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RC SPENCER ASSOCIATES INC.
Consulting Engineers

City of Woodstock

City of Woodstock

Transportation Master Plan

2024

May 5, 2025

Harold deHaan – City Engineer

City of Woodstock
PO Box 1539
944 James St.
Woodstock, ON
N4S 0A7

Dear Harold:

Re: City of Woodstock Transportation Master Plan

Enclosed is the City of Woodstock Transportation Master Plan (TMP). The TMP study is a strategic policy document that will serve as a road map for short, medium, and long-term transportation infrastructure investments. It will guide how the City:

- Develops their roadways;
- Coordinates infrastructure improvements with land uses;
- Responds to future growth and demand on the transportation network.

The TMP is developed in full compliance with the Ontario Environmental Assessment (EA) Act, following Phases 1 and 2 of the Municipal Class Environmental Assessment (MCEA) Master Planning Process. This TMP addresses the transportation challenges that the forecasted growth will impose and provides an opportunity for the City to capitalize upon re-thinking the function of streets to be more inclusive and accommodate all modes of transportation, while becoming more efficient, sustainable, and safe.

6240 Highway 7, Suite 200, Woodbridge, ON L4H 4G3 | T. 905-856-5200 | F. 905-695-0221
info.north-america@egis-group.com | www.egis-group.com

Contributors

We would like to thank all the contributors and stakeholders who helped guide and create this Transportation Master Plan. The project has been carried out by Egis in collaboration with RC Spencer Associates Inc. and in close consultation with the City of Woodstock. Following is a list of key contributors that have been part of the development of the Transportation Master Plan study:

City of Woodstock Advisor

Harold deHaan, City Engineer

Egis Consulting Team

Francois Tomeo, Transportation Planning Lead

Mitchell Patenaude, Senior Traffic Engineer

Hannia Nawaz, Transportation Planner

RC Spencer Associates Inc.

Aaron Blata, Project Manager

Cheryl Morden, Traffic Associate

Stakeholders

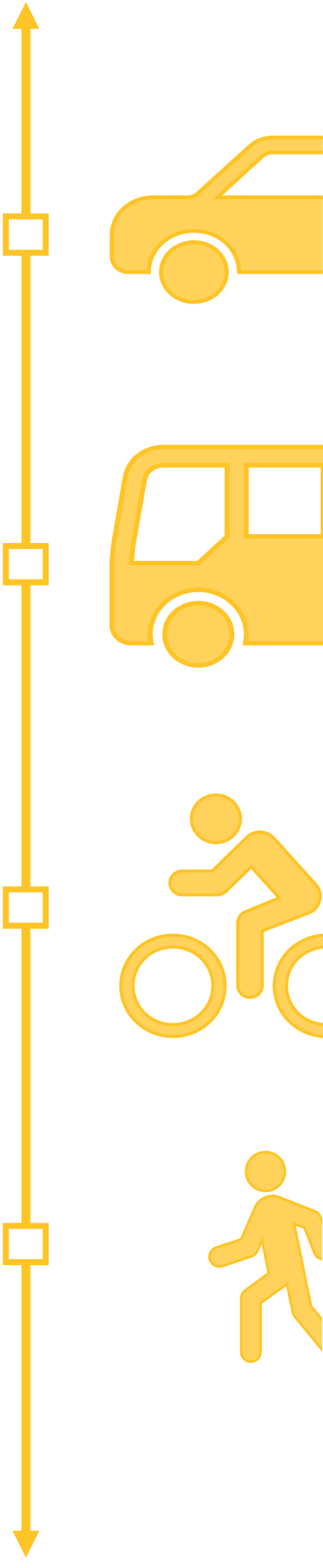
Ministry of Transportation Ontario (MTO)

Oxford County

City of Woodstock Departments

Grand River Conservation Authority (GRCA)

Ministry of Natural Resources (MNR)



Executive Summary

Introduction

The City of Woodstock has prepared its Transportation Master Plan (TMP) update to guide proactive approaches to planning a transportation system that will serve the community to the 20-year horizon and beyond. Over the last few years, the City of Woodstock has experienced a 13% growth in population, from approximately 40,164 people in 2016 to 46,296 people in 2021. Due to this rapid growth, the City's landscape is constantly changing, posing not only significant transportation challenges but great potential for opportunity in terms of impacting and shaping the City's future population dynamics, culture, and identity in a positive manner.

To strategically prepare for this growth and to enhance the municipality's existing transportation network, the City of Woodstock retained Egis to undertake the development of the municipality's TMP update. The TMP is a strategic policy document that will be used to help plan for the City's population growth and serve as a roadmap for short-range, medium-range, and long-range transportation infrastructure, as well as multi-modal transportation planning to meet the demands up to the 20- year horizon.

The City is expected to grow considerably in the fullness of time, and the TMP can address the transportation challenges that the growth imposes – connecting new communities, promoting accessibility and inclusivity, and overcoming barriers to travel. The growth also represents an opportunity for the City to capitalize upon re-thinking the function of streets to be more inclusive and to accommodate all modes of transportation, while becoming more efficient, sustainable, and safe. The resulting prioritized list of transportation network strengthening recommendations and set of policy recommendations will guide the implementation plan in the years to come.

The TMP was developed through a collaborative process led by Egis, under the direction of the City staff, with significant input from various stakeholders and the public. It was carried out in accordance with the Municipal Class Environmental Assessment (EA) process for Master Plans, completing requirements for Phase 1 and Phase 2.

Engagement

Multiple public consultation and stakeholder engagement opportunities were offered throughout the duration of the study. These events were published through the City's website, social media, and newspaper notices, and consisted of various stakeholder meetings and two public information centres. All the comments, input, and feedback from the various stakeholders and the public were assessed to help inform the recommendations for the TMP.

A Vision for Woodstock

Based on the feedback received from the consultation process and evaluation of four alternatives (do-nothing, status quo, road network strategy, and multi-modal network strategy), the preferred solution was selected as follows:

Alternative 4: Multi-Modal Network Strategy

The City will focus on strategic road network capacity improvements, promoting and enhancing active transportation network and transit opportunities. The City will take on a multi-modal approach, which includes a balance of traditional road network improvements and sustainable modes through policy and significant capital investment.

The TMP was guided by the following vision and objectives, crafted through consultation with City staff, stakeholders, and members of the public.

"The City of Woodstock's transportation network is envisioned as a safe, efficient, and accessible multi-modal system designed for all ages and abilities. The transportation network will also provide connectivity and efficient movement of goods and people, supporting its growing economy."

Supporting Policies and Strategies

This TMP provides various policies and strategies to strengthen the City's multi-modal transportation network, which have been summarized below.

Road Network Planning

1. Adopt the recommended road classifications provided in Map 18 in **Section 6.1.1**.
2. Develop a Road Classification and Design Standards Guideline which includes provisions for corridor management and complete streets approach appropriate cross-sections.
3. Develop Special Character Roadway Design Guidelines (Streetscaping and Beautification).

Speed Limit Policy

4. Apply the methodology set out in TAC Canadian Guidelines for Establishing Posted Speed Limits in setting speed limits on City roads and refer to the City's Traffic Calming Policy in instances whereby the recommended posted speed is lower than desired (in response to public or Council requests).
5. Maintain the statutory 50km/h speed limit on roads within Urban Communities and Rural Villages, except for designated School Zones or Community Safety Zones.
6. Conduct a comprehensive review of posted speed limits every five years.

Automated Speed Enforcement

7. Assess the merit of implementing Automated Speed Enforcement, including review of safety statistics, potential sites, financial implications, and Administrative Monetary Penalty System for adjudicating fines.
8. Liaise with other agencies for opportunities to share resources.

Special Speed Zones

9. Utilize the TAC School and Playground Areas and Zones: Guidelines for Application and Implementation in considering new and revising existing School and Playground Zones or Areas.
10. Phase implementation of 40 km/h Neighbourhood zones within the City with proper signage and usage of the Area tab signs installed at the entrances and exits to all neighbourhoods.
11. Set 30 km/h School Zone speed limits within the Neighbourhood speed areas and mark as Community Safety Zones.
12. Implement traffic calming measures as necessary to facilitate new speed limits.
13. Assess the merit of implementing Automated Speed Enforcement, including reviews of safety statistics, potential sites, financial implications, and Administrative Monetary Penalty System for adjudicating fines. Initial implementation should be considered along Arterial and Collector Roads.

Traffic Calming Policy

14. Adopt a traffic calming policy for the City.
15. Prioritize the following traffic calming measures: speed display devices, speed posted bollards, speed humps, raised crosswalks, and curb extensions.
16. Consider traffic calming measures during the design and implementation of reconstructed streets and new residential subdivisions.
17. Purchase a radar-based traffic monitoring device to collect speed data.

Supervised School Crossing

18. Have some form of traffic control in place or an adult crossing guard present at all marked school crossing locations.
19. Replace current crossing guard warrant system with the Ontario Traffic Council (OTC) School Crossing Guard Guide (2017).

All-Way Stop Control Policy

20. Adopt an all-way stop policy to ensure fair access to the right-of-way for similar volumes of traffic travelling in opposing directions.
21. Ensure all-way stop control is not relied upon to manage or reduce vehicle speeds.

22. Ensure all-way stop control is not used as a traffic calming measure.

Pedestrian Cross-Over Policy

23. Adopt a pedestrian crossover (PXO) policy to create safer and more pedestrian-friendly environments.
24. Ensure all current PXOs meet the standards set in the PXO policy and industry best practice.
25. Install all new PXOs following the process set forth in the PXO policy and industry best practice.
26. Enhance public awareness and educate both pedestrians and motorists on the proper use and function of PXOs via the City website, social media, school newsletters, and other outreach channels.

Transportation Impact Assessment Guidelines

27. Adopt the Transportation Impact Assessment (TIA) guidelines prepared as part of the TMP to provide a structured framework for conducting TIAs and ensure analysis approaches are consistent with industry best practices.

Downtown Parking Management

28. Conduct parking counts more frequently, including weekend and evening parking counts to understand variation of parking demand, to capture the overall utilization, and to complete a more comprehensive analysis.
29. Have a comprehensive and uniform wayfinding and signage program to guide drivers to the available parking options (and to reduce confusions about payment).
30. Use streetscaping and landscaping to promote cleanliness of outer city parking lots (to encourage people to park there).

Recommendations

This TMP consists of recommendations that include physical infrastructure projects, policies, and additional studies to enhance the City's transportation network and to make it more resilient to changing travel patterns and growth. However, not all recommendations are required immediately or concurrently, nor is there available capital budget to complete all projects immediately. Based on population and employment forecasts and the anticipated level of achievable operational improvements (and to establish a feasible timeline that can be reasonably achieved), the following planning horizons have been set for the proposed improvements:

- Short-term (within 5 years);
- Medium-term (6 to 10 years); and
- Long-term (11 to 20+ years).

As part of this TMP, an implementation plan was developed, which outlines the process for advancing the various recommended projects. The plan includes high-level descriptions of the projects and low-order conceptual cost estimates. The implementation plan provides the framework for effective and efficient progress of identified projects.

Project	Section	Action / Extent	Cost
Short-Term (0 – 5 Years)			
Policy Implementation	6.1	Road Classification & Design Standards	$0* *assumed to be done in house
Policy Implementation	6.1	Special Character Design Guidelines	
Policy Implementation	6.2.1	Posted Speed Limit Review	$10,000
Policy Implementation	6.2.2	Automated Speed Enforcement Review	-
Policy Implementation	6.2.3	School and Playground Assessment	$10,000
Policy Implementation	6.2.3.3	Community Safety Zone Implementation	$10,000
Policy Implementation	6.2.4	Adopt Traffic Calming Policy and begin implementing measures	$385,000
Policy Implementation	6.3.1	Crossing Guard Warrant assessment	-
Policy Implementation	6.3.2	Adopt All-Way Stop Control Policy	$25,000
Policy Implementation	6.3.3	Adopt Pedestrian Cross-Over Policy and begin assessment / implementation of treatments	$875,000
Policy Implementation	6.4.1	Expand Traffic Data collection program	-
Sidewalk Implementation	7.1.2	Devonshire Avenue from Woodall Way to Oxford Road 4	$145,000
Sidewalk Implementation	7.1.2	Woodall Way from Devonshire Avenue to Dundas Street	$270,000
Cycling Infrastructure	7.1.1	Shared operating spaces on Alice Street and Sprucedale Road	$15,000
Cycling Infrastructure	7.1.1	Designated operating spaces on Dundas Street, Finkle Street, Lansdowne Avenue, Springbank Avenue, Rathbourne Avenue and Ingersoll Avenue	$420,000

Project	Section	Action / Extent	Cost
Cycling Infrastructure	7.1.1	Physically separated bikeways on Dundas Street, Springbank Avenue and Lansdowne Avenue	$5,290,000
Urbanization	7.3.1	Springbank Avenue between Parkinson Road and Juliana Drive	$2,750,000
Urbanization	7.3.1	Clarke Street between Nellis Street and Warwick Street	$1,950,000
Road Reconstruction (Two-Way-Left-Turn-Lane)	7.3.3.1	Vansittart Avenue from Devonshire Avenue to Dundas Street	$105,000
Road Reconstruction (Two-Way-Left-Turn-Lane)	7.3.3.1	Ingersoll Avenue from Oxford Street to Huron Street	$120,000
Road Reconstruction	7.3.3.4	Bruin Boulevard access realignment	$800,000
		Short-Term Total:	**$13,180,000**
Medium-Term (6 – 10 Years)			
Policy Implementation	6.2.3.4	Implement 40 km/h neighbourhood zones	$10,000
Policy Implementation	6.2.4	Continued Traffic Calming implementation	$250,000
Policy Implementation	6.3.3	Assessment / implementation of PXO treatments	$525,000
Cycling Infrastructure	7.1.1	Designated operating spaces on Finkle Street, Park Row, and Henry Street	$155,000
Cycling Infrastructure	7.1.1	Physically separated bikeways on Juliana Drive, Springbank Avenue and Wellington Street	$2,620,000
Road Reconstruction (TWLTL)	7.3.3.1	Wellington Street from Devonshire Avenue to Dundas Street	$105,000
Road Reconstruction	7.3.3.3	Juliana Drive Corridor Review	$6,000,000
		Medium-Term Total:	**$9,665,000**

Project	Section	Action / Extent	Cost
Long-Term (10 – 20+ Years)			
Policy Implementation	6.2.4	Continued Traffic Calming implementation	$400,000
Policy Implementation	6.3.3	Assessment / implementation of PXO treatments	$525,000
Sidewalk Implementation	7.1.2	Parkinson Road from Brick Pond Lane to Oxford Road 4	$460,000
Cycling Infrastructure	7.1.1	Designated operating spaces on Finkle Street, Athlone Avenue, Wilson Street, Norwich Avenue, Main Street and Clarke Street	$495,000
Cycling Infrastructure	7.1.1	Physically separated bikeways on Beards Lane and Dundas Street	$1,215,000
Road Reconstruction	7.3.3.2	Dundas Corridor Review	$6,820,000
Urbanization	7.3.1	Dundas Street between Springbank Avenue and Oxford Road 4	$12,100,000
Urbanization	7.3.1	Lansdowne Avenue between Oxford Road 4 and north of Springbank Avenue	$10,500,000
		Long-Term Total:	**$32,515,000**
Development-Driven			
Urbanization	7.3.1	Middletown Line between Towerline Road and Pattullo Avenue	$10,050,000
New Roadway	7.3.2	East extension of Springbank Avenue	$2,830,000
New Roadway	7.3.2	New roadway east of Middletown Line	$6,580,000
New Roadway	7.3.2	New roadway north of Patullo Avenue	$7,990,000
New Roadway	7.3.2	South extension of Anderson Street	$3,220,000
New Roadway	7.3.2	East extension of Sprucedale Road to Dunkirk Avenue	$1,630,000
New Roadway	7.3.2	East extension of Upper Thames Drive	$6,960,000
		Development-Driven Total:	**$39,260,000**

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1.0 Introduction

1.0 Introduction

Transportation networks contain several layers that interact with each other in order to move people and goods around the community and to provide access to businesses, homes, parks, and institutions. Therefore, a Transportation Master Plan (TMP) is needed to set the vision for a City's transportation infrastructure and services. It includes plans, policies, and strategies for walking, cycling, transit and roads. It provides guidance to staff, stakeholders, and decision-makers on transportation development and is typically updated every five years to reflect changes in population, employment, travel trends, or policy direction.

The City of Woodstock (the City) undertook its previous TMP in 2011 to develop an integrated multi-modal transportation system that is sustainable and functional. It is intended to optimize the transportation network. The 2011 TMP addressed and recommended improvements to the transportation infrastructure in order to meet the projected population and employment growth up to the year 2031.

The City is now undertaking an update to their 2011 TMP because most of the recommendations in the previous TMP have been implemented and the City has experienced significant growth in the past 15 years (which is forecasted to continue). Therefore, this TMP update will incorporate updated population and employment forecasts to guide further development for the multi-modal transportation network over the next 20 years (until the 2043 planning horizon).

1.1 Geographical Context

The City of Woodstock is located within Oxford County, in Southwestern Ontario, between the City of London, the City of Kitchener, and the City of Hamilton, as shown in **Map 1.** It is one of the eight lower-tier municipalities within Oxford County and is primarily rural, with a few more densely populated areas located northwest and southwest within the City's borders. The City is home to a multitude of residential, commercial, and industrial uses, with a prominent employer being the Toyota Manufacturing Plant.

In Ontario, municipalities are categorized into upper-tier, lower-tier, and single-tier municipalities based on their functions:

- **Upper-Tier Municipality**: Provides regional services to multiple Lower-Tier municipalities. Examples include Oxford County, Peel Region, and York Region.
- **Lower-Tier Municipality**: Operates within the boundaries of an upper-tier municipality and provides local government services. Examples include cities, towns, and townships within regional municipalities.
- **Single-Tier Municipality:** Combines municipal and regional responsibilities into one entity. Examples include City of Toronto, City of Hamilton, and City of Ottawa.

