driveway ramps, asphalt, and subbase both sides of road. Also bike lane signs, bike lane stencils, and longitudinal pavement markings. Assumes conventional paint

Table 6.3: Unit Costs for Linear Active Transportation Facilities

Route Type	Cost (per km)	Comments
Off-Road Routes		
Granular off-road multi-use trail outside of road right-of-way in an urban setting (park or open space)	$201,000	Compacted stone dust surface trail with trail marker signs. Does not include trail lighting.
Upgrade granular to paved off-road multi-use trail (3.0 metres) outside of road right-of-way in an urban setting (e.g., park or open space)	$213,000	Asphalt surface trail upgraded from granular surface with trail marker signs. Some new base work (approximately 25%), with half of the material removed from site. Does not include trail lighting. Assumes no utility relocations.
Paved off-road multi-use trail (3.0 metres) within road right-of-way in an urban setting (e.g., park or open space)	$365,000	Asphalt surface pathway with trail marker signs. Does not include trail lighting. Assumes no utility relocations.
Paved boulevard multi-use path (3.0 metres) within road right-of-way	$395,000	Asphalt surface pathway on one side of the road. Could include removal of existing sidewalk. Assumes no utility relocations.
Concrete multi-use sidewalk (3.0 metres) within road right-of-way	$438,000	Concrete sidewalk on one side of the road. Assumes no utility relocations.
Concrete sidewalk (1.5 metres) within road right-of-way	$219,000	Concrete sidewalk one side of road. Assumes no utility relocation.

Table 6.4: Unit Costs for Crossings and Other Features

Feature	Cost (each)	Comments
Trail/road transition at unsignalized intersection	$9,000	Warning signs, pavement markings, curb cuts, and minimal restoration (3.0m pathway)
Pedestrian crossover (Level 2 Type B)	$36,000	RRFBs, 2 poles, 2 foundations, 2 push buttons, and 2 arms
Trail/road transition at signalized intersection	$97,000	4 signal heads, 2 poles, 2 foundations, 2 controller connectors, and 2 arms

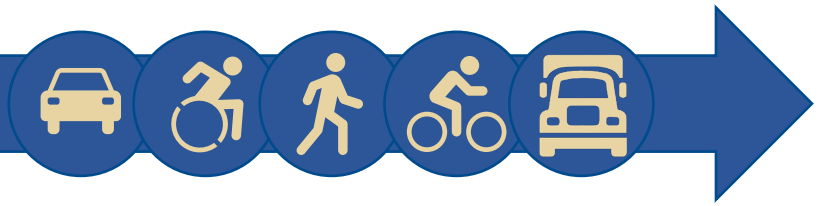


Table 6.5: Recommended Phasing and Indicative Costs of Proposed Pedestrian Improvements

Street	Limits	Phasing (Years)		Indicative Cost
		(0–5)	(+5)	
Listowel Urban Area				
Albert Avenue N	Elizabeth Street W to Rogers Road	●		$105,100
Alexander Avenue N	Main Street W to John Street W	●		$13,300
Anger Street W	Salisbury Avenue S to Wallace Avenue S	●		$22,300
Anger Street E	Wallace Avenue S to Wellington Avenue S	●		$20,700
Ann Street	Boyne Avenue to Victoria Avenue S	●		$29,300
Argyle Avenue N	Winston Street W to Winston Boulevard	●		$62,100
Barnett Street	Mitchell Road S to Nelson Avenue S	●		$39,100
Binning Street W	Louise Avenue N to Edward Avenue N	●		$67,800
Blake Street E	Davidson Avenue N to End of Road	●		$48,900
Briarwood Avenue N	Edgar Street W to End of Road	●		$30,600
Bright Street E	Reserve Avenue S to Tremaine Avenue S	●		$132,100
Boyne Avenue	Riverview Drive to Elma Street W	●		$129,900
Campbell Street E	Davidson Avenue N to Walton Avenue N	●		$37,200
Centennial Court	McLaren Avenue N to End of Road	●		$10,700
Churchill Drive	Winston Street W to Winston Street W	●		$49,700
Davidson Avenue N	McKenzie Street E to Rhine Street E	●		$99,900
Edgar Street W	Briarwood Avenue N to Edward Avenue N	●		$95,900
Edward Avenue N	Elizabeth Street W to Edgar Street W	●		$51,200
Elma Street W	Mitchell Road S to Victoria Avenue N	●		$140,400
Elma Street W	Livingston Avenue to Wallace Ave. S	●		$53,000
Fern Place	Victoria Avenue S to End of Road	●		$12,000

Table 6.5: Recommended Phasing and Indicative Costs of Proposed Pedestrian Improvements

Street	Limits	Phasing (Years)		Indicative Cost
		(0–5)	(+5)	
Listowel Urban Area				
Hay Avenue S	Napier Street W to Elma Street W	●		$25,100
Herbert Street W	Richelieu Avenue S to Wallace Avenue S	●		$33,100
Inkerman Street E	Elm Avenue N to End of Road	●		$26,600
Inkerman Street W	End of Road to Victoria Avenue N	●		$30,900
Jackson Crescent	Winston Boulevard to Winston Boulevard	●		$85,900
John Rosa Street E	Davidson Avenue S to Reserve Avenue S	●		$14,300
John Street W	End of Road to Albert Avenue N	●		$45,500
Louise Avenue N	Binning Street W. to End of Road	●		$139,600
Maitland Avenue S	Bright Street E to Clayton Street E	●		$104,300
Maple Avenue N	Elm Avenue N to Palace Street E	●		$99,000
McKenzie Street E	Davidson Avenue N to Walton Avenue N	●		$36,300
McLaren Avenue N	McDonald Street W to End of Road	●		$49,600
Nelson Avenue S	Elma Street W to Main Street W	●		$25,600
Pleasant View Drive	Walton Avenue N to End of Road	●		$37,600
Perkin Crescent	Walton Avenue N to Pleasant View Drive	●		$56,400
Palace Street E	Elm Avenue N to End of Road	●		$25,900
Park Avenue N	Campbell Street E to Blake Street E	●		$51,400
Rhine Street E	Davidson Avenue N to Walton Avenue N	●		$33,100
Riverview Drive	Kinsmen Trail to End of Road	●		$98,300
Robarts Street	Briarwood Avenue N to Louise Avenue N	●		$26,400
Royal Street E	Elizabeth Street E to Derry Street E	●		$43,300

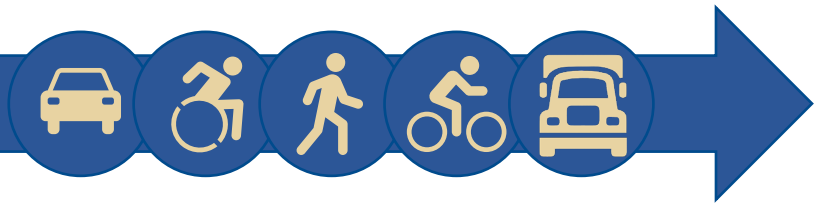


Table 6.5: Recommended Phasing and Indicative Costs of Proposed Pedestrian Improvements

Street	Limits	Phasing (Years)		Indicative Cost
		(0–5)	(+5)	
Listowel Urban Area				
Tatham Place	McKenzie Street E to End of Road	●		$3,000
Victoria Avenue S	Riverview Drive to Main Street W	●		$116,500
Wallace Avenue S	Krotz Street to Line 84	●		$129,400
Walton Avenue N	Campbell Street E to Perkin Crescent	●		$139,800
Windham Court	McLaren Avenue N to End of Road	●		$7,000
Winston Boulevard	Winston Street W to Highway 23	●		$105,400
Winston Street W	Winston Boulevard to Highway 23	●		$56,600
Winston Street E	Davidson Avenue N to End of Road	●		$94,400
Albert Avenue N	Main Street W to Elizabeth Street W		●	$51,200
Clayton Street E	Wallace Avenue S to Wellington Avenue S		●	$22,200
Clayton Street E	Nichol Avenue S to Maitland Avenue S		●	$42,900
Clayton Street E	Maitland Avenue S to Tremaine Avenue S		●	$43,200
Davidson Avenue N	Elizabeth Street E to McKenzie Street E		●	$140,400
Davidson Avenue S	Main Street E to Elma Street E		●	$25,800
Elizabeth Street W	Albert Avenue N to Victoria Avenue N		●	$52,300
McDonald Street W	Rogers Road to Highway 23		●	$98,400
Rogers Road	Albert Avenue N to McDonald Street W		●	$125,300
Wallace Avenue S	Elma Street to Anger Street		●	$151,100
Atwood Urban Area				
Arthur Street	Highway 23 to End of Road	●		$62,400
Arthur Street	Queen Street to King Street	●		$25,400