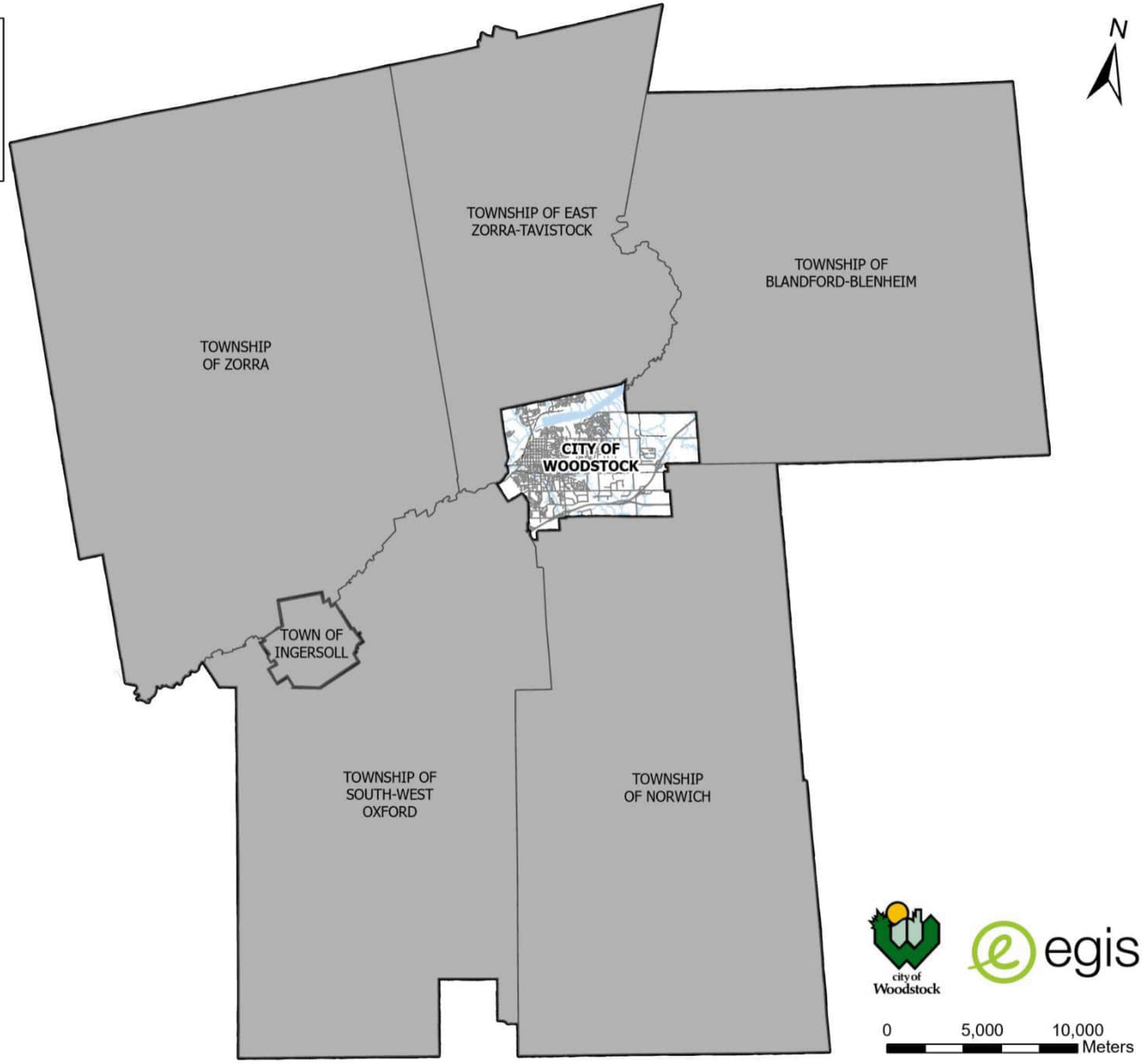
As mentioned earlier, the City of Woodstock is a lower-tier municipality and operates within the boundary of its upper-tier municipality, Oxford County (the County); therefore, the City provides the local services to its residents, and the County oversees the regional services.

The City of Woodstock is located at the crossroads of Highway 401 and 403 and is a 45-minute drive from the City of London and an hour and a half drive from the City of Toronto. The small-town feel and up-and-coming lifestyle of the City lend to its charm, making it a desirable place to live for people of all ages.

City of Woodstock

Transportation Master Plan

Surrounding Municipalities



Map 1 Existing Municipal Boundaries

1.2 Purpose of the Plan

This TMP update will serve as a long-range strategic plan for the entirety of the City, one that identifies transportation infrastructure requirements to accommodate projected growth, addresses existing challenges, identifies areas of opportunity, and guides transportation and land use decisions. Environmental planning and sustainability principles are also embedded into the TMP to provide a framework for implementing the suggested improvements on a city-wide basis.

This TMP update also provides an opportunity for proactive thinking, preparing for emerging technologies in transportation, and anticipating community needs. The City of Woodstock highlighted some general requirements for the TMP, which include:

- A review of the City's existing road network, including recommendations for network optimization and improvements to address growth and travel demand that encompass a period of at least 20 years from 2023 to 2043.
- Mobility across all transportation modes, for residents of all ages and abilities, that is safe, efficient, connected, accessible, affordable, and sustainable.
- A review of active transportation network gaps and the opportunities to better integrate the City's settlement areas through cycling loops and multi-use pathways.
- A clear and concise review of the active transportation network and recommendations that further build on and integrate with the wider guidelines and recommendations from the updated Oxford County TMP while incorporating up-to-date design guidelines and best practices for active transportation facilities.
- Develop a sustainable transportation network implementation plan that reflects future development scenarios for the short-term (1-5 year), medium-term (5-10 year) and long-term (10-20 year) that will assist the City in prioritizing capital works and investing efficiently.
- A review of roadways and intersections with high traffic volumes to highlight potential operational and safety issues and develop recommendations to achieve the City's goals.
- A review of current transit opportunities and the City's medium- and long-term transit requirements/feasibility.
- Creation of a detailed Terms of Reference (ToR) for Transportation Impact Assessment (TIA) to be used as a standard guideline for developments to ensure consistency.

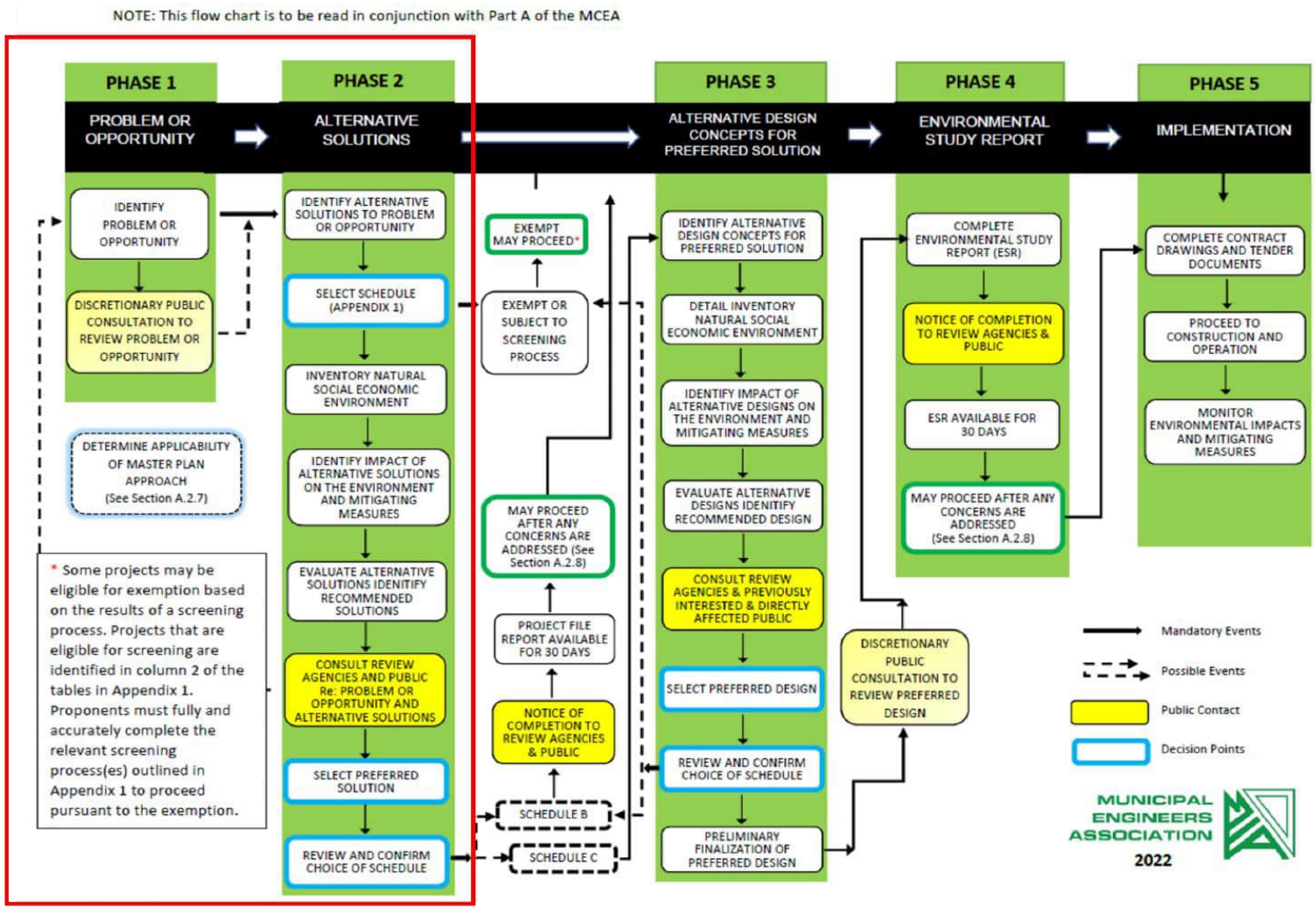
- Completion of a Traffic Calming Policy uniquely tailored to Woodstock which includes definition of key features, guidelines for implementation and recommended list of solutions based on road type.
- Policy or guideline recommendations to incorporate traffic calming into design and planning of new subdivisions.
- A review of roadways and intersections with high truck volumes to provide recommendations for truck routes.
- Review and provide updated recommendations for downtown parking.
- Implementing a meaningful consultation and engagement process for City staff, business communities, the public and external stakeholders that meets the Municipal Class Environmental Assessment (MCEA) requirements for a TMP.
- Development of an implementable action plan with recommended capital projects and/or initiatives for transportation infrastructures (roads, active transportation facilities, etc.) based on priority, estimated cost, and timelines for completion (by 2043), under the MCEA process.

1.3 The Municipal Class Environmental Assessment Process

Transportation Master Plans are required to complete Phases 1 and 2 of the five-phased Municipal Class Environmental Assessment (MCEA) process, which include the development of an opportunity statement, objectives, and an overall TMP vision (Phase 1); alternative scenarios development and evaluation, leading to preferred alternative (Phase 2); and engaging public representatives and stakeholders at least twice over the course of the study. The MCEA process is shown in

Figure *1*.

This TMP follows approach 1 (which includes Phase 1 and Phase 2) of the MCEA process in which the master plan being undertaken involves a broad scope and level of assessment. It involves analysis on a regional or systems scale, which enables the proponent to identify needs and establish broader infrastructure alternatives and solutions. Specific projects that are required to achieve the preferred solution described in the TMP may be identified within the document; however, the level of detail at a project-specific level is minimal. Therefore, more detailed investigations at the project-specific level are required to fulfil the MCEA requirements for the specific Schedule B and C projects identified within the TMP. The Transportation Master Plan would therefore become the basis for, and be used in support of, future investigations for the specific Schedule B and C projects identified within it.



*Completed as part of the TMP process (Approach 1)

Source: Municipal Class Environmental Assessment. Municipal Engineers Association (2023)

Figure 1 Municipal Class Environmental Assessment and Design Process

1.4 Study Process

Figure 2 outlines the project approach, which consisted of three parts that are detailed below:

1. A comprehensive review of Woodstock's existing road, active transportation, and public transit networks, which were required to understand the function of the transportation infrastructure. Input was gathered from residents of the community and local stakeholders to ensure responsiveness and openness throughout the project process.

2. A comprehensive review of Woodstock's road network needs from a traffic operations and safety perspective. Gaps in the existing active transportation and transit network were also identified with solutions to shore up those gaps. This step also included the update of Woodstock's policies and design standards.

3. Refine the preferred solutions and develop a comprehensive TMP document.

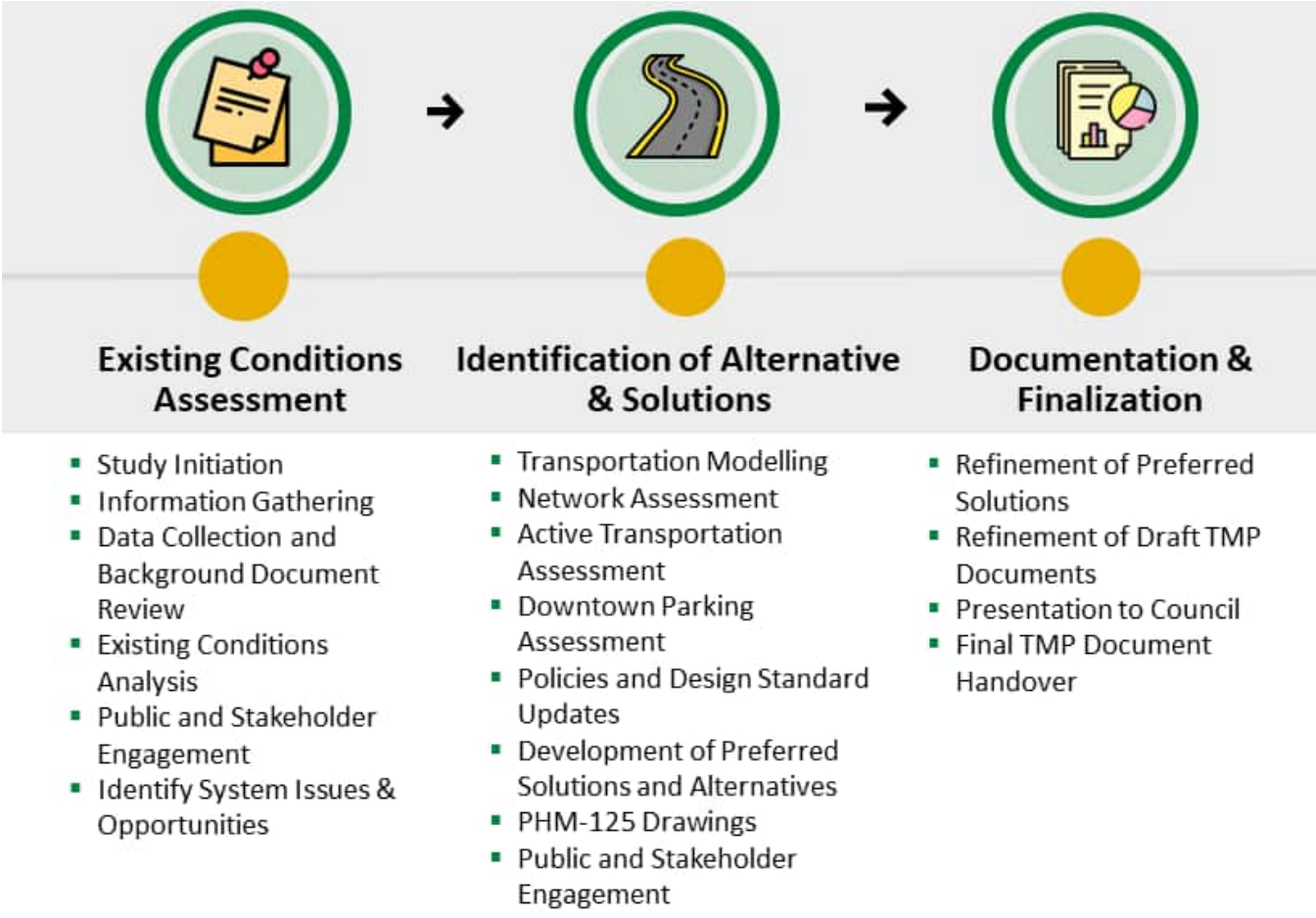


Figure 2 Project Methodology

1.5 Public and Stakeholder Engagement

The project team established the guiding principles for the study by gathering local knowledge and having open and effective communication with the public, as well as all stakeholders. The philosophy behind the approach and methodology of the study included the following:

- Maintain and preserve the local character and protect the natural environment that makes Woodstock a desirable place for residents, businesses, and tourists alike.
- Provide safe and accessible streets for all users, ensuring all modes of transportation are promoted as effective and safe mobility options, regardless of age or ability.
- Ensure a vibrant and attractive downtown core to enhance tourism and economic development within the City.
- Minimize traffic congestion, ensuring Woodstock's road network can accommodate future growth and travel demand.
- Effectively consult with all stakeholders, including the City staff and general public to ensure success of the TMP.

An integral part of the MCEA process is public consultation, as there are requirements for notifications and consultations with the public, agencies, and other stakeholders at key phases of the process.

During the TMP's development, multiple audiences were engaged, and feedback was incorporated into technical milestones, elements of the process, and the final report. A summary of the engagement tactics, milestones and stakeholders involved is provided below, and **Appendix A** provides detailed information such as the date, time, and consultation material used during the engagement sessions.

Who was Engaged?

Residents: This group represents the individuals who live, work, and play within the City of Woodstock.

Stakeholders and Technical Agencies: This group included various City departments and technical agencies such as Ministry of Transportation (MTO), Ministry of Environment, and Oxford County.

City Staff and Council: This group included those involved in the planning, implementation, decision making, operation, and management of the TMP.

How Were They Engaged?

Online: Two rounds of virtual public engagement sessions and virtual meetings with stakeholders and technical agencies

Outreach: Promotional tools, social media, and the City's project webpage to post consultation material and keep the public informed about the project

When Were They Engaged?

- 2023 August 23 — Notice of Study Commencement circulated
- 2024 March 20 — Public Information Centre #1
- 2024 Nov 20 — Public Information Centre #2
- 2025 May 15 — Presentation to Council
- 2025 TBD — Notice of Study Completion

What We Heard

Extend Transit Network and Access Times: The City has an aging population; therefore, there is a need to extend the reach of transit service to a wider area and increase operating hours to include Sunday service. Furthermore, the City should work with VIA Rail to provide a holistic transportation network and increase the VIA Rail service frequencies within the City to improve connections to Downtown Toronto.

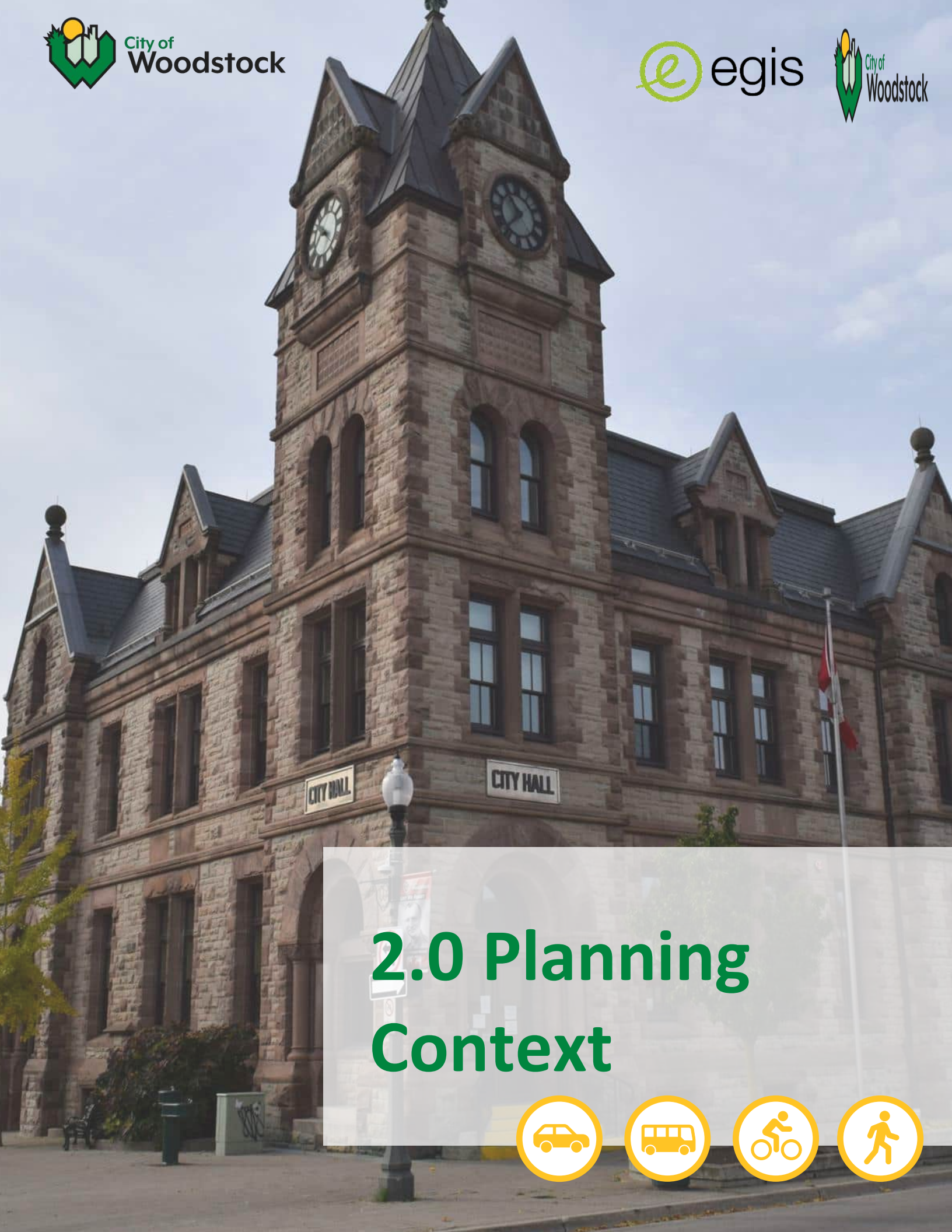
Promote the Use of Sustainable Transportation Modes: The City should balance the needs of cyclists and motorists on the roadway by ensuring cyclists are provided designated routes to enhance safety. The City should work on improving pedestrian connectivity to key destinations.