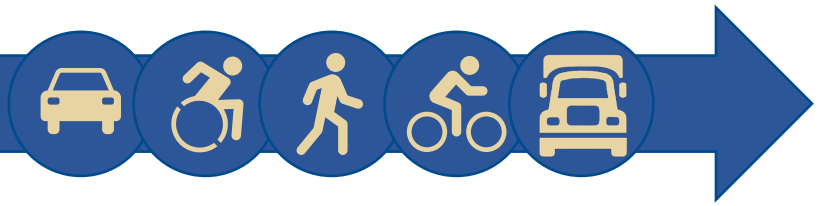


Table 6.5: Recommended Phasing and Indicative Costs of Proposed Pedestrian Improvements

Street	Limits	Phasing (Years)		Indicative Cost
		(0–5)	(+5)	
Listowel Urban Area				
Baker Street	Ellen Street to End of Road	●		$34,300
David Street	King Street to Highway 23	●		$22,100
Ellen Street	Arthur Street to End of Road	●		$65,000
Elma Centre Street	Highway 23 to Woodview Drive	●		$55,900
Fisher Avenue	Highway 23 to End of Road	●		$92,700
George Avenue	Queen Street to Highway 23	●		$49,300
James Street	Queen Street to End of Road	●		$42,300
John Street	Queen Street to End of Road	●		$42,900
King Street	Fisher Avenue to George Avenue	●		$62,200
Parkview Crescent	Elma Centre Street to End of Road	●		$96,300
Queen Street	Fisher Avenue to Arthur Street	●		$62,200
Queen Street	John Street to Line 75	●		$127,100
William Street	Queen Street to Hwy. 23	●		$44,100
Woodview Drive	Parkview Crescent to Parkview Crescent	●		$108,600
Monkton Urban Area				
Brook Street	Erskine Street to Line 57	●		$119,700
Fishleigh Street	Highway 23 to King Avenue	●		$44,100
Jones Street	Brook Street to Highway 23	●		$31,800
King Avenue	Perth Line 55 to Fishleigh Street	●		$52,900
Mill Street	Brook Street to Highway 23	●		$37,700
Nelson Street	Highway 23 to West Avenue	●		$44,100
Schade Street	Highway 23 to Perth Line 55	●		$153,000

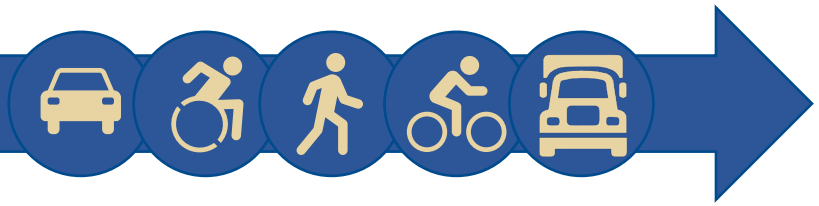


Table 6.5: Recommended Phasing and Indicative Costs of Proposed Pedestrian Improvements

Street	Limits	Phasing (Years)		Indicative Cost
		(0–5)	(+5)	
Listowel Urban Area				
West Avenue	Nelson Street to Brook Street	●		$20,200

Table 6.6: Recommended Phasing and Indicative Costs of Proposed Cycling Improvements – Rural Area

Corridor/Location	Description	Phasing (Years)		Indicative Cost
		(0–5)	(5+)	
Road 173 from Line 55 to Guelph to Goderich (G2G) Trail	Signed on-road bike route	●		$29,300
Road 158/Tremaine Avenue S from Perth Line 72 to Kinsmen Trail	Signed on-road bike route	●		$26,100
Road 165 from Perth Line 86 to Line 89	Signed on-road bike route	●		$24,400
Line 81 from Road 172 to Road 158	Signed on-road bike route	●		$36,500
Line 84 from Kinsmen Trail (Listowel) to Perth Road 147	Signed on-road bike route	●		$17,000
Line 87 from Road 176 to Perth Road 140	Signed on-road bike route	●		$49,700
Line 89 from Perth Road 178 to Road 165	Signed on-road bike route	●		$12,000

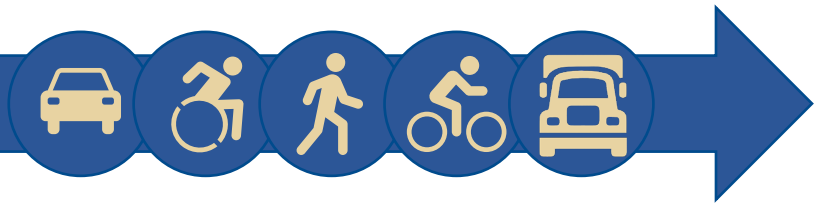


Table 6.7: Recommended Phasing and Indicative Costs of Proposed Cycling Improvements – Listowel Urban Area

Corridor/Location	Proposed Improvement	Phasing (Years)		Indicative Cost
		(0-5)	(+5)	
Reserve Avenue S from Hutton Street E to Elma Street E	Signed on-road bike route	●		$3,500
Nichol Avenue from Elma Street E to Elizabeth Street E	Signed on-road bike route		●	$1,500
Davidson Avenue from Elma Street E to McDonald Street E	Signed on-road bike route	●		$5,000
Louise Avenue N from Binning Street W to Scott Street W	Signed on-road bike route		●	$1,000
Albert Avenue N from Elizabeth Street W to Binning Street W	Signed on-road bike route	●		$500
Kinsmen Trail at Elizabeth Street W/Edward Avenue N	Unsignalized crossing on Line 84	●		$9,000
Kinsmen Trail at Main Street W (Perth Line 86)	Signalized crossride on Main Street W at Kinsmen Trail	●		$97,000
Kinsmen Trail at Elma Street W	Unsignalized crossing on Line 84	●		$9,000
Kinsmen Trail at Line 84	Unsignalized crossing on Line 84	●		$9,000
Hutton Street from Kinsmen Trail to Reserve Avenue S	Signed on-road bike route	●		$4,100
Mowat Street Allowance from Nichol Avenue S to Tremaine Avenue S	Off-road multi-use trail		●	$84,100
Kinkaid Street from Mitchell Road S to Havelock Avenue S/ Kinsmen Trail	Signed on-road bike route		●	$1,900
Elma Street W from Kinsmen Trail to Nichol Avenue S	Signed on-road bike route	●		$4,900
Elizabeth Street W from Albert Avenue N to Elm Avenue N	Signed on-road bike route	●		$6,100

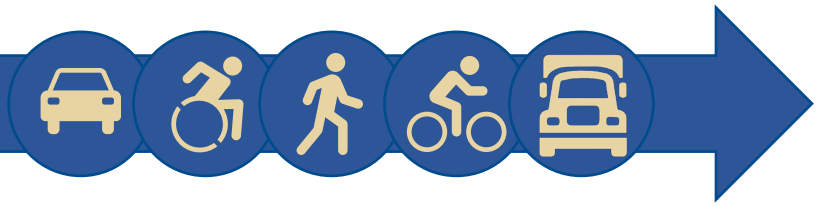


Table 6.7: Recommended Phasing and Indicative Costs of Proposed Cycling Improvements – Listowel Urban Area