1.6 Project Objectives

A multi-modal transportation network that is well-designed and efficient can be an essential part in achieving the local goals set out in various City plans. This TMP study will help in enhancing the transportation network for the City to establish it as a leader in building, preserving, and enhancing livable communities, which will be supported by economic development, tourism, sustainable transportation practices, and the emerging shared economy.

The objectives for this study were tailored specifically to the needs of the City of Woodstock and have been listed below:

1. Provide a roadmap for transportation planning needs over the next 20 years, with a goal of optimizing the performance of existing infrastructure and identifying the most sustainable approach to accommodating new development.
2. Develop an integrated multi-modal network that supports the City's strategic objectives, reflects the community context, and contains the appropriate transportation infrastructure.
3. Encourage active transportation by making cycling and walking a means to address future growth and traffic congestion. Furthermore, utilize active transportation infrastructure to promote transit, tourism, and healthier communities.
4. Improve safety for all road users by making the transportation network safe, comfortable, and reliable for all road users, regardless of how residents choose to travel within Woodstock.
5. Enhance multi-modal connections by carefully planning and coordinating infrastructure between different modes of transportation to create a holistic transportation network that meets the needs of the growing population.



2.0 Planning Context

2.0 Planning Context

A detailed review of various background documents and studies was conducted, which provided the current context for Woodstock's planning objectives, as well as direction for developing the TMP update. The documents that were reviewed for the purpose of this TMP update are detailed in the subsequent sections.

2.1 Provincial Documents

Provincial Policy Statement (2024) provides the guiding principles and policy direction on key land use planning issues within Ontario. It aims to promote land-use patterns that support multi-modal transportation options and increase the use of sustainable modes of transportation.

2.2 Regional Documents

Oxford County Official Plan (2023) provides policy guidance to manage the use of land and resources desired to maintain and improve the quality of the environment and the quality of life for County residents. It recognizes Woodstock as one of its large urban centres and a focal point for employment, commerce, recreation, and administration within the County. It aims to develop an efficient, safe, and comprehensive road system in Woodstock that will promote pedestrian and bicycle facilities and transit use, encouraging better integration of the City's transportation network with the wider transportation network.

Oxford County Transportation Master Plan (2024) outlines and defines policies, programs, and infrastructure improvements needed to manage both existing and future transportation demands to the year 2046. It focuses on all modes of transportation to promote a safe, effective, and sustainable transportation network.

Oxford County Cycling Master Plan (2021) aims to provide specific direction that builds upon recommendations, policies, and strategies identified in high-order policies, such as the County's Official Plan and TMP. It mentions that the primary cycling network will prioritize County roads and facilitate connectivity between the County's main urban areas, including Woodstock. It aims to create an integrated and connected cycling network that promotes active transportation, tourism, and low carbon travel options as part of a sustainable multi-modal transportation network.

2.3 Local and Municipal Documents

City of Woodstock Strategic Plan (2013) aims to provide a holistic view of community through a sustainability approach that considers the natural environment, the economy, and the community. It provides guidance for developing services to meet expectations of Woodstock residents and sets strategic priorities over the short, medium, and long-term.

City of Woodstock Asset Management Plan (2024) supports the vision for the City's asset management practices and programs. It provides key asset attribute data, including current composition of the City's infrastructure portfolio, inventory, useful life, and it summarizes the physical health of the capital assets. This document also assesses the current capital spending framework and outlines financial strategies to achieve sustainability in the long term (while reducing and eventually eliminating funding gaps).

City of Woodstock Downtown Development Plan (2020) provides strategic direction and key tactics to sustain and renew Downtown Woodstock through co-ordination with existing plans and policies, as well as the development of new initiatives. It aims to create Downtown Woodstock into a vibrant, inclusive, and sustainable destination for everyone.

Downtown Woodstock Streetscape Master Plan (2022) intends to serve as a tool to guide design and expenditures of future streetscape and related infrastructure within the City's core. It aims to create a central focal point that is accessible to the public and an attractive and cohesive urban space.

City of Woodstock

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City of Woodstock

3.0 Existing Conditions

3.0 Existing Conditions

To identify opportunities for improvements, recommendations, and strategies for the City's transportation network, a comprehensive understanding of the current community context is essential. The existing conditions of the transportation network will serve as the basis for assessing future opportunities and improvements.

The subsequent sections provide a summary of the existing transportation network, including the current community context, road classification system, traffic volumes, aggregate haul routes, traffic operations, and active transportation facilities.

3.1 Community Profile

The transportation network for a city must be planned in accordance with the local landscape and demographics to address the problems and to recommend solutions tailored specifically to the local community. It is essential to understand the relationship between the changing demographics and land use to know the needs of the community and to find out where residents and businesses will go in the future.

3.1.1 Population

The City of Woodstock is part of Oxford County, and the County has a total population of 121,781 with Woodstock accounting for 46,705 (or 38%) of the County's population, according to the 2021 Statistics Canada data. This represents a 13% increase from the 2016 population, which was reported to be 41,098. The City's average population growth compares to the provincial average of 5.8%, indicating steady growth within the City. Per Oxford County's TMP, the population of the City is forecasted to be 67,295 by 2046, as shown in **Table 1**, which also shows the change from 2016 for population and household data. As per Statistics Canada, the City has a land area of 56.46 square kilometers and a population density of 827.2 people per square kilometre. Furthermore, 18,886 private dwellings were occupied in 2021, which represents a net increase of 9.7% from 2016.

The largest age demographic within the City is residents aged 65 years or over, which account for approximately 19.6% of the total population as shown in **Figure 3**. This is slightly higher than the City's median age of 41.9 and the provincial median of 41.6. Regardless of a growing senior population, a younger cohort of 14 years of age and under are expected to enter the working-age bracket in the next 10 – 15 years. This presents an opportunity to guide the transportation choices for the next generation of working-age residents and make transportation related decisions accordingly. Monitoring trends in demographics enables the City to better understand change over

time (and how that might affect the transportation system) and assess the effectiveness of the TMP in meeting stated objectives.

Table 1 Population and Household Projections for the City of Woodstock

	2016	2021	2028	2033	2046
Population	41,098	46,705	53,421	57,419	67,295
Household	17,100	18,886	21,128	22,692	26,256

Source: Oxford County Transportation Master Plan (2024)

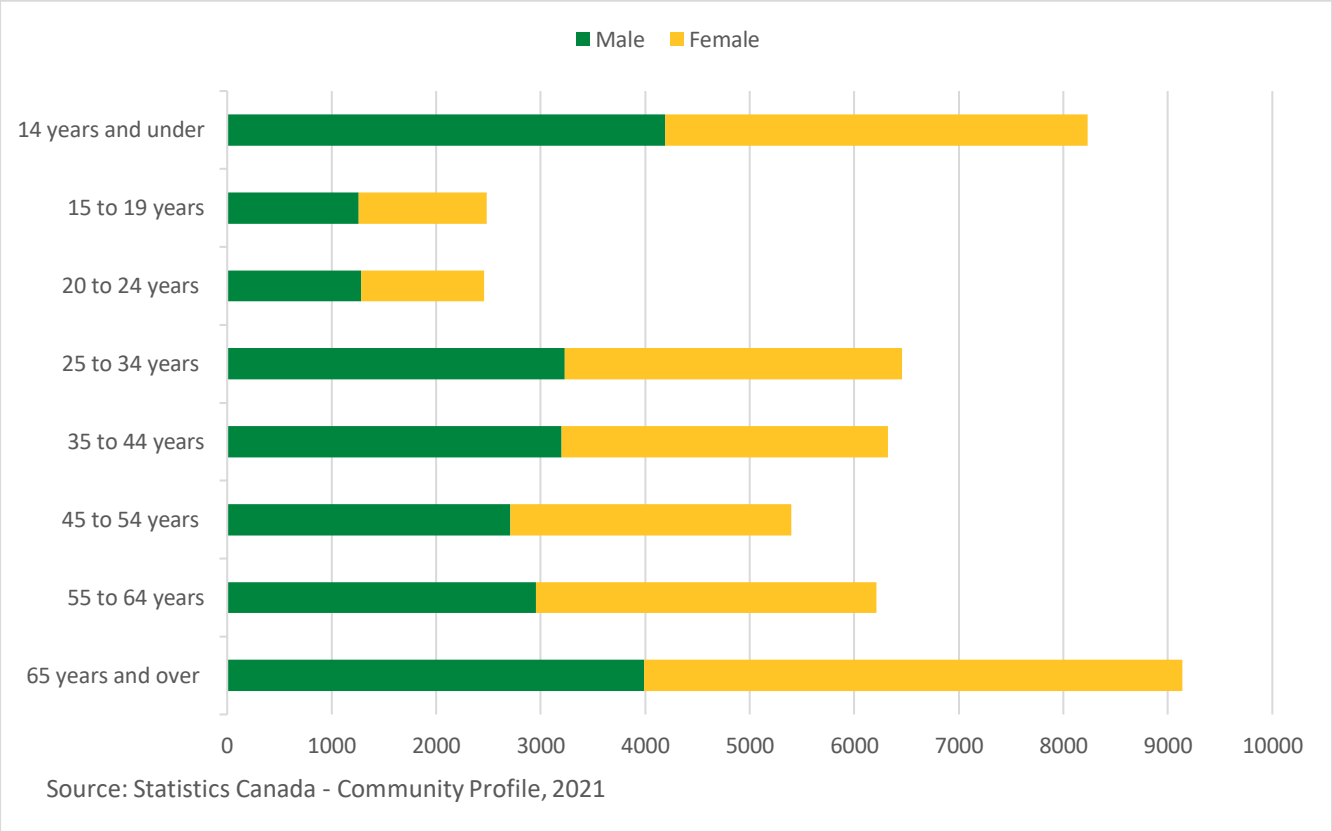


Figure 3 Population Breakdown in the City by Age

3.1.2 Employment

The City is recognized as one of the large urban centres of the County and is a focal point for employment, commerce, recreation, and administration. The City also has several major employers, with Toyota being a notable one. As per the 2021 Statistics Canada data, the employment rate in the

City is 55.6% and 20,985 people are employed, which is not surprising due to the skew of the population of the City towards retirement-aged people. According to the County's TMP, the employment for the City is projected to reach 38,730 by 2046.

In terms of employment distribution, sales and service occupations (23.9%) make up the highest proportion of the occupation split, as shown in **Table 2**. A considerable percentage of the population is also employed in trades, transport, equipment operator, and related occupations (21.7%).

Table 2 Occupation Split within the City

Occupation	Employment	Total
Sales and service occupations	5,695	24%
Trades, transport, and equipment operators and related occupations	5,175	22%
Business, finance, and administration occupations	3,380	14%
Manufacturing and utilities occupations	3,335	14%
Education, law, social, community, and government services occupations	2,125	9%
Health occupations	1,620	7%
Natural and applied sciences and related occupations	1,095	5%
Natural resources, agriculture, and related production occupations	395	2%
Art, culture, recreation, and sport occupations	330	2%
Legislative and management occupations	180	1%

Source: Statistics Canada (2021)

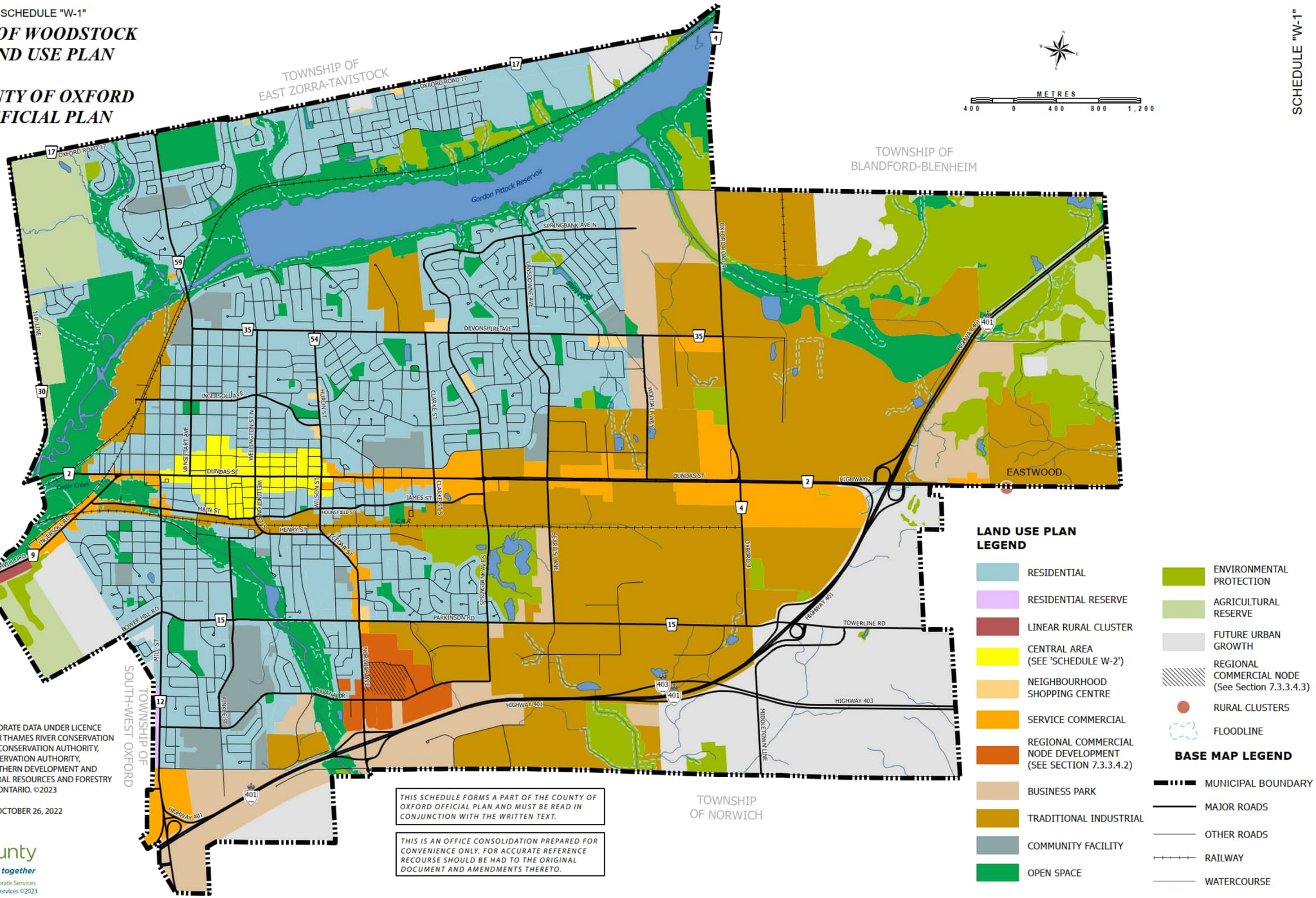
3.1.3 Land Use

The City is predominantly comprised of residential and traditional industrial land uses as per Schedule W-1 of Oxford County's Official Plan, shown in **Map 2**. The land use designations intend to promote the concept of a compact urban form in order to maximize the use of existing services. Furthermore, the land use designations also intend to emphasize an efficient land use pattern for both residential and employment areas by promoting high density development (while still maintaining flexibility for a mix of land uses that is well-complemented by a comprehensive transportation system).

SCHEDULE "W-1"

CITY OF WOODSTOCK
LAND USE PLAN

COUNTY OF OXFORD
OFFICIAL PLAN



LAND USE PLAN LEGEND

- RESIDENTIAL
- RESIDENTIAL RESERVE
- LINEAR RURAL CLUSTER
- CENTRAL AREA (SEE 'SCHEDULE W-2')
- NEIGHBOURHOOD SHOPPING CENTRE
- SERVICE COMMERCIAL
- REGIONAL COMMERCIAL NODE DEVELOPMENT (SEE SECTION 7.3.3.4.2)
- BUSINESS PARK
- TRADITIONAL INDUSTRIAL
- COMMUNITY FACILITY
- OPEN SPACE
- ENVIRONMENTAL PROTECTION
- AGRICULTURAL RESERVE
- FUTURE URBAN GROWTH
- REGIONAL COMMERCIAL NODE (See Section 7.3.3.4.3)
- RURAL CLUSTERS
- FLOODLINE

BASE MAP LEGEND

- MUNICIPAL BOUNDARY
- MAJOR ROADS
- OTHER ROADS
- RAILWAY
- WATERCOURSE

THIS SCHEDULE FORMS A PART OF THE COUNTY OF OXFORD OFFICIAL PLAN AND MUST BE READ IN CONJUNCTION WITH THE WRITTEN TEXT.

THIS IS AN OFFICE CONSOLIDATION PREPARED FOR CONVENIENCE ONLY. FOR ACCURATE REFERENCE RECOURSE SHOULD BE HAD TO THE ORIGINAL DOCUMENT AND AMENDMENTS THERETO.

COUNTY COUNCIL APPROVAL: OCTOBER 26, 2022

Oxford County
Growing stronger together
Produced By The Department of Corporate Services
Information Services ©2023

Source: Oxford County Transportation Master Plan (2024)

Map 2 City of Woodstock's Existing Land Use Plan

3.2 The City's Transportation System

A City's transportation network plays a fundamental role in shaping not only the physical but also the social and economic landscape of a city or region. Therefore, it is essential to understand the existing context of the transportation facilities in order to identify the improvements needed to serve its population and to achieve a progressive, prosperous, and safe community (well-served by its transportation infrastructure).