Corridor/Location	Proposed Improvement	Phasing (Years)		Indicative Cost
		(0-5)	(+5)	
Binning Street W from Road 165 to Albert Avenue N	Signed on-road bike route	●		$4,500
McDonald Street from Kinsmen Trail to Davidson Avenue N	Signed on-road bike route	●		$2,800
Tremaine Avenue S from Kinsmen Trail (Listowel) to Main Street E	Signed on-road bike route		●	$6,000
Kinsmen Trail at Victoria Street S	Unsignalized crossing on Victoria Street S	●		$9,000
Future Connections				
Tremaine Road N Extension from Elizabeth Street E to Rhine Street E	Signed on-road bike route		●	$7,100
Northeast Listowel Ring Route from McDonald Street E to Kinsmen Trail via Rhine Road E	Signed on-road bike route		●	$9,700
Northwest Listowel Ring Route from Road 165 to Kinsmen Trail (north of McDonald Street W)	Granular multi-use trail		●	$526,800
Southwest Listowel Ring Route from Road 165/Line 87 to Kinsmen Trail	Granular multi-use trail		●	$534,400
Future North-South Road from Northeast Listowel Ring Route to Line 87	Signed on-road bike route		●	$900

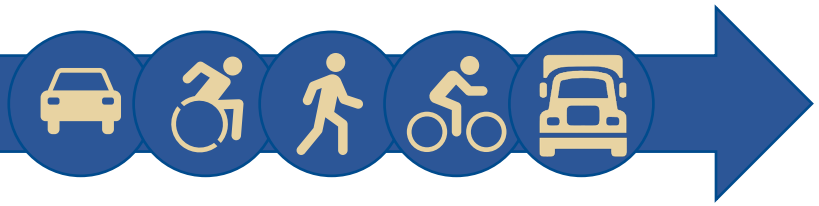


Table 6.8: Recommended Phasing and Indicative Costs for All Active Transportation Facilities

Type and Area	Phasing and Indicative Costs		
	Short (0-5 Years)	Long (+5 Years)	Total
Pedestrian Network			
Listowel Urban Area	$2,991,500	$752,800	$3,744,300
Monkton Urban Area	$503,500	$0	$503,500
Atwood Urban Area	$992,800	$0	$992,800
Sub-Total	**$4,487,800**	**$752,800**	**$5,240,600**
Cycling Network			
Rural Area	$195,000	$0	$195,000
Listowel Urban Area	$164,400	$1,173,400	$1,337,800
Sub-Total	**$359,400**	**$1,173,400**	**$1,532,800**
GRAND TOTAL	**$4,847,200**	**$1,926,200**	**$6,773,400**

Table 6.9: Recommended Phasing and Indicative Costs of Proposed Policies and Studies

#	Recommended Study	Implementation Timing	Indicative Cost
4.6, 6.2	Transportation Impact Study and Access Management Guidelines	Short-Term	$30,000
4.16-4.18	Speed Management Program – Area-Wide 40 km/h Signing, Education and Communication	Short-Term	$50,000
4.21	Parking Standards Review	Long-Term	$30,000
4.22	Listowel Downtown Core Area Parking Study	Short-Term	$50,000
4.23	Gravel Roads Conversion Policy	Long-Term	$50,000
4.24, 4.27	Automated, Connected, and Electric Vehicle Action Plan and Public Education Program	Long-Term	$50,000
5.3-5.7	Bicycle Parking and Amenities Study	Short-Term	$50,000
5.8	Active Transportation Outreach Strategy	Short-Term	$25,000
6.9-6.10	Transportation Monitoring Program	Short-Term	$25,000

Recommendation 6.3: Adopt the recommended phasing plan specified in **Table 6.2** to guide the prioritization of road network implementation and budget preparation.

Recommendation 6.4: Adopt the recommended phasing plan specified in **Table 6.5** to guide the prioritization of pedestrian facility implementation and budget preparation.

Recommendation 6.5: Adopt the recommended phasing plans specified in **Table 6.6** and **Table 6.7** to guide the prioritization of cycling facility implementation and budget preparation.

Recommendation 6.6: Reassess the recommended phasing and funding of the proposed pedestrian and cycling facility projects annually, including exploring potential funding sources and other opportunities to implement the networks.

6.4 Potential Funding Sources

Potential funding sources to implement the recommended active transportation and road projects and programs identified in **Section 6.3** include:

- **Property Taxes** – Taxes levied on land and structures are the primary source of revenue for the Municipality;
- **Development Charges** – Fees charged by the Municipality on land development and redevelopment projects help fund the capital costs of infrastructure needed to serve planned growth. The Municipality's 2019 Development Charges Background Study identifies the items and costs eligible for collection through the Development Charges By-law;
- **Federal Gas Tax Fund** – This permanent source of funding provided by the Federal government to municipalities (via the Association of Municipalities of Ontario (AMO)) supports local infrastructure priorities including roads and active transportation facilities. Municipal allocation is on a per capita basis and split on a 50:50 basis between upper- and lower-tier jurisdictions;
- **Other Provincial and Federal Programs** – When available, conditional and unconditional grants to municipalities by senior levels of government can fund transportation initiatives meeting the program eligibility criteria. Recent examples include:
  - *Ontario Builds* – This provincial program has financed a range of transportation infrastructure projects in communities across Ontario;
  - *Green Municipal Funds* – This $1 billion program delivered by the Federation of Canadian Municipalities (FCM) and funded by the Government of Canada finances a share of eligible costs for studies, capital projects, and pilot

projects that "reduce the number of vehicles on the road, the number of kilometres they travel, or the amount of time they spend transporting people or goods" or "get people to use their vehicles more efficiently or switch to less polluting forms of transportation (i.e., a modal shift to public transit, walking, or cycling)"; and

- **Developer, Private Sector, and Other Alternative Funding** – In-kind or cash contributions from non-government sources can play an important role in financing the cost of public amenities like sidewalks, parking, and trails, and community programs through sponsorships and focused advertising.

Property taxes, development charges, and Federal Gas Tax funds represent the most reliable and consistent sources of financing for the Municipality. Although availability is less certain, other funding sources will likely be needed to implement some TMP recommendations, particularly higher cost items like the truck route around Listowel.

6.5 Operations and Maintenance

6.5.1 Minimum Maintenance Standards

The Minimum Maintenance Standards for Municipal Highways (MMS) (Ontario Regulation 232/02 under the *Municipal Act,* 2001) define standards for the maintenance of road and active transportation infrastructure in Ontario. The regulation clarifies the scope of the statutory defence available to a municipality under the Act by establishing maintenance standards that are non-prescriptive as to the methods or materials to be used in complying with the standards but instead describe a desired outcome. These standards are intended to provide municipalities with a "due diligence" defense in the event of a vehicular collision, a pedestrian slip, trip or fall, or other incident on its roads, sidewalks, and bicycle facilities.

The standards set out in the MMS are not mandatory, so the Municipality does need to explicitly follow the Regulation. If the Municipality cannot meet the MMS standards specified, the Municipality can still rely on Section 44(1) of the Act to demonstrate that the service provided was reasonable in the circumstances for both weather and road conditions. In short, the Municipality can set local maintenance standards based on its needs and resources.

6.5.2 Current Practice

By-law No. 135-2017 defines the Winter Maintenance Guidelines for the Municipality. The guidelines specify winter maintenance requirements based on a classification system (Class 1 to 6) as a function of annual average daily traffic (AADT) and the posted or statutory speed limit, consistent with the MMS structure.

For snow accumulation and plowing requirements, the Municipality follows the MMS. If a weather hazard is forecast to occur, causing snow accumulation too significant for the Municipality to effectively clear roadways within the specified time frames, the Municipality can declare a "Significant Weather Event". This declaration suspends the standard timelines until the significant weather event is declared over. During this suspension, all Municipality roads are considered "in a state of repair" warning residents and visitors to expect poor road conditions and permitting the Municipality to clear its roadways when it is safe and practicable to do so.