3.2.1 Road Network

The existing City of Woodstock road network includes a hierarchy of roadways classified as Provincial Highways, Arterials, Collectors, and Local Roads. The existing roads in the City are classified based on Oxford County's 2023 Official Plan and the County's Road Rationalization Policy. The purpose of the road rationalization policy is to allow the City to conduct a review of its road system and determine the appropriate jurisdiction of a road or road section while ensuring local roads serve a local function and the County roads serve a through traffic function. Under the Public Transportation and Highway Improvement Act, the policy allows for the City to establish, maintain, add, or remove designated roads from or to its municipal road system.

Three tiers of government have jurisdiction within the City boundary; the Provincial Highways are under the jurisdiction of the Ministry of Transportation (MTO), the Arterial Roadways are under the jurisdiction of Oxford County (with some arterials governed by the City), and the Collector, Minor Collector and Local Roads are governed by the City. **Map 3** shows the respective jurisdictions of the City's roads.

The transportation network consists of several different road types which are intended to serve different objectives. **Map 4** shows the road classifications for the City of Woodstock; a description of the roadway classifications is provided below:

- **Provincial Highways:** Provincial highways fall under the jurisdiction of the Ministry of Transportation of Ontario (MTO) and serve high traffic volumes at high speed for long distance, inter-urban travel. These include Highway 401 and Highway 403.
- **Arterial Roadways:** Arterial roads are major roads designed to carry moderate to high volumes of intra-urban and long-distance traffic movements at moderate speeds and have limited property access. They serve as primary routes for the movement of vehicles between different areas, often connecting major centres such as cities and neighbourhoods. Notable examples include Dundas Street, Parkinson Road, and Devonshire Avenue. These vital roadways facilitate regional and long-distance travel, supporting economic growth and connectivity.

- **Collector Roadways:** Collector Roads serve light to moderate volumes of traffic for short distances and form the backbone of the City's local transportation system, providing essential connections between arterial roads and local roads. They play a crucial role in distributing traffic within the City and ensuring accessibility to residential, commercial, and recreational areas.
- **Minor Collector Roadways:** These roadways serve light volumes of traffic for short distances between local and arterial roads and provide access to individual properties.
- **Local Roadways:** These roadways serve light volumes of traffic for short distances and provide access to individual properties. They typically have fewer lanes and are intended for local traffic within communities. They are designed to restrict major volumes of through traffic.

As part of a two-tier system, the upper tier municipality (Oxford County) typically provides upper-tier services. The County maintains its road network, which typically serves as a network of arterial roadways. The lower-tier municipality, in turn, typically maintains a network of local roads and collector roads, which connect to the County's arterials, which in turn connect to the provincial highway network. However, the City of Woodstock, as illustrated in **Map 3**, does currently maintain a number of arterial roadways, including:

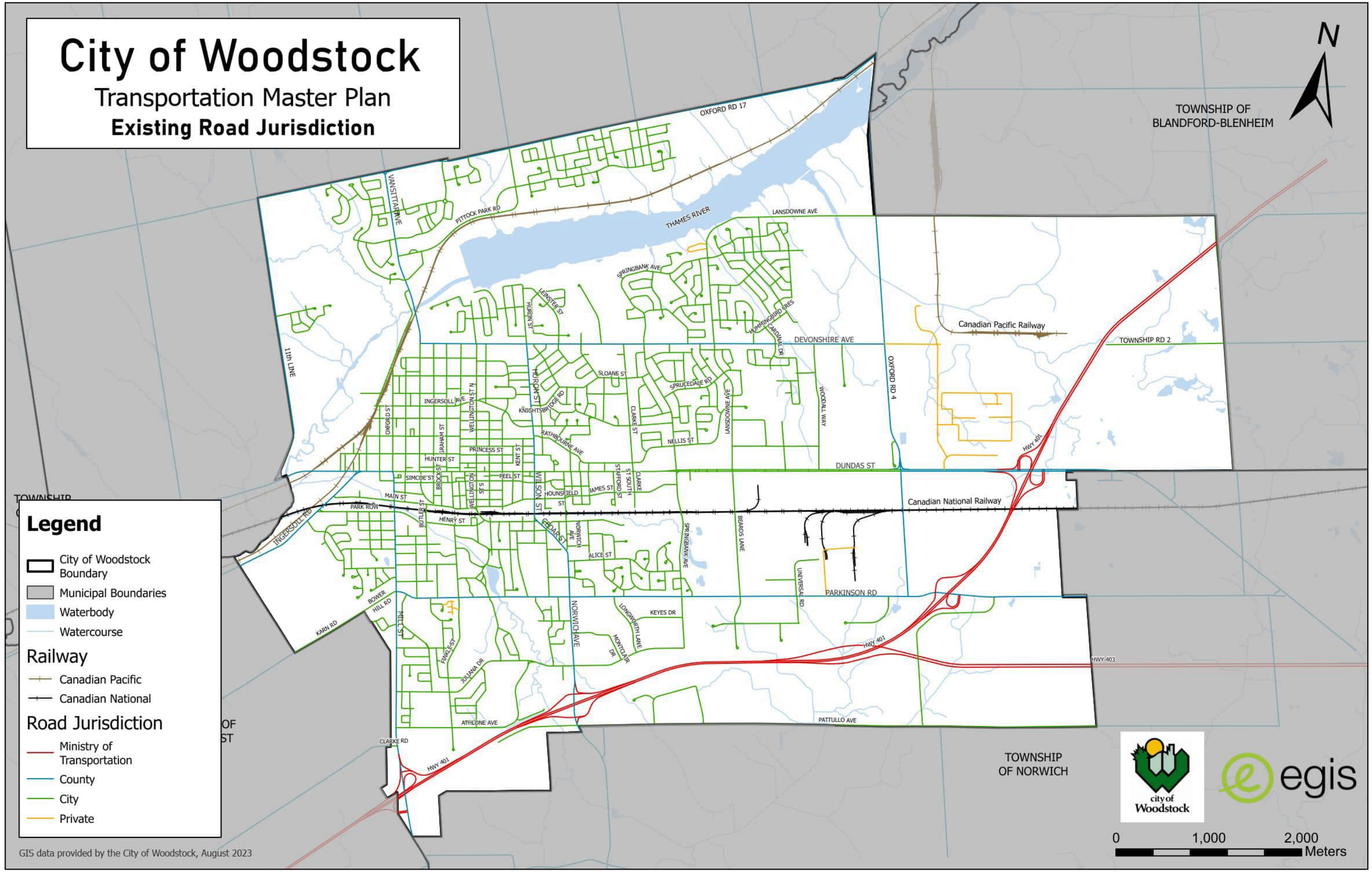
- Dundas Street;
- Springbank Avenue;
- Lansdowne Avenue;
- Wellington Street North;
- Ingersoll Avenue; and
- Vansittart Avenue.

Overall, the existing road network serves as the essential framework for the daily lives of residents and the growth of businesses. It embodies the character of the City's communities, connects diverse landscapes, and fuels the economic vitality of the region. Understanding the City's existing road network is fundamental in working towards improving the transportation network and making it efficient, safe, and sustainable. While the County of Oxford Official Plan provides descriptions for the various road classifications (and outlines some general requirements such as sidewalks), the City of Woodstock does not currently have a road classification policy. Having this type of policy and utilizing applicable design standards would ensure the City's roadways function according to their intended use.

City of Woodstock

Transportation Master Plan

Existing Road Jurisdiction

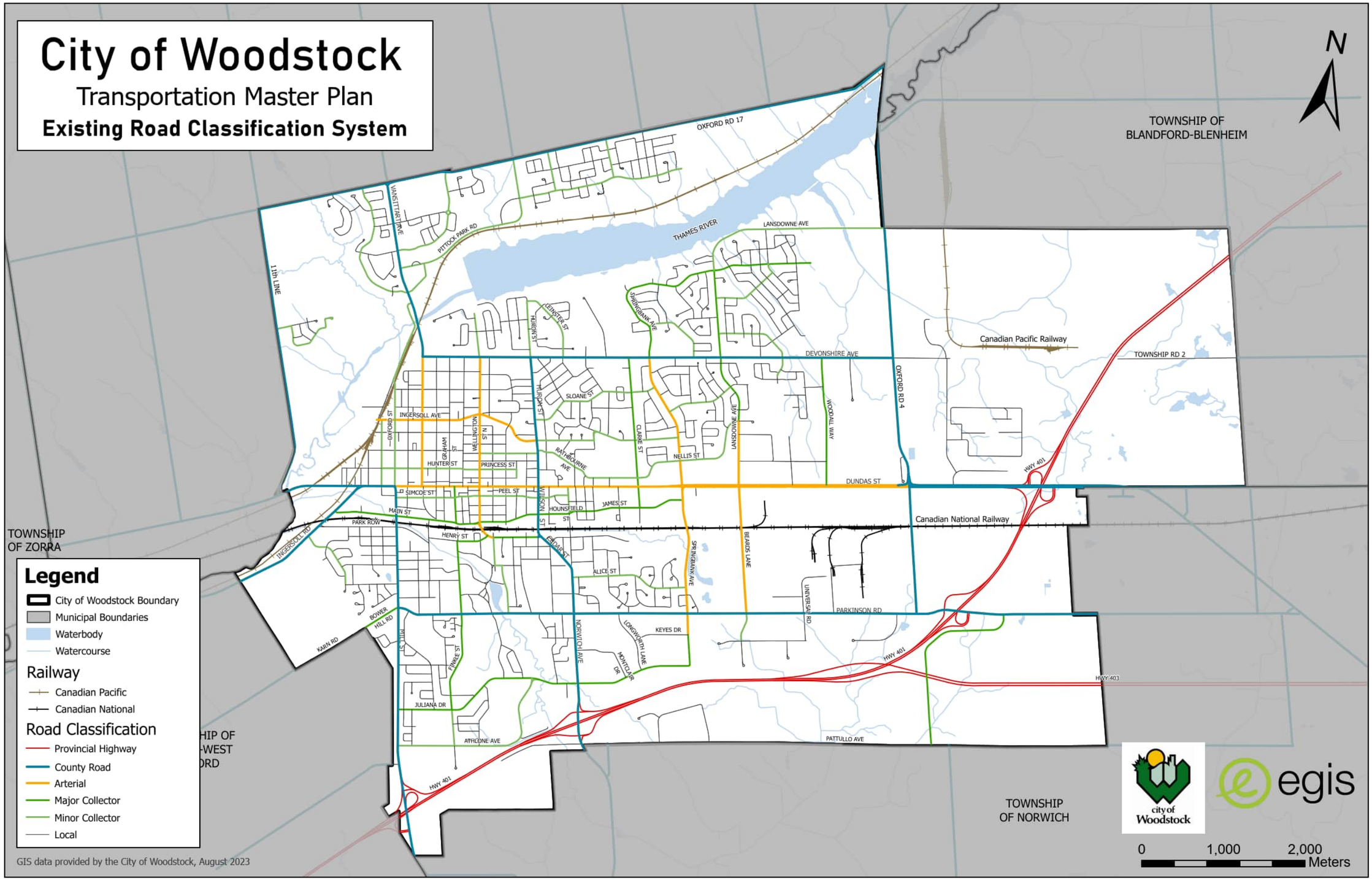


Map 3 Existing Road Jurisdiction

City of Woodstock

Transportation Master Plan

Existing Road Classification System



Map 4 Existing Road Classification

3.2.2 Transit Network

The City operates a conventional and paratransit service throughout the community. The conventional service operates seven routes throughout the City. The service has a headway of 30 minutes and runs from 6 a.m. to 10 p.m., Monday through Saturday, with no service operations on Sunday and Statutory Holidays. However, from 3:00 p.m. to 5:00 p.m. on weekdays, the buses run on a 40-minute cycle and return to a 30-minute cycle after 5:00 p.m. The City also has a VIA Rail Station, providing connections to Downtown Toronto on the east end and to Windsor on the west end. The City is served by three eastbound and four westbound trains on both weekdays and weekends. **Map 5** shows the existing transit network within the City.

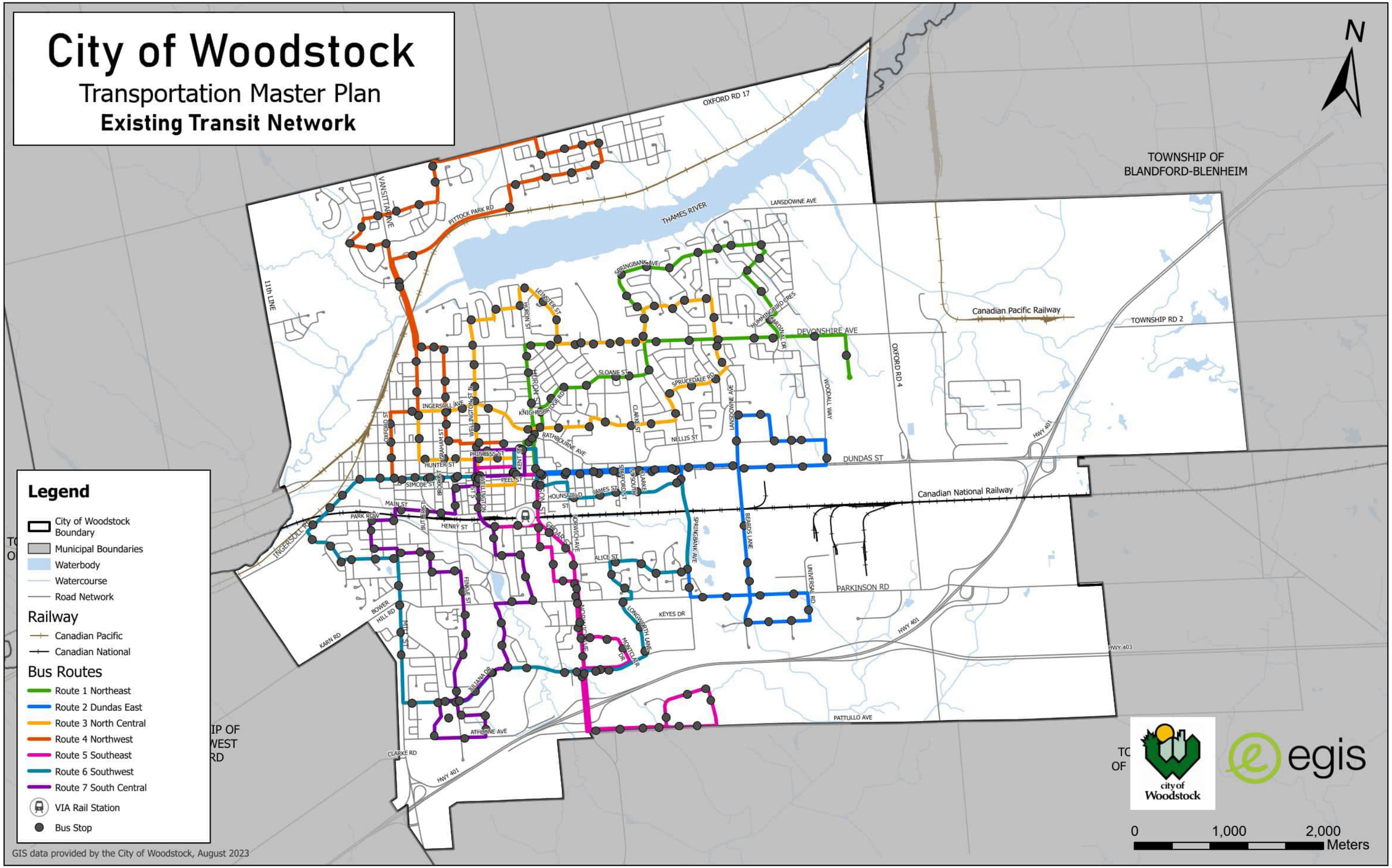
The para-transit service offers door-to-door scheduled service for persons who, due to functional limitation, cannot board, ride, or disembark from the City's fixed transit routes. It requires pre-booking a minimum of 24 hours in advance and offers same day rides only if space is available.

The City also has an Inter-Community Transit service called T-Go that is based in the Town of Tillsonburg and has a route that travels through the City. The transit service operates Monday to Friday, and there are five trips between the City of Woodstock and the Town of Tillsonburg daily, passing through the Town of Ingersoll. The transit service has bus stops at the Woodstock Hospital, VIA Rail Station, and the Woodstock Transit Terminal on Dundas Street at Young Street.

City of Woodstock

Transportation Master Plan

Existing Transit Network



Map 5 Existing Public Transit Network

3.2.3 Active Transportation Network

The City's existing pedestrian network consists mainly of sidewalks that provide links between local neighbourhoods and connect into the multi-use trail network within the parks and open spaces, such as those adjacent to the Thames River, as shown in **Map 6**. Sidewalks are provided on the majority of the roads within the City, and the current practice within Woodstock is to provide sidewalks on at least one side of every street. The pedestrian sidewalks are located throughout the Downtown and residential neighbourhoods, providing a well-connected pedestrian network. Within the downtown core, significant improvements are planned to the pedestrian streetscape as part of the Downtown Woodstock Streetscape Master Plan. Planters, sidewalk bulb-outs, and alternative materials have been used to enhance the public realm and improve the pedestrian experience.

There are 16 locations within the City of Woodstock that have a school crossing guard stationed during school hours from Monday to Friday. The crossing guards are generally on duty from 8:00 am to 9:00 am, 3:00 pm to 4:00 pm, and at various times during mid-day (for recess and lunch breaks). A list of crossing guard locations, the schools using them, and their schedules are provided in **Appendix B**.

Map 7 illustrates the existing cycling network within the City. The existing cycling network is comprised of the following, as described in the City's Bicycle Routes Mapping:

- **Bike Lane:** A lane that runs along the road that is dedicated solely for cyclists. It is identified by a white line with painted white bicycle symbols. Vehicles are only allowed to pass through a bike lane when making a turn.
- **Sharrow:** A lane used to alert motorists and cyclists of the need and expectation to share the road. It is also used to guide cyclists as to where they should ride within the shared travel lane. On a sharrow lane, one can expect to see the regular green bike route signs, as well as sharrows painted on the road. A sharrow consists of two white chevron markings above a white bicycle marking.
- **Edge Line:** Similar to the bike lane; however, it will not have the white painted bicycle markings. This type of lane can be used by cyclists, although vehicles are also permitted to park within the lane in designated parking areas.