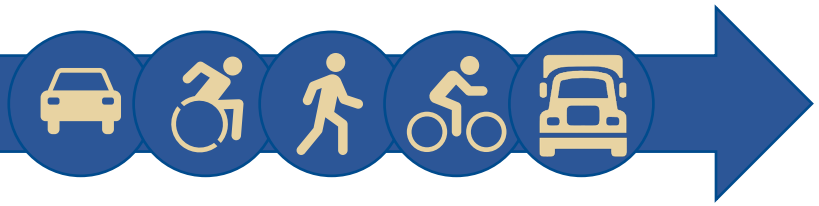
The Municipality prioritizes snow clearing to Class 3 roadways, and sequences snow clearing to provide a "plowed Class 4 roadway as soon as possible following a major snowfall." Schedule B of By-law 135-2017 specifies the sidewalks designated for Municipality snow removal and sand/salt applications. Sidewalks are prioritized as either Primary or Secondary sidewalk segments. Primary sidewalk segments are cleared after approximately 8 cm of snow accumulation, and Secondary sidewalk segments are only cleared after Primary sidewalk segments are complete.

6.5.3 Future Considerations

The Municipality has on-going operation and maintenance programs for its transportation network guided by the MMS, industry best practices, and Municipality-specific by-laws and policies. Local standards and practices should be reviewed periodically to ensure the Municipality continues to meet legislated requirements and satisfy community expectations within available resources.

The expansion of the active transportation network contemplated by this plan would increase operational and maintenance requirements for the Municipality. Active transportation facilities need to be properly maintained during all seasons to remain safe, effective, and in a state of good repair. This helps to improve rideability, alleviate potential safety hazards, maximize utility, minimize lifecycle costs, reduce risk, limit exposure to liability, and enhance the cycling experience. To encourage use throughout the year, the following facility maintenance activities should be considered:

- **Sweeping** – Cycling facilities located at the roadway edge should be swept to remove accumulating debris. The Municipality may wish to consider increasing sweeping frequency on priority cycling routes subject to additional funding.
- **Surface Repairs** – The Municipality repairs typical surface issues, such as bumps, depressions, cracking, potholes, and pavement drop-offs at shoulders, through its on-going maintenance operations until such time as the road (including bike lanes) is resurfaced. Continuing to perform interim treatments such as patching and catchbasin repairs on cycling routes is recommended.



- **Vegetation Management** – Vegetation maintenance activities, including the installation of root barriers and trimming of shrubs and trees, should be carried out to avoid encroachment onto active transportation facilities and maintain sightlines. Removal of obstructions at intersections should be prioritized.
- **Sign and Pavement Marking Maintenance** – Sign and pavement marking inspections, repainting of faded pavement markings, and replacement of discoloured and damaged signs that have lost reflectivity should be conducted regularly per the MMS.
- **Drainage Improvements** – Drainage features along or adjacent to active transportation facilities should be cleaned. Locations with greater vegetation will need more attention.
- **Winter Control** – Active transportation facilities and amenities designated for winter use should be cleared of snow and ice, with on-road routes maintained along with other travel lanes per the MMS. The Municipality may wish to consider developing a cycling priority network, which could entail identifying priority cycling routes, intersections, crossrides, and bike racks, subject to additional funding.
- **Parking** – Bicycle parking facilities should be regularly inspected. Bikes parked for extended periods of time should be tagged for removal and removed if remaining after the specified time. Severely damaged or stripped bikes should also be removed.

The additional budget will depend on the facility types added, with typical estimated annual maintenance costs ranging from[33]:

- $5,000 to $9,000 per kilometre for on-road facilities; and
- $4,000 to $6,000 per kilometre of off-road multi-use trails in greenways and parks, depending on the level of service standard and trail condition.

Chapter 10 of OTM Book 18 provides further guidance on maintenance related matters.

Recommendation 6.7: Continue to engage in a regular, ongoing maintenance program for the road and active transportation network consistent with the Minimum Maintenance Standards requirements unless specifically defined otherwise.

Recommendation 6.8: Provide additional ongoing funding to support growing maintenance activities resulting from expansion of the active transportation network.