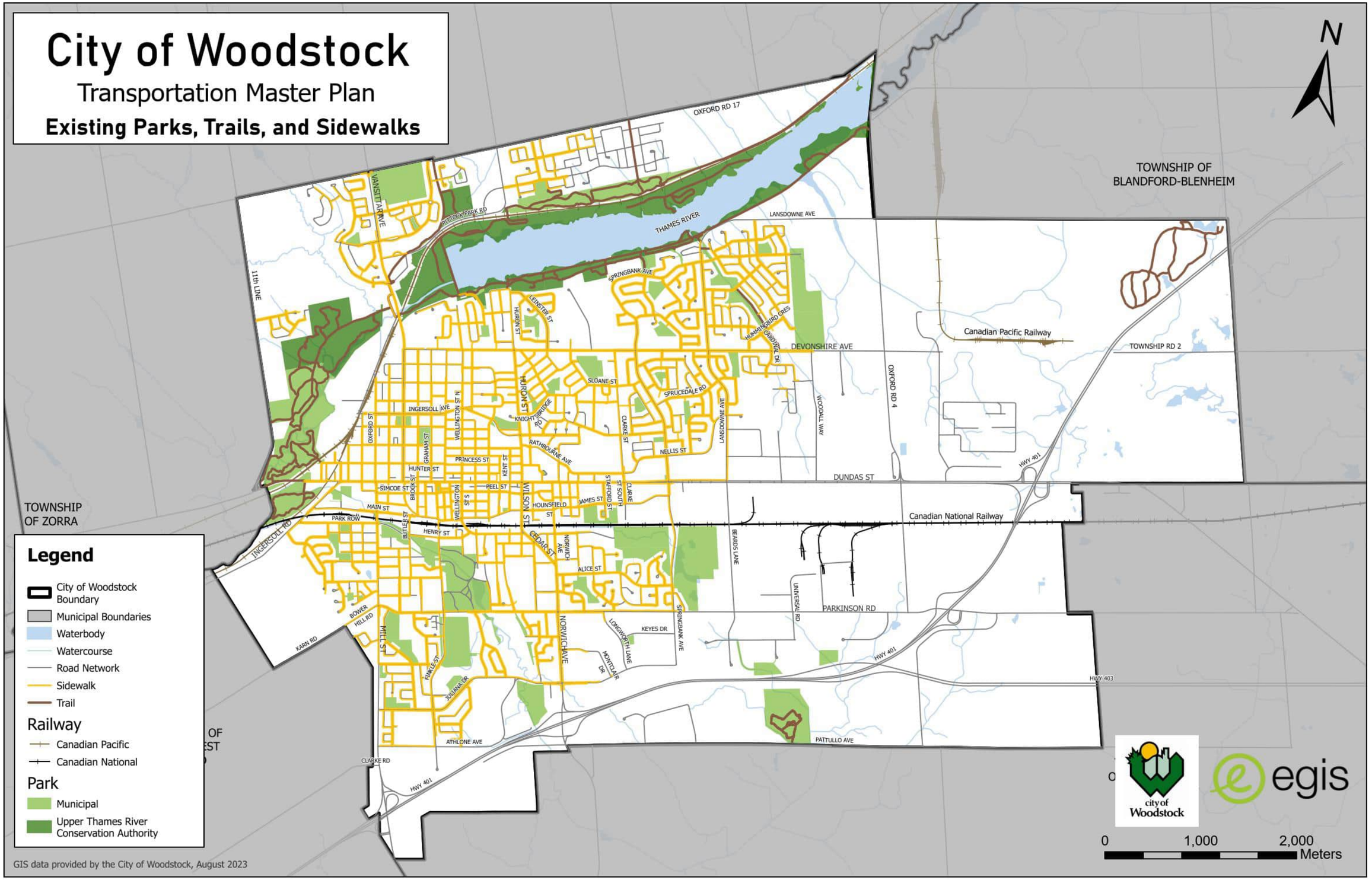
- **Signed Route:** All the cycling facilities previously described will have bike route signs. In addition to lanes, there are also many roads within the City that have been deemed a designed bike route. These routes will not have white lines dedicating space for cyclists; this means that cyclists and drivers will have to share the road. The bike route signs will direct cyclists when a route starts, changes, and ends.

The cycling network is mainly concentrated on the west side of the City, where the residential neighbourhoods are located, and it connects to the multi-use trail network within the parks. The City has dedicated bike lanes located mainly along Woodall Way, Springbank Avenue, Huron Street, and Mill Street, which are designated by pavement marking for the exclusive use of cyclists. However, it should be noted that Huron Street and Mill Street are Oxford County roads, which may impact jurisdiction over cycling infrastructure. While the network provides some connectivity, there are gaps and areas of disconnection, limiting its overall effectiveness. Additionally, most of the existing cycling infrastructure does not meet the standards set forth in the Ontario Traffic Manual (OTM) Book 18 – Cycling Facilities, as the design of cycling facilities does not align with posted speed limits and traffic volumes, raising safety concerns.

City of Woodstock

Transportation Master Plan

Existing Parks, Trails, and Sidewalks

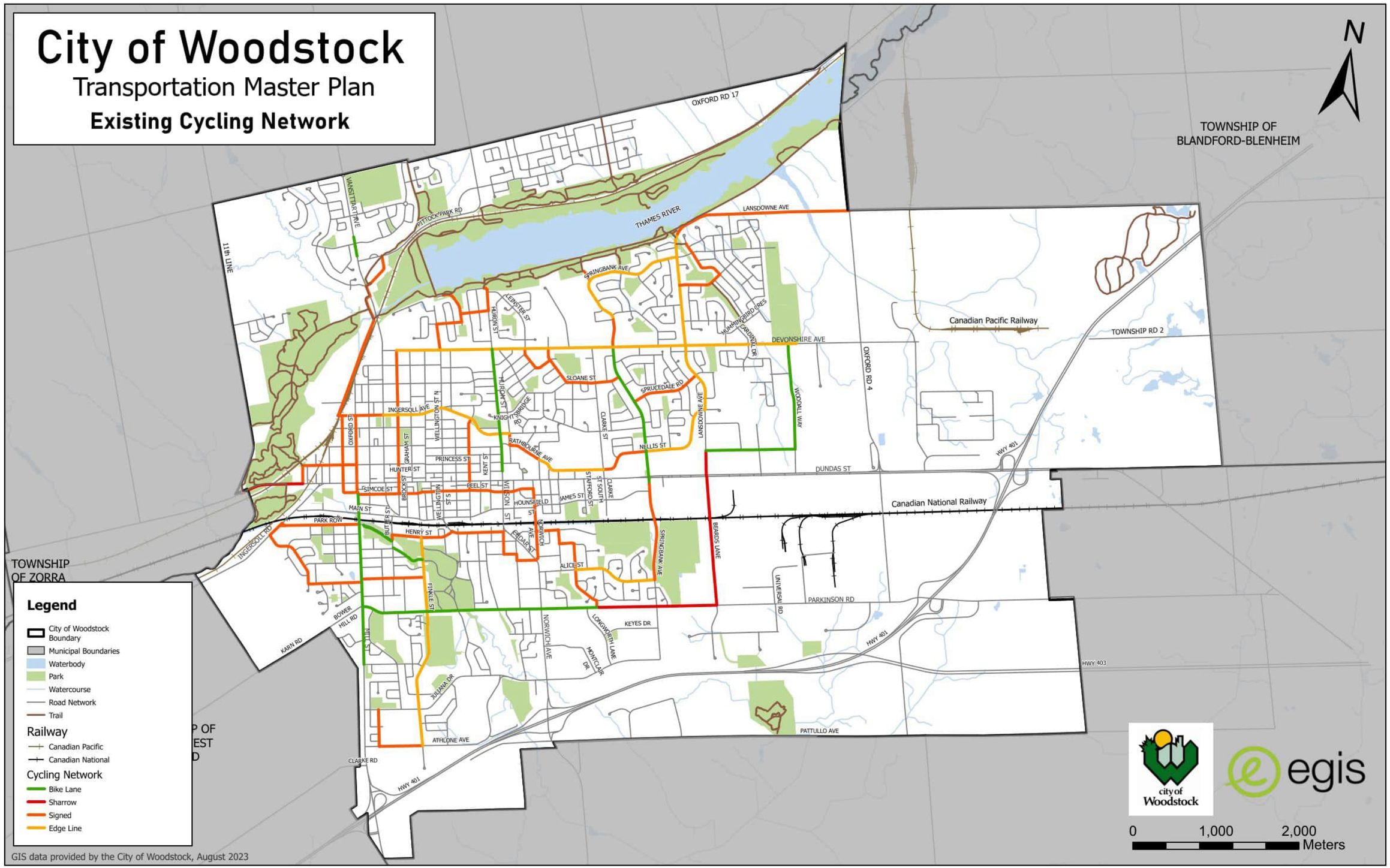


Map 6 Existing Pedestrian Network

City of Woodstock

Transportation Master Plan

Existing Cycling Network



Map 7 Existing Cycling Network

3.2.4 Truck Network

Aside from the existing provincial road network of the City of Woodstock, it is important to note that the City does not currently have any designated truck routes. All roadways (except for Oxford Street) are legally able to be used by trucks. However, this enables trucks to utilize downtown roads in the City to get to external destinations that are not best suited for those trips. This creates increased congestion and noise in the downtown area.

It should be noted that Oxford County enacted By-law No 6191-2020 on January 22, 2020, that placed seasonal load restrictions on County roads to protect them from potential damage. The By-law was applied in accordance with Section 122 of the Highway Traffic Act, whereby road damage is most likely to occur due to heavy loading. However, none of the road segments with load restrictions currently fall within the City of Woodstock.

Overall, understanding the road network and existing traffic patterns for the City will provide a starting point to determine the appropriate commercial truck routes. Equally important will be the need for a plan to minimize the disruption of truck movement to local, tourist, and recreational areas.

3.2.5 Parking Facilities

The existing municipal parking facilities within the downtown area are shown on **Map 8**. Currently, users have the option for on-street parking or off-street parking lots in the downtown core. Parking is free during weekdays, between 9:00 a.m. and 6:00 p.m., for up to two hours on-street and in most of the parking lots except the Brock Street, Market/Centre, and Light Street Lots, where parking is allowed by permit or pay and display option. For the paid parking lots, frequent users can purchase monthly passes at reduced rates. The City has also introduced a new software system called the Hotspot Parking App that allows users to purchase a monthly, semi-annual, or annual parking permit to park in the permit-designated municipal parking lots.

As per the downtown parking usage data, approximately 51.1% of the on-street parking is utilized on average, with the highest utilization occurring around 2:00 p.m., while 51.3% of municipal parking lots are utilized on average. It should be noted, however, that several areas within the downtown core have higher usage rates. For on-street parking, Whites Lane (north side) from Graham Street to Riddell Street, is highly used during the afternoons, sometimes reaching full capacity. Moreover, the Whites Lane parking lot is also on a regular basis utilized to a 100%. This data is based on counts provided by the City for morning and afternoon usage during the weekdays. No analysis was done for weekend or evening parking usage in the downtown (due to the data not being available).

Overall, there is sufficient parking within the downtown core of the City to meet the demand based on the parking usage data received. Accordingly, there are no significant concerns with parking supply within the downtown area.

3.2.6 Emerging Technologies

The transportation sector is rapidly evolving due to advancements in technology, so cities need to better prepare in response to these emerging trends. This involves adapting new transportation and land use policies to help prepare communities for the upcoming transformative shift in mobility services. Technology plays a crucial role in how people move and how communities develop, and as technology rapidly evolves, it has a substantial impact on transportation networks, particularly in urban areas. The challenge for municipalities is to proactively manage these new technologies so that they have a positive impact on transportation trends and the municipality more broadly.

In general, much of the emerging technology, such as those involving shared mobility (ride sharing) and micro-mobility (e-bikes/e-scooters) have yet to be adopted in the City of Woodstock. Electric Vehicles (EV), however, have become common place on all Canadian roads. The Government of Canada has set a mandatory target for all new light-duty cars and passenger trucks to be zero emission by 2035, accelerating Canada's previous goal of 100% sales by 2040. Planning for this eventuality will be critical for the City to continue to be a viable place to live and visit.

Currently, the City has 30 public charging stations that have been shown on **Map 9**. However, significant opportunity exists to collaborate with developers and stakeholders for expanding EV charging capacity throughout the City.

CITY OF WOODSTOCK
BIA-PARKING LOCATIONS

Woodstock
ONTARIO • CANADA
UPDATED IN 2023

STREET PARKING

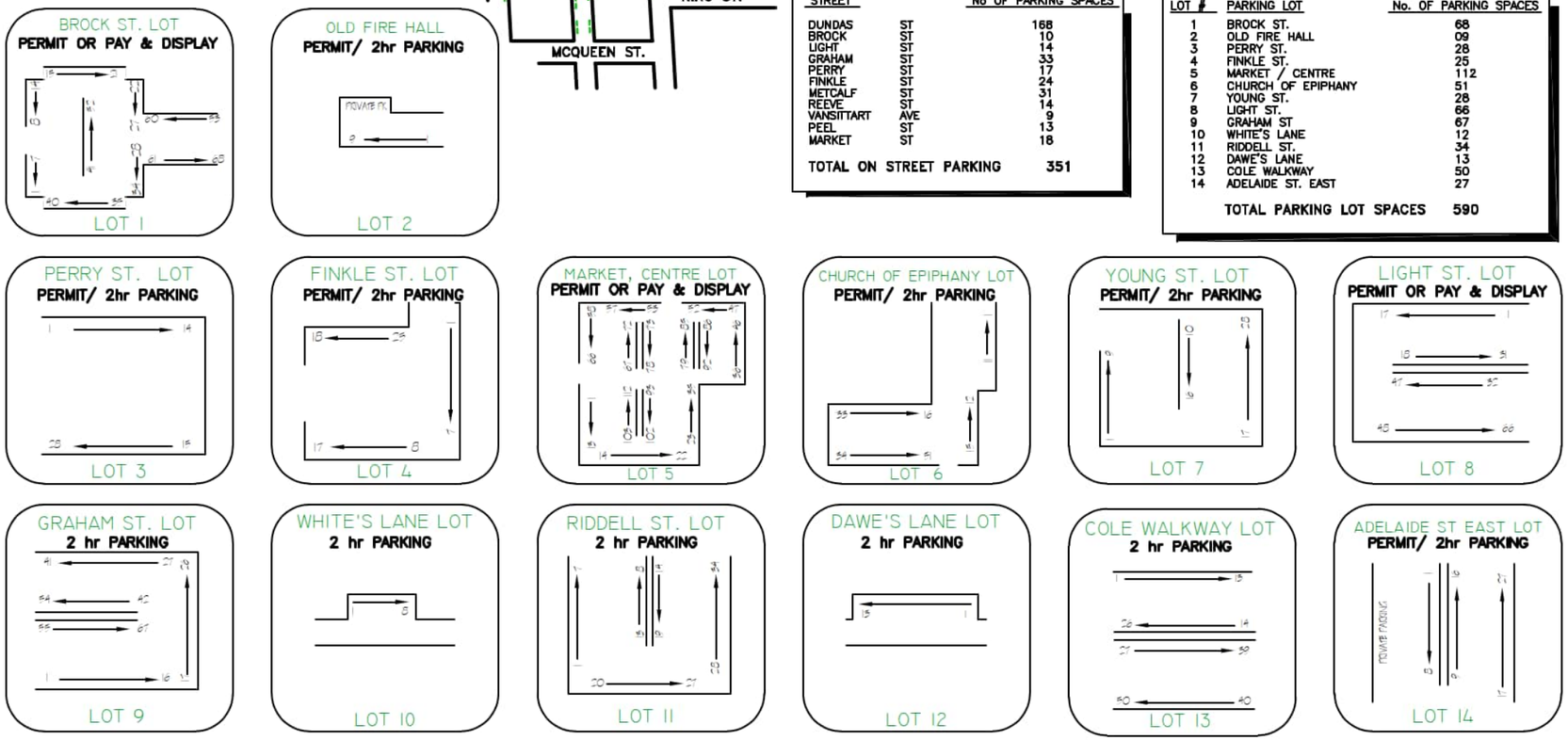
♿ DENOTES ACCESSIBLE PARKING AREAS

- 2 HR STREET PARKING
- BUS BAY AREA
- 15-MIN STREET PARKING
- EV STREET PARKING
- ♿ ACCESSIBILITY PARKING

STREET		No OF PARKING SPACES
DUNDAS	ST	168
BROCK	ST	10
LIGHT	ST	14
GRAHAM	ST	33
PERRY	ST	17
FINKLE	ST	24
METCALF	ST	31
REEVE	ST	14
VANSITTART	AVE	9
PEEL	ST	13
MARKET	ST	18
TOTAL ON STREET PARKING		351

LOT #	PARKING LOT	No. OF PARKING SPACES
1	BROCK ST.	68
2	OLD FIRE HALL	09
3	PERRY ST.	28
4	FINKLE ST.	25
5	MARKET / CENTRE	112
6	CHURCH OF EPIPHANY	51
7	YOUNG ST.	28
8	LIGHT ST.	66
9	GRAHAM ST	67
10	WHITE'S LANE	12
11	RIDDELL ST.	34
12	DAWE'S LANE	13
13	COLE WALKWAY	50
14	ADELAIDE ST. EAST	27
	TOTAL PARKING LOT SPACES	590

PARKING LOTS



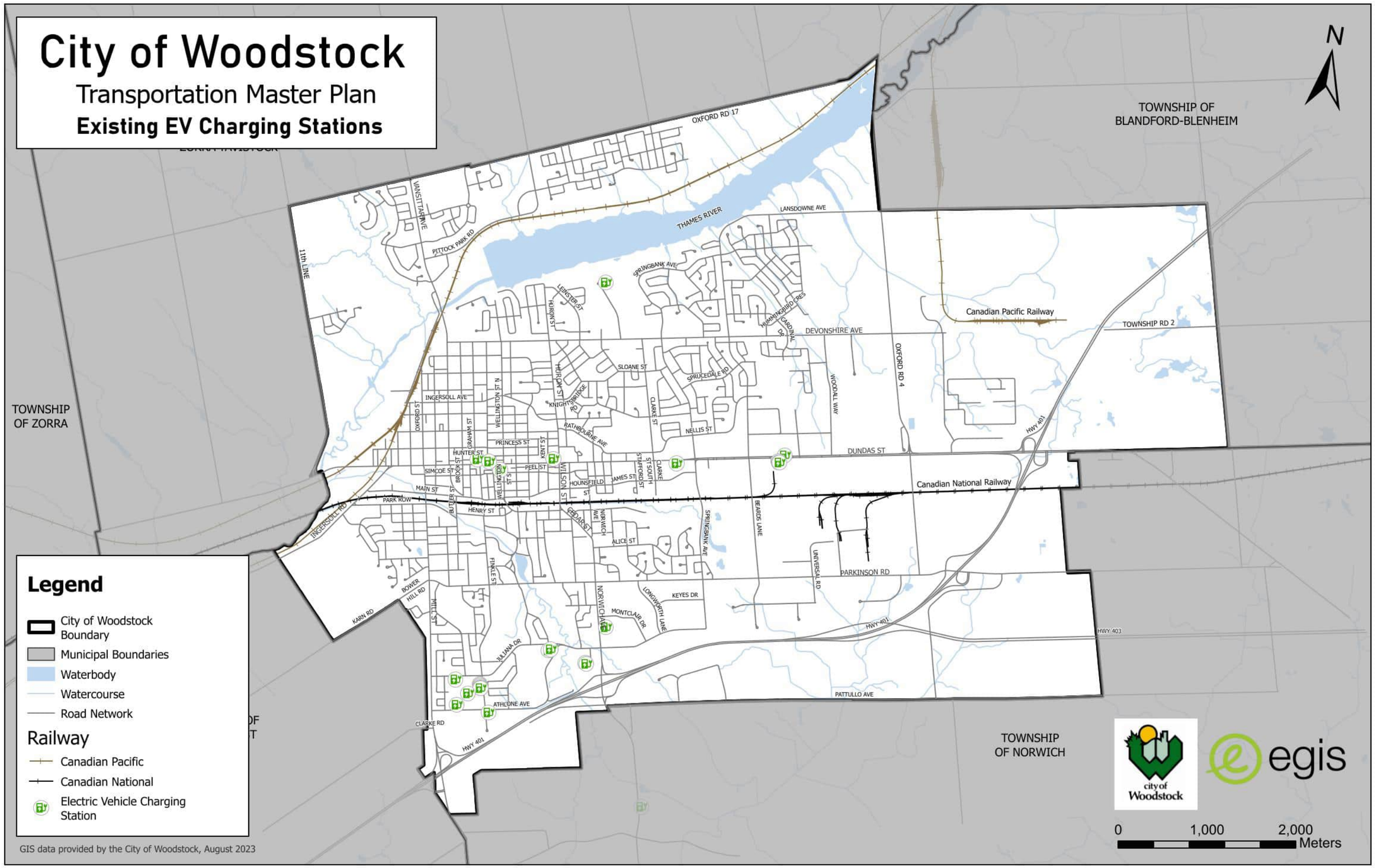
Source: City of Woodstock.