[33] Town of Milton. *Town of Milton Transportation Master Plan, Appendix A: Active Transportation Strategy.* April 2018

6.6 Monitoring

6.6.1 Performance Measures

Ongoing monitoring of the transportation network will enable the Municipality to gauge the effectiveness of the policies and recommendations of the TMP in fulfilling the transportation vision and goals.

Performance measures, such as an intersection volume to capacity (v/c) ratios, level of service (LOS), and pedestrian/bicycle volumes, can be used to monitor transportation network performance. If performance measures indicate progress in an undesired direction, adjustment, or updates to the TMP can be made.

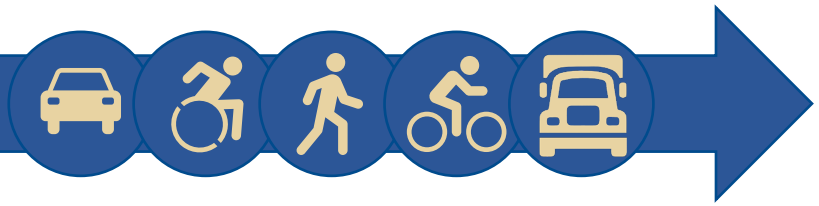
Specific performance measures and targets should be set to provide direction for the monitoring program. For example, the number of bicycle parking spaces within the Municipality could be a performance indicator. The Municipality could set a target to provide bicycle parking at 100% of all municipal facilities (buildings and parks). Individuals not cycling due to lack of secure parking upon reaching their destination may be more inclined to cycle as this target it realized. Targets or benchmarks such as these can also be used in marketing campaigns and events to help motivate the community. The Municipality should set realistic targets based on existing trends, as previously summarized in **Section 3.4**.

Regular public and stakeholder consultation should be carried out as part of the monitoring program to collect information about community satisfaction. These events can help to identify barriers and motivators to active travel use, ways to improve and grow walking and cycling, and gaps in the transportation network.

6.6.2 Data Collection

Current, reliable data provides the foundation for evidence-based decision-making concerning the transportation system. The most common types of transportation data collected by municipalities include:

- **Traffic Volumes** – Traffic counts (both automatic traffic recorders and turning movement counts) provide the basis for key policy and investment decisions, as well as support monitoring programs. The Municipality should adopt a consistent traffic count program to better capture traffic volume trends, notably in Listowel.
- **Collision History** – Maintaining access to collision data for the municipal road network will enable the Municipality to monitor trends in road safety and conduct safety-specific investigations.



The monitoring program should also examine user preference for facilities, levels of use, and other key factors over an extended timeframe to avoid immediate response bias (which occurs right after a new improvement is implemented). Data should be collected every two to three years (maximum every five years) and at the same time/season during each cycle.

Results of the monitoring program should be reported to Council and the community through information reports and other publications. The reports should highlight progress made in implementing the TMP, summarize the performance measures and targets for the previous period, and outline upcoming initiatives.

Recommendation 6.9: Develop and implement an ongoing transportation monitoring program and set performance measures and targets to track progress.

Recommendation 6.10: Prepare a periodic (at least annually) report to Municipal Council on the State of the Transportation System.

6.7 Plan Review and Updates

Regular reviews and updates of the TMP allow for the ongoing assessment of the performance and effectiveness of the plan. Establishing this stable transportation planning cycle ensures the plan strategies can respond to unforeseen conditions and imprecise assumptions, remain relevant, and fulfil the Municipality's transportation vision and goals.

Generally, master plans should be reviewed every five years to determine the need for a formal update. The need to renew the TMP should also be examined in conjunction with a similar assessment of the Official Plan and Development Charges Background Study. The monitoring program outlined in **Section 6.6** will also provide an indication of the necessity for an update. In the intervening period, individuals seeking a current statement of Municipal transportation policies must consult the record of Council decisions in addition to the plans.

Recommendation 6.11: Review the Transportation Master Plan every five years, ideally in conjunction with updates to the Official Plan and Development Charges Background Study.