Map 8 Existing Municipal Parking Lots and On-Street Parking in Downtown Woodstock

City of Woodstock

Transportation Master Plan

Existing EV Charging Stations



Map 9 Existing Electric Vehicle Charging Stations

3.3 Existing Travel Characteristics

Understanding the existing travel patterns is important for the effective planning of a city's transportation network and infrastructure development. Understanding the origin-destination patterns provides a high-level assessment of general travel patterns throughout the City, while vehicle volumes provide context for assessment of the road network on a road link basis, providing a more fine-grained analysis of specific roads that aide in making informed decisions.

3.3.1 Trip Distribution

Origin destination data was used to analyze trips to, from, and within the City of Woodstock. The data was obtained from Oxford County's TMP, which utilized the 2019 origin-destination data from StreetLight (a transportation analytics software that provides data-driven insights on traffic, mobility, and transportation patterns). **Table 3** presents a summary of the travel trends.

According to the data in the table below, approximately 84% of the trips originate in Woodstock and end within Woodstock as well. Other frequent destinations include East Zorra-Tavistock and Ingersoll, accounting for approximately 3.4% and 3.2%, respectively, of the trips originating in Woodstock. Furthermore, most of the trips that originate in East Zorra-Tavistock and Ingersoll end in Woodstock, while the least number of trips that originate in Tillsonburg end in Woodstock.

Table 3 Origin and Destination Travel Trends for the City of Woodstock

Location	Origin of Traffic to Woodstock	Destination of Traffic from Woodstock
Woodstock	243,333	243,333
Tillsonburg	1,965	1,842
Ingersoll	9,139	8,143
Norwich	7,321	6,157
Zorra	3,591	3,087
East Zorra-Tavistock	9,628	8,554
South-West Oxford	8,149	6,416
Blanford-Blenheim	3,593	2,881

Source: Oxford County Transportation Master Plan (2024)

3.3.2 Traffic Volumes and Roadway Capacity

3.3.2.1 Local Traffic Volumes

An understanding of existing traffic volumes is important to determine traffic demand characteristics within the City. This information is also essential in forecasting future traffic conditions and building a properly calibrated model to analyze traffic capacity and level of service on existing and future road networks. Current (2023) Annual Average Daily Traffic (AADT) volumes for the City of Woodstock are illustrated in **Map 10**; most were obtained through counts conducted by Egis, while some were provided by the City. AADT is a theoretical estimate of the total volume of vehicles using a specific segment of a roadway (in both directions) on any given day of the year. AADT is an essential factor in the analysis of the road network, including:

- Establishing adequacy of the available roadway capacity in comparison to the roadway's traffic demand and its Level of Service (LOS);
- Establishing design and maintenance classifications for the roadway; and
- Establishing the relative priority for maintenance, reconstruction, and rehabilitation.

As per **Map 10**, the largest traffic volumes were observed on Dundas Street, part of Springbank Avenue, Mill Street, Norwich Avenue, and Devonshire Avenue. A map of the select locations where traffic data was collected is provided in **Appendix C**.

3.3.2.2 Existing Volume to Capacity

Volume to capacity ratio (v/c) is a measure that reflects mobility and quality of travel of a roadway, comparing demand (vehicle volumes) with supply (carry capacity).

Map 11 illustrates the v/c ratios for City owned roads based on 2023 AADT volumes. The v/c calculations assume a two-way planning capacity for the different road classes shown in **Table 4**. It should be noted that planning capacity differs from free flow roadway capacity, as it accounts for traffic control and friction from accesses, parking activity, pedestrian and cycling movements, etc. As such, planning capacity provides a high-level indication of overall corridor operations and can be used to highlight areas which warrant further review.

Table 4 Roadway Capacities for Different Road Classifications

Functional Road Classification	Speed (km/h)	Planning Capacity Per Lane/Direction
Arterial	50	800
Arterial	60	900
Arterial	70	1000
Arterial	80	1100
Collector	40	500
Collector	50	600
Collector	60	750
Collector	70	800
Collector	80	900
Minor Collector	40 & 50	500
Minor Collector	60	600
Minor Collector	70	700
Minor Collector	80	800
Local	30	350
Local	40	400
Local	50, 60, 70 & 80	500

Table 5 summarizes the grouping and colour coding of v/c ratios depicted in **Map 11** and provides qualitative description of traffic flow characteristics typically associated with these conditions.

Table 5 v/c Ratio Ranges and Descriptions

v/c Ratio Range	Description
≤ 0.25	Free Flow Conditions
0.25 to ≤ 0.50	Stable Flow, No Congestion
0.50 to ≤ 0.85	Approaching Capacity, Limited Passing Opportunity
0.85 to ≤ 1.00	At Capacity, Unstable Flow, Congestion Potential
> 1.00	Over Capacity, Congestion at Intersections

Overall, most City owned roadways are operating at a v/c less than 0.85. The following roadways were shown to have a v/c ratio greater than 0.85:

- Dundas Street between Springbank Avenue and Clarke Street;
- Oxford Street between Dundas Street and Hunter Street;
- Peel Street between Finkle Street and Wellington Street;
- Simcoe Street between Mill Street and Perry Street;
- Nellis Street between Springbank Avenue and Clarke Street;
- Finkle Street between Simcoe Street and Main Street; and
- Alice Street between Norwich Avenue and Bee Street.

While these roadways were shown to operate with a v/c ratio greater than 0.85, it is important to note that, should a roadway operate poorly, drivers typically select alternative or parallel routes that would result in similar travel times. Based on a review of these highlighted roads, it is noted that there is adequate capacity along parallel roads to accommodate any spillover traffic volume from poorly performing roadways.

3.3.2.3 Provincial Highway Traffic Volumes

The AADT data for the Provincial Highways (from 1988 to 2019) is available through MTO's web-based data visualization and information sharing tool, iCorridor. AADT volumes along the Provincial Highways, within the City boundaries, for the years 2009, 2014, and 2019, have been provided in the following set of tables (**Table 6** and **Table 7**).

As illustrated, traffic volumes along the provincial highways are highest along Highway 401 between Norwich Street and Mill Street, with an AADT of 77,600 as per 2019, which gradually decreases to 70,600 between Norwich Avenue and Highway 403. Highway 401 segments east of Highway 403 have less than half the traffic volumes as compared to the traffic volumes west of Highway 403. Furthermore, Highway 403 has relatively lower traffic volumes at 18,600 as per 2019.

Table 6 Highway 401 Annual Average Daily Traffic Summary

Location	AADT			Annual Growth Rate
	2009	2014	2019	
Eastern City Limit to North of Dundas Street	43,200	45,200	49,200	1.3%
South of Dundas Street to Highway 403	44,800	43,300	49,900	1.1%
Intersection of Highway 403 to Norwich Avenue	60,900	66,100	70,600	1.5%
Norwich Avenue to Mill Street	66,900	67,200	77,600	1.5%

Source: MTO iCorridor

Table 7 Highway 403 Annual Average Daily Traffic Summary

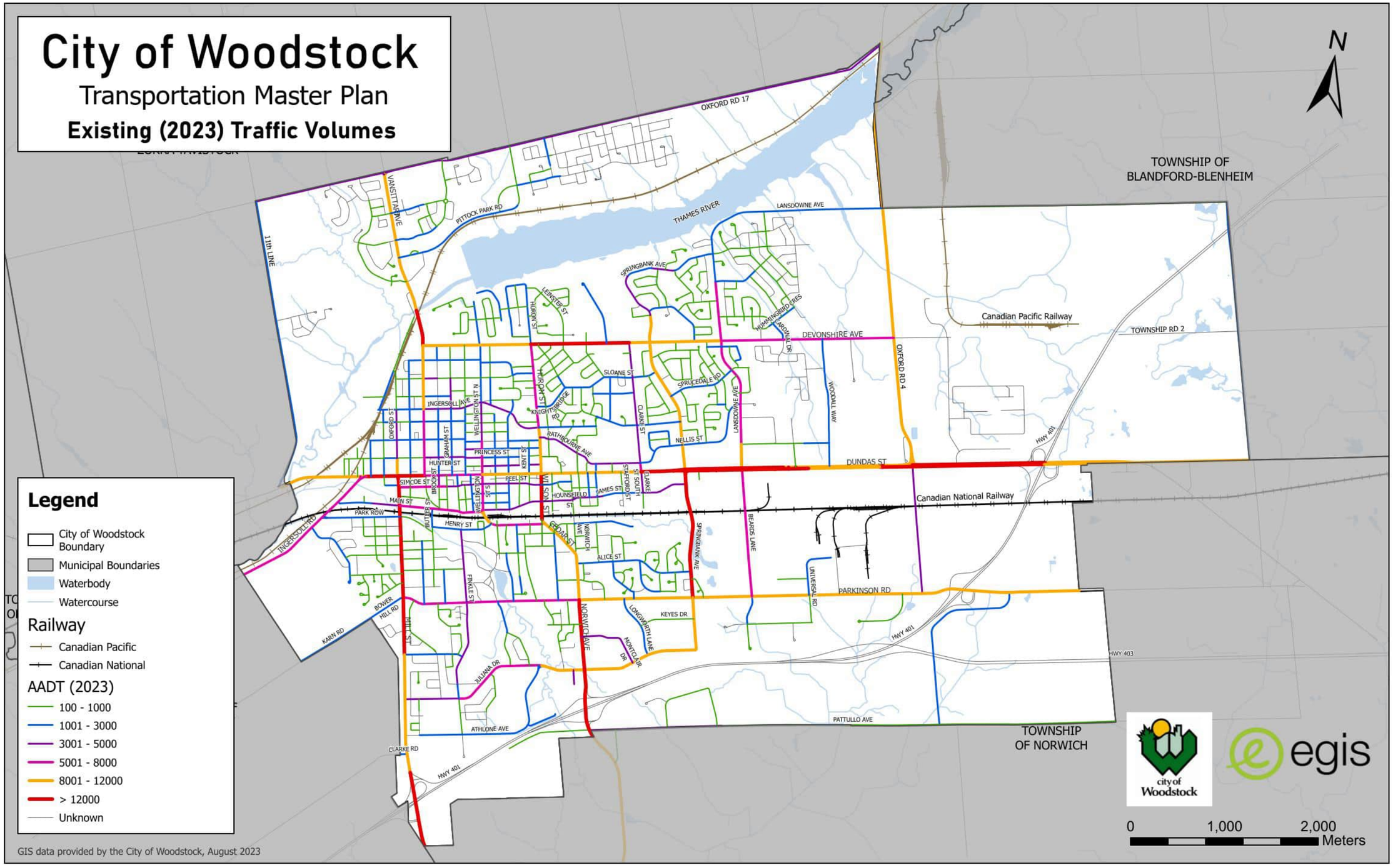
Location	AADT			Annual Growth Rate
	2009	2014	2019	
Eastern City Limit to Highway 401	18,400	18,200	18,600	0.1%

Source: MTO iCorridor

City of Woodstock

Transportation Master Plan

Existing (2023) Traffic Volumes

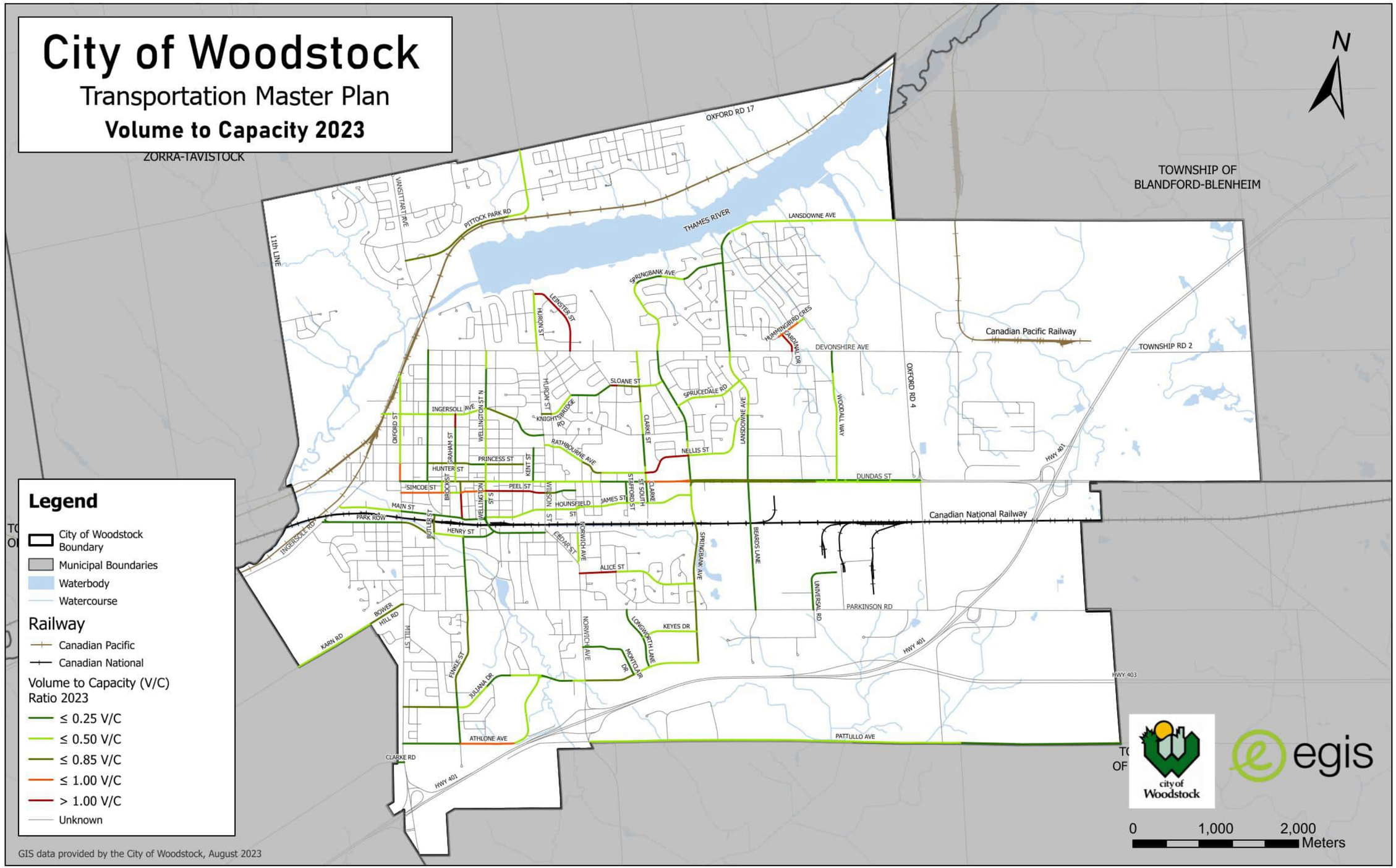


Map 10 Existing Traffic Volumes on City Owned Roads

City of Woodstock

Transportation Master Plan

Volume to Capacity 2023



Map 11 Volume to Capacity (2023) for City Owned Roads

3.3.3 Modal Split

Woodstock's transportation network is impacted by the choices residents make every day in relation to moving around the City. Therefore, it is important to understand how people move around the City in order to add important context to the transportation network. The 2021 Census data provided the most recent mode share figures; however, it should be noted that this was during the COVID-19 pandemic (and the stay-at-home restrictions, which can have an impact on the data collected.

Figure 4 shows the main mode of commuting for the employed labour force as per the 2021 Census data. Approximately, 91% of the population use a car, as a driver and as a passenger, for their main mode of commuting. This is followed by 5.7% of the population which use walking as their main mode of commuting, followed by transit (1.5%) and then biking (0.8%). This shows that the residents of Woodstock are highly auto dependent. These comparisons help to identify appropriate markets for alternatives to driving alone and establish appropriate future targets for these alternatives.

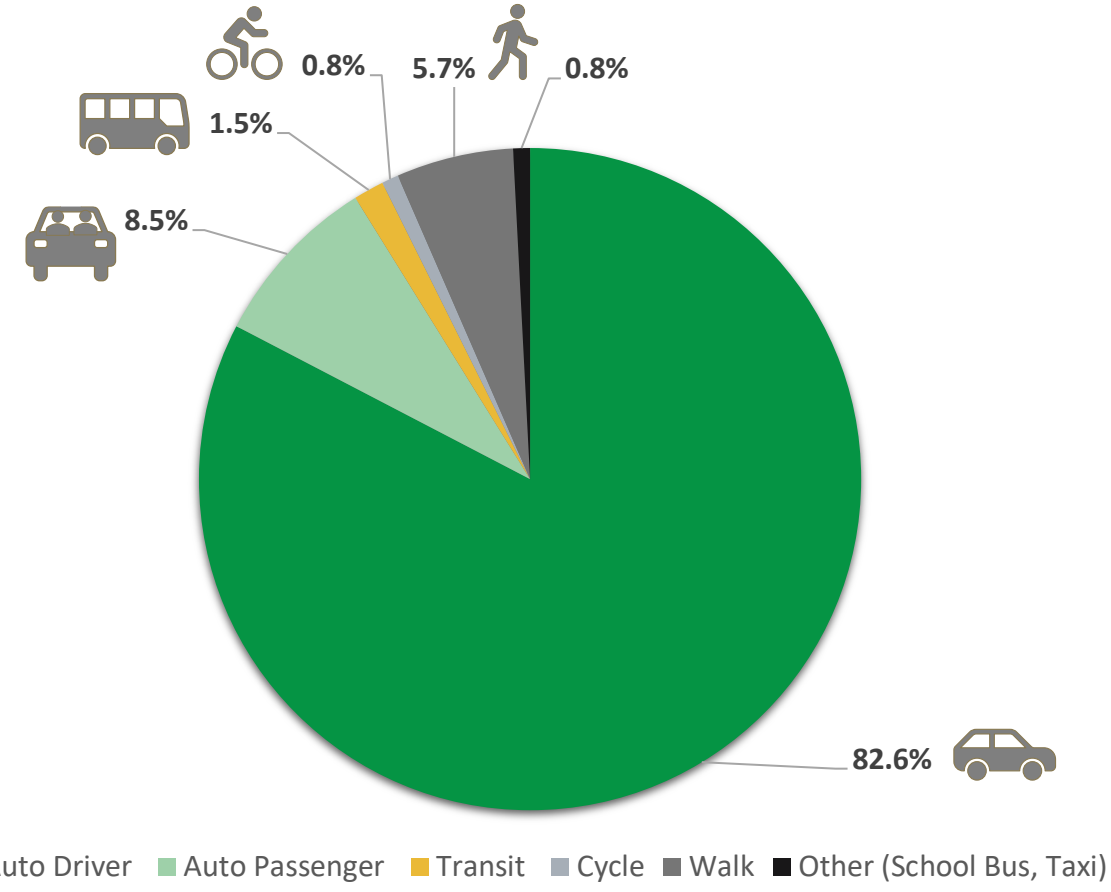


Figure 4 Modal Split for Commuting to Work

Source: Statistics Canada, 2021

3.4 Existing Traffic Operations

3.4.1 Collision Analysis and Road Safety Review

A collision analysis was prepared to aide in developing a model to effectively conduct existing and future safety assessments for the City of Woodstock's intersections. The analysis included a five-year period, January 1, 2018, to December 31, 2022, for which the data was provided from the City to Egis. The data included all intersection-related collisions during the time period for all intersections within the City's boundaries. Within the five-year period, a total of 1,432 collisions were recorded within the City's limits.

It is important to note that the information provided was limited in nature and was missing details, such as type of collision, environmental conditions, driver actions, number of vehicles, and severity of collision. As such, it was not possible to draw conclusions on the cause or severity of each collision and safety performance of the identified intersection. A heat map illustrating the locations and frequency of the collisions is presented in **Map 12**.

The data was processed to rank each intersection having the highest frequency of collisions over the five-year period, as shown in **Table 8**.

Table 8 Intersection Collision Count (2018-2022)

Location	Number of Collisions
Dundas St and Springbank Ave	52
Dundas St and Huron St	43
Norwich Ave and Parkinson Rd	39
Wilson St and Peel St	39
Devonshire Ave and Springbank Ave	36
Norwich Ave and Juliana Dr	35
Wilson St and Main St	35
Springbank Ave and Nellis St	22
Parkinson Rd and Springbank Ave	21
Dundas St and Clarke St S	20

The highest volume of collisions occurred at the intersections of Dundas Street at Springbank Avenue and Dundas Street at Huron Street. These results are not unexpected based on the high vehicular volume along Dundas Street and other roadways listed in the above noted table. Due to the lack of information regarding collision type and environmental conditions, probable causation of collisions cannot be confirmed.

The collisions were then broken down by year, month, and day of week to observe if any patterns were present. All tables can be found in **Appendix D**.

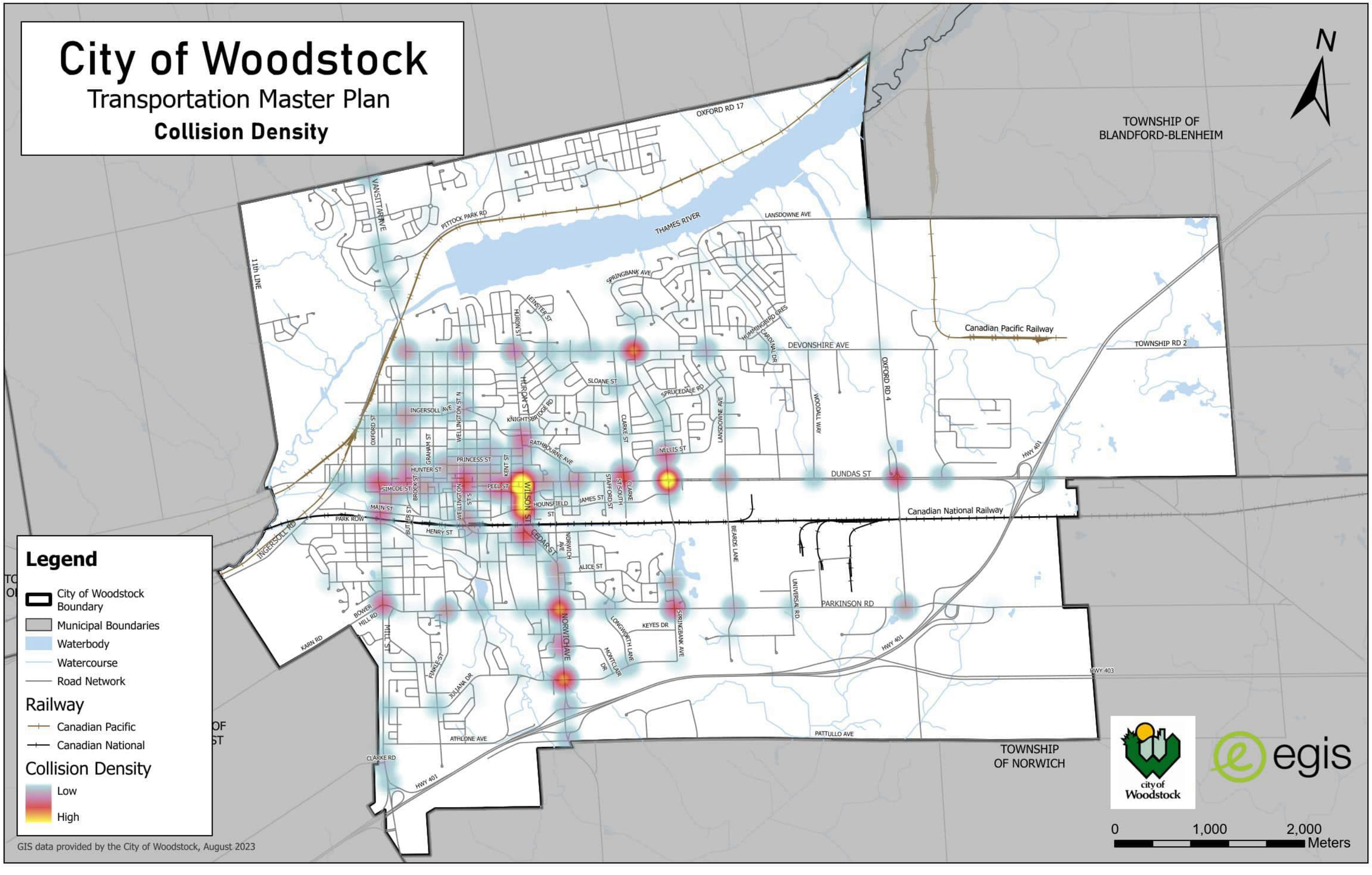
It was shown that the majority of collisions occurred during the winter months, December to February, while the least volume of collisions occurred during the spring months, March to May. Most collisions occurred on Thursday or Friday. This is not unexpected, as the winter months in Canada tend to have harsher weather conditions, with snow and ice on the roadways, which tend to lead to an increase in collisions.

A roadside safety review was not completed at this time due to the limited collision data provided to Egis. It is recommended that the City include more information, such as: collision type, collision severity, environmental conditions, and driver conditions.

City of Woodstock

Transportation Master Plan

Collision Density



Map 12 Existing Collision Occurrence within the City

3.4.2 Emergency Detour Routes

In cases where a casualty or emergency requires a section of the Ontario Provincial Highway to be closed for any duration of time, the use of a signed Emergency Detour Route (EDR) is utilized. EDR markers are located along alternate routes and provide direction to vehicular traffic around the closure and back onto the highway. **Map 13** illustrates the EDR within the vicinity of the City of Woodstock.

3.4.3 Traffic Control and Pedestrian Crossings

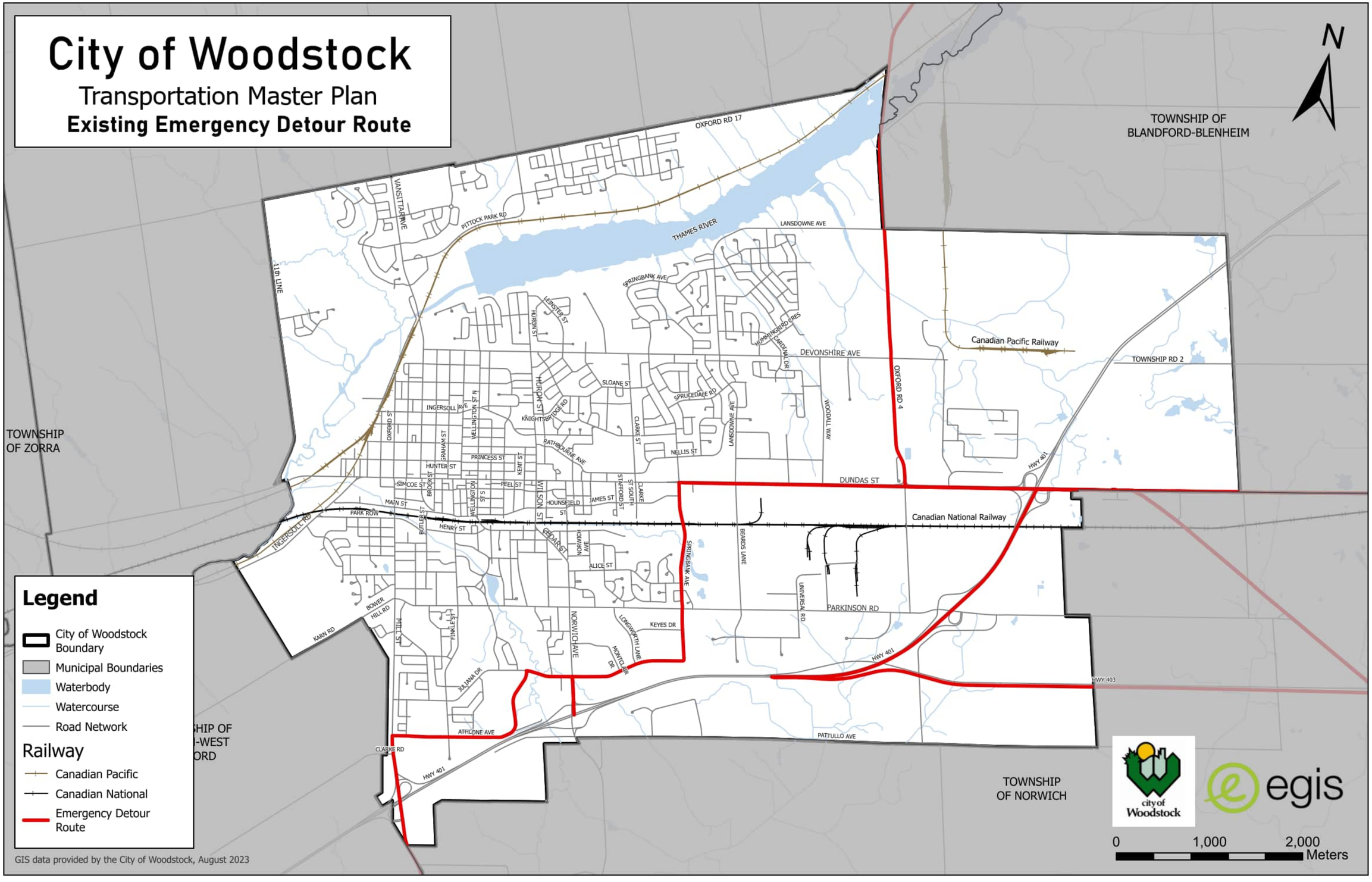
Map 14 shows the existing traffic control within the City. As illustrated, most of the major intersections along Dundas Street, Parkinson Road, and Devonshire Avenue are signalized, which promotes orderly and predictable vehicular and pedestrian traffic movements. Furthermore, there are currently eight rail crossings in the City that are not grade separated, with one at-grade crossing blocked off to vehicular traffic (and only providing access for pedestrians to cross over). Oxford County undertook a review of the at-grade crossings in 2020 in response to the updated Transport Canada regulations to identify safety deficiencies and ensure that grade crossings comply with the applicable standards. As per the study, no grade separations were warranted in the City of Woodstock.

A review of pedestrian crossing locations, which included school crossings and uncontrolled crossings, was conducted to make observations and to note any deficiencies. **Map 15** shows the locations of all school and uncontrolled crossings relative to community facilities within the City. **Appendix E** provides a comprehensive list of pedestrian crossing assessments conducted to note the deficiencies at the crossings.

City of Woodstock

Transportation Master Plan

Existing Emergency Detour Route

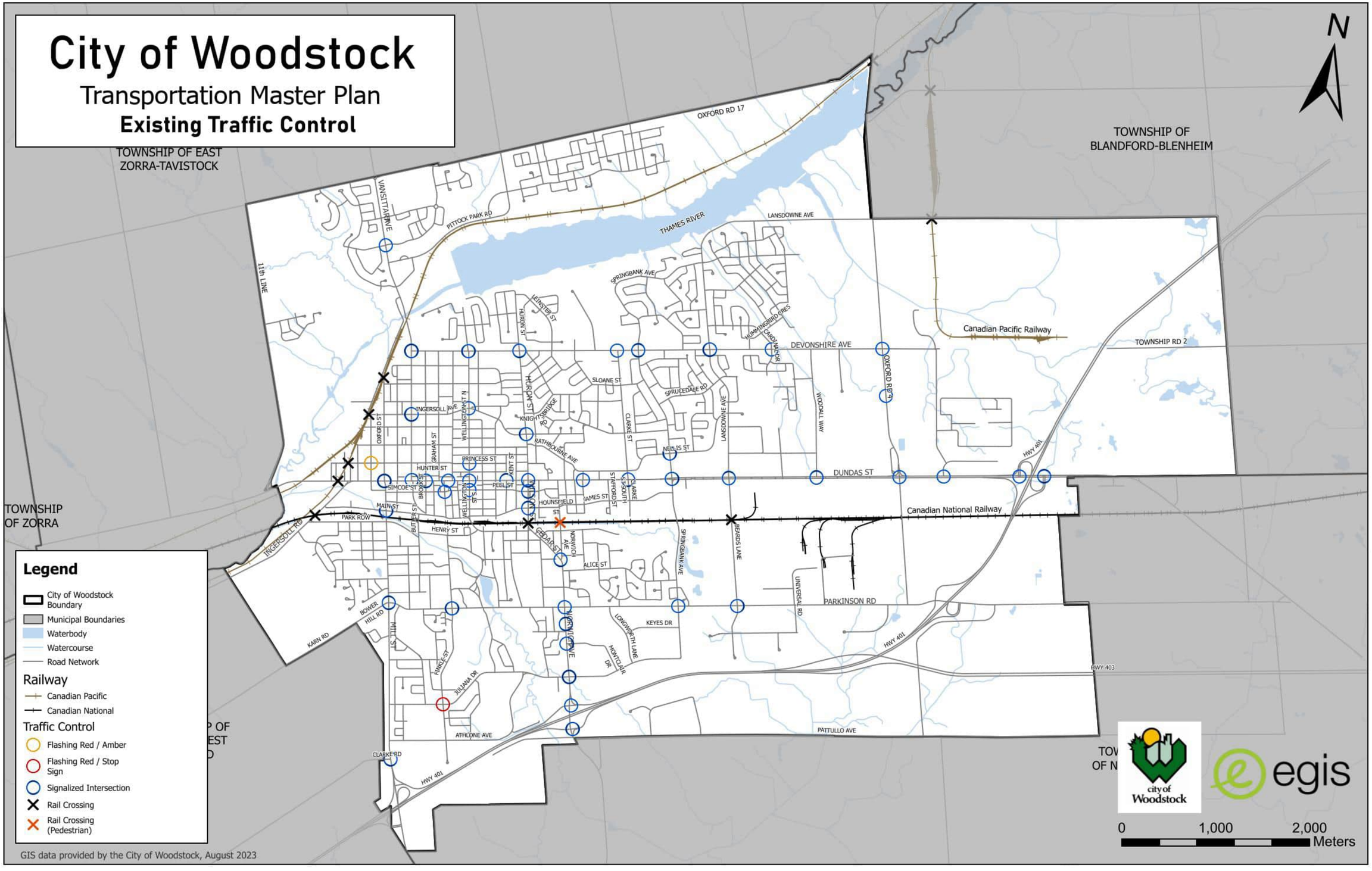


Map 13 Existing Emergency Detour Route

City of Woodstock

Transportation Master Plan

Existing Traffic Control

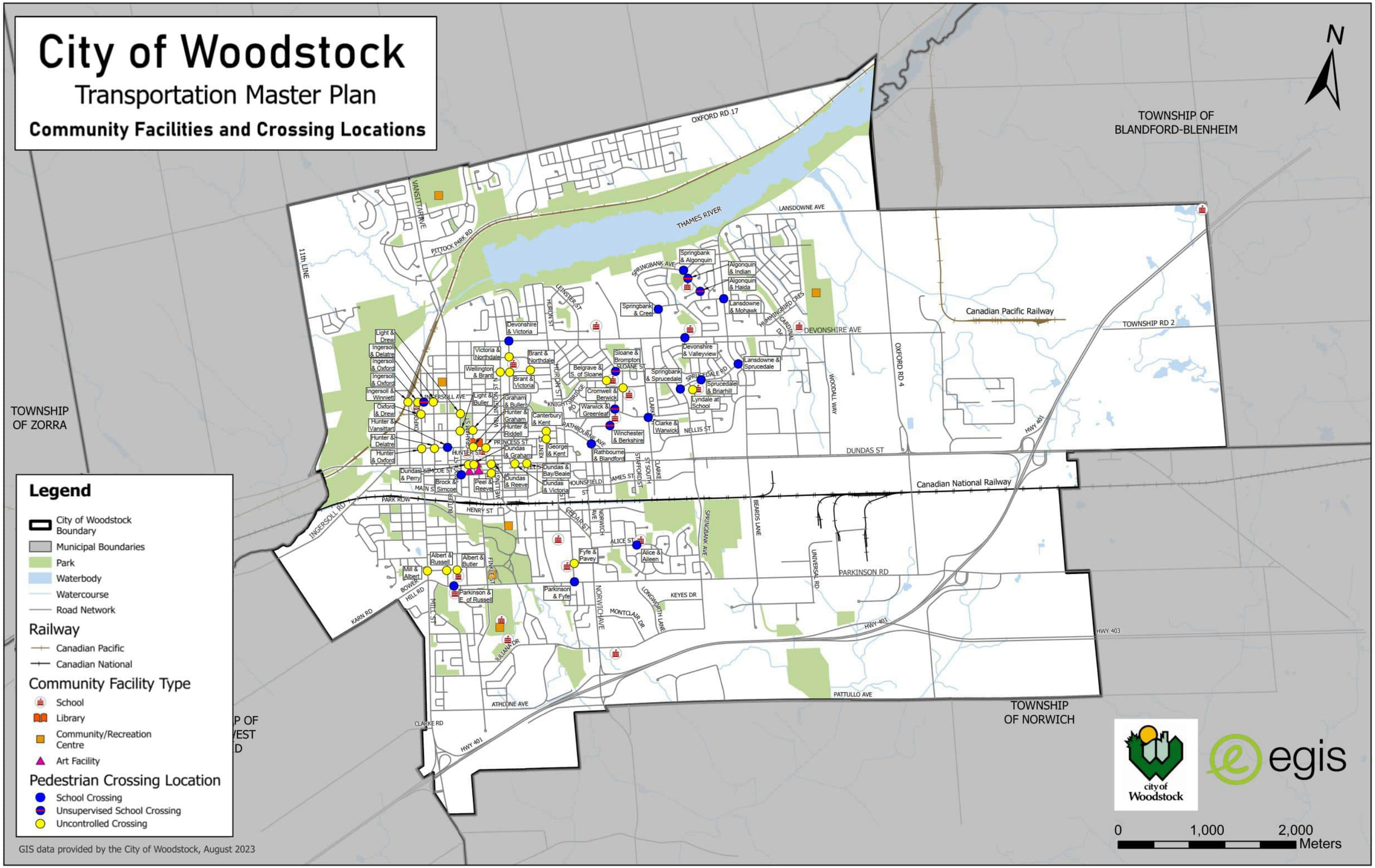


Map 14 Existing Traffic Control

City of Woodstock

Transportation Master Plan

Community Facilities and Crossing Locations



Map 15 Pedestrian Crossing Locations in relation to Community Facilities

4.0 Future Conditions

4.0 Future Conditions

4.1 Growth and Development

Woodstock is one of the fastest growing communities within the Oxford County. According to the 2021 Census data, the population of the City of Woodstock was 46,705, which represents a growth rate of approximately 13% from 2016. Furthermore, the City approved a Housing Pledge in December 2023 that aims to achieve a housing target of 5,500 new residential units by 2031. In 2022, the City issued permits for 322 housing units; however, to achieve the housing target by 2031, the City needs to exceed 550 units per year after 2025.

According to Oxford County's growth projections, the City's population is estimated to increase to 67,295 in 2046, and the employment for the City is projected to reach 38,730 by 2046. It should be noted that factors beyond local population and employment growth will influence traffic volumes. Growth in communities adjacent to the City also contribute to more vehicles using the City's transportation infrastructure.

The population and employment growth could be attributed to the sizeable land development applications that have been approved or are under construction. **Table 9** provides the details of some notable developments within the City.

Table 9 Development Activity within the City

Location	Development Description
140 Ferguson Drive	Proposed development with five residential units within the existing Woodstock Peace Lighthouse, 58 student units within a new eight storey building and 122 residential units within a new 9 storey building.
200 Montclair Drive	Proposed commercial development consisting of two commercial buildings, one restaurant building, and one bank building.
300 Juliana Drive/785 Southwood Way	Proposed residential apartment with 52 units.
355 Juliana Drive	Proposed residential apartment with 142 residential condominium/apartment units contained in a 12-storey tower.

Location	Development Description
760 Juliana Drive	Proposed residential development with one 20-storey residential building consisting of 140 units and two 15-storey residential buildings, consisting of 100 units each.
Northwest corner of Juliana Drive and Lampman Place	Proposed development consisting of a ten-storey building with 125 residential units.
499 and 527 Lampman Place	Proposed hotel and commercial centre development consisting of a six-storey hotel by Hilton with 113 rooms. The development also comprises of a four-storey conference centre.
555 Mill Street	Proposed mixed-use development consisting of two quick-service restaurants with a drive-thru, a gas station, and a convenience store, an automatic car wash, and a five-storey hotel building with 94 rooms.
580 Bruin Boulevard	Proposed development consisting of a ten-storey hotel with 110 rooms, two 12-storey apartment buildings with 200 units each, and a two-storey townhouse development with eight units.
670 Finkle Street	Proposed industrial building with approximately 20,962 square metre of gross floor area.
415 Norwich Avenue	Proposed expansion of the existing commercial development with two new buildings for retail commercial purposes.
Woodstock Meadows	Proposed residential development located south of Oxford Road 17, east of Bedi Drive, north of the CPR tracks and west of Oxford Road 4, consisting of 1,120 units.
Karn Road Development	Proposed residential development located on the north-east side of Karn Road, west of Mill Street, consisting of 930 units.

Location	Development Description
Thames Development VI	Proposed residential development bounded by Oxford Road 17 to the north, Pittock Reservoir and CP Railway to the south, consisting of 380 units.
Alyea Industrial Park	37 hectares of land located on Alyea Street dedicated for industrial use.
Gill Subdivision	Proposed development of an industrial plan of subdivision comprising nine blocks of industrial development on 37 hectares of land located on the north side of Highway 2, west side of Blandford Road, south side of Township Road 2 and are bordered by Highway 401 to the west.
715239 Oxford Road 4/Drago Vuckovic Property	Proposed industrial development consisting of 40 hectares of land.

Apart from the development application mentioned in **Table 9**, the City completed a planning study for the Northeast Woodstock Industrial Park. The study area is located at the northeast limit of the City and consists of 143 hectares of land. The study was conducted to assess the traffic conditions and constraints and to analyze future traffic conditions to facilitate the implementation and operation of the Industrial Park. The key recommendations from the study consisted of a combination of road re-alignments, new roads, and a roundabout at the County Road 2 and Highway 55 intersection, as well as the need for intercommunity bus routes and transit service expansion to the study area.

The City also completed a Municipal Class Environmental Assessment (MCEA) Master Plan study in 2022 to address the spatial separation between the intersection of Highway 59 and Pattullo Avenue East and West. The study determined that Pattullo Avenue east of Highway 59 should be re-aligned by constructing a new road south through the farm field and connecting to Highway 59 just north of the Oxford Sand and Gravel location. The existing access from Pattullo Avenue west to Highway 59 would be restricted to local residents/businesses only by means of a cul-de-sac and barrier being constructed east of Greenly Line. The study also determined that, at the west side of Highway 59, the existing access from Pattullo Avenue east to Highway 59 would be closed with a cul-de-sac. To provide access to the west, Old Stage Road will be upgraded to a municipal standard, and a new road will be constructed to the north (through the existing farm field, along the east property line).

It should be noted, however, that all development generated traffic should be accounted for through the development application process for specific planned developments and then added to the road network volumes.

4.2 Network Improvements

The Oxford County TMP outlines several recommended road network improvements for the City of Woodstock to address up to 2046. Key recommendations include:

- Road reconstruction/rehabilitation for sections of Devonshire Avenue (Oxford Road 35), Oxford Road 9 (Ingersoll Road), and Oxford Road 59, as well as urbanization on a section of Devonshire Avenue;
- Cycling infrastructure implementation on sections of Oxford Road 9 (Ingersoll Avenue), Oxford Road 59, Oxford Road 17, and Oxford Road 54/59;
- Intersection upgrades and improvements on Oxford Road 15 (Parkinson Road) and Springbank Avenue (North Right Turn Lane), Oxford Road 59 and Pattullo Avenue (realignment), Oxford Road 12 (Mill Street) and Dundas Street (North Right Turn Lane), Oxford Road 12 (Mill Street) and Juliana Drive (Roundabout), Oxford Road 12 (Mill Street) and Athlone Avenue (Roundabout), Oxford Road 4 and Oxford Road 2 (Dual Left Turn Lane), Oxford Road 35 (Devonshire Avenue) and Clarke Street N (Signalization), Oxford Road 4 and Oxford Road 15 (Parkinson Road), Oxford Road 17, and Oxford Road 4;
- Intersection control feasibility studies on Oxford Road 35 (Devonshire Avenue) and Springbank Avenue, Oxford Road 15 (Parkinson Road) and Oxford Road 12 (Mill Street), Oxford Road 54 (Huron Street), and Oxford Road 35 (Devonshire Avenue);
- Grade separation for Oxford Road 59 at CNR and Oxford Road 9 at CNR.

The County's recommendations were reviewed, and it was ensured that they align with the recommendations for the City's TMP. The specific project timelines and details are provided in the County's TMP and in **Appendix F**.

4.3 Future Traffic Volumes

The TMP forecasted future traffic volumes up to 2043 by applying a uniform growth factor of 2.0% per annum (compounded) to existing (2023) AADT volumes. Overall, the 2011 TMP used the same approach for forecasting traffic; however, it used a 2% growth factor (per annum) for the first 5 years and a 1% growth factor for the next 15 years. Given the rapid growth in the City, a 2% growth factor (per annum) was agreed upon for up to 20 years.

Based on the established growth trends, the existing AADT volumes were forecasted to the short term (2028), medium-term (2033) and long-term (2043) planning horizons. The future AADT

projections for the long-term are illustrated in **Map 16**, and **Appendix G** shows the AADT volumes for the short-term (2028) and medium-term (2033).

4.4 Future Traffic Operations

Map 17 illustrates the v/c ratios for the City's road network based on 2023 AADT volumes that were forecasted to the long term (2043) planning horizons as per the 2% growth factor. The v/c ratio maps for the short-term (2028) and medium-term (2033) are given in **Appendix G**. The roadway capacities for the different road classifications and descriptions of the v/c ratio ranges have been provided in **Section 3.3.2.2**.

As per **Map 17**, most City roads operate well within capacity; however, a few key roads, highlighted below, are expected to operate over-capacity and experience congestion in the long-term (2043) planning horizon:

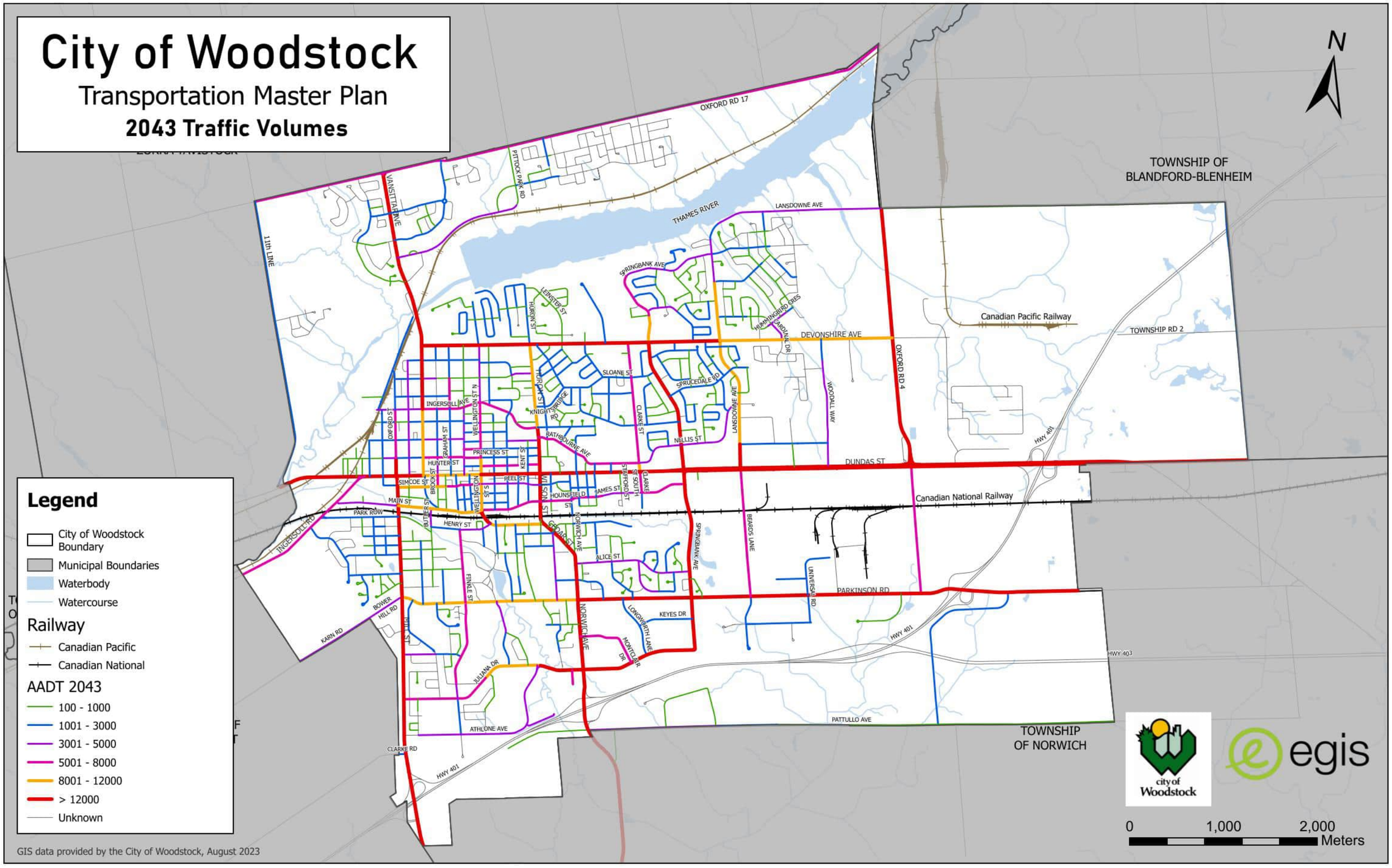
- Dundas Street between Woodall Way and Clarke Street;
- Nellis Street between Clarke Street and Springbank Avenue;
- Peel Street between Wilson Street and Finkle Street;
- Simcoe Street between Finkle Street to Mill Street;
- Finkle Street between Main Street and Simcoe Street; and
- Springbank Avenue between Keyes Drive and Juliana Drive.

While these roadways are expected to operate over capacity in the long-term planning horizon (2043), it is important to note that, should a roadway operate poorly, drivers will select alternative or parallel routes that result in similar travel times. Based on a review of these highlighted roads, it is noted that there should be adequate capacity along parallel roads, which could accommodate any spillover traffic volume from poorly performing roadways.

City of Woodstock

Transportation Master Plan

2043 Traffic Volumes

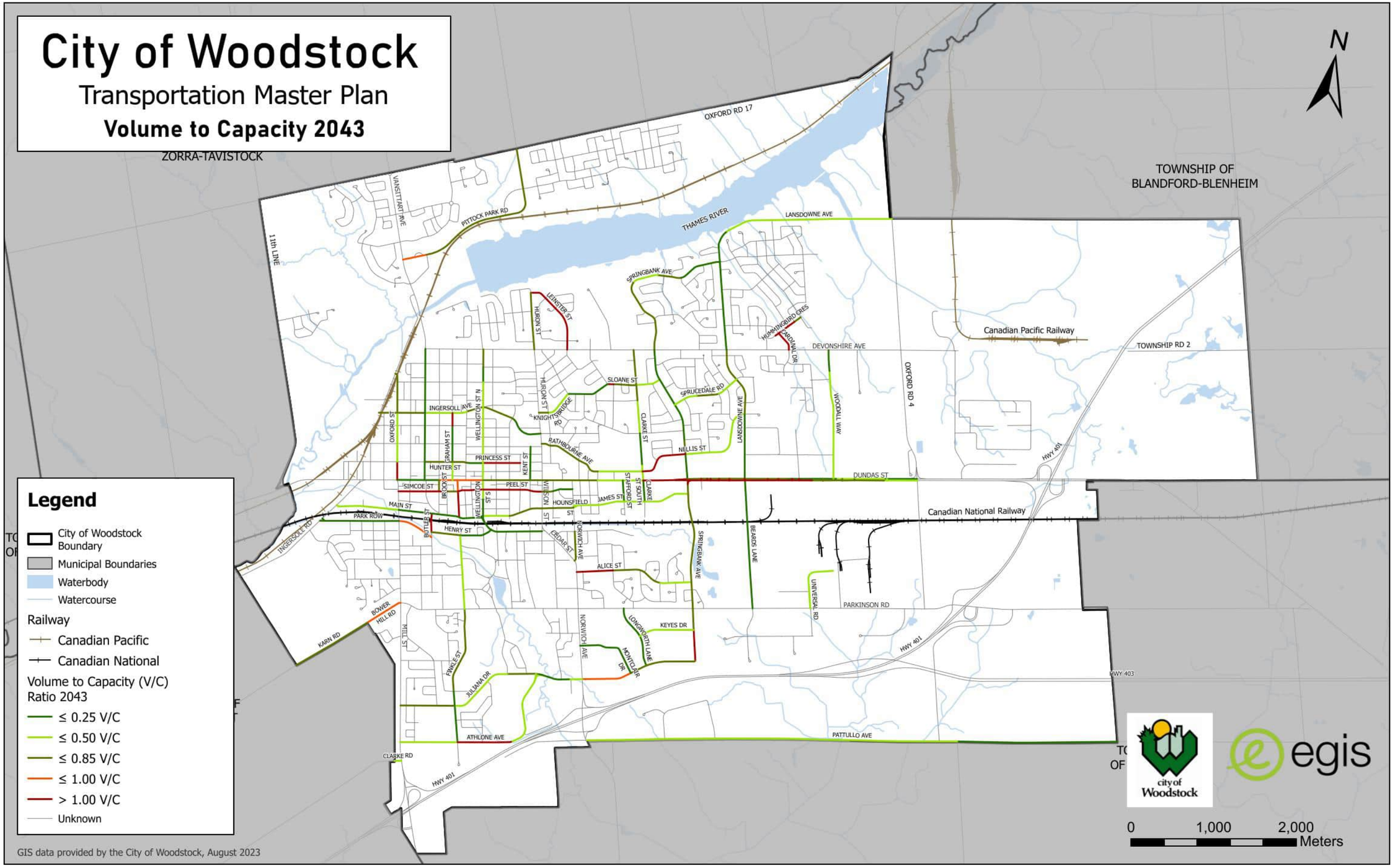


Map 16 Future (2043) Traffic Volumes

City of Woodstock

Transportation Master Plan

Volume to Capacity 2043



Map 17 Future (2043) Volume to Capacity for City Owned Roads

5.0 A Vision for Woodstock

5.0 A Vision for Woodstock

5.1 Opportunities and Challenges

Some key opportunities and challenges were identified as part of the analysis and are summarized below:

Challenges

Growth and Urbanization: Woodstock is one of the fastest growing cities within Oxford County, and as it continues to grow, there is a need to create complete communities for the residents (to ensure their basic needs are met). With that, there is also a need to ensure sufficient transportation infrastructure is available to accommodate the growing population while having a strong emphasis on minimizing environmental impacts and contributing to sustainable growth.

High Auto-Dependency: Although Woodstock has planned for and accommodates all modes of transportation within its existing network, it is still a highly auto-dependent city. Automobiles represent over 90% of the modal split, as discussed in **Section 3.3.3**. The existing auto-dependent travel and behavioral patterns exist because they are perceived as the most convenient, accessible, and attractive choice. Therefore, it is essential to build a city with viable age-friendly transportation options with a renewed focus on sustainability.

Aging Population: The City has an aging population because it is an attractive location for older adults; therefore, meaningfully responding to the needs of the community is a vital aspect of developing this TMP. Adopting an age-friendly planning framework is an important consideration for developing a safe, dependable, and accessible transportation network.

Dangerous Conditions Around Key Areas: A few problem areas within the City were identified with speeding, poor intersection sightlines, lack of bicycle and pedestrian facilities for crossing, and poor roadway conditions. Therefore, transportation infrastructure should be planned in a way that ensure the safety of all its users and minimizes points of conflict.

Opportunities

Transit Integration with the GTA: The City has a VIA Rail Station which provides service on the Toronto-Windsor corridor. It can provide the opportunity for enhancing connections with the Greater Toronto Area (GTA), resulting in improved access, increased ridership and mode share for public transit, and support for future needs in a sustainable, effective, and efficient way.

Strategic Location: Woodstock is at the cross roads of Highway 401 and Highway 403 in Southwestern Ontario. These are important economic links and trade corridors. They provide connections from Woodstock to the Greater Toronto and Hamilton Area (GTHA), ensuring that goods and people keep moving across the region. Woodstock's location provides the opportunity to enhance community connections and improve people's access to jobs, housing, healthcare, and education.

Dynamic Diversified Economy: The City is making significant investments that will be beneficial to residents and commercial interests. There are new industrial and business parks planned for the City, and the City plans to achieve the target of building 5,500 new residential units by 2031, as per the Housing Pledge approved by City Council in December 2023. Therefore, Woodstock's approach to growth, coupled with a commitment to preserving its unique identity, positions the City as an inviting destination for businesses and residents alike.

5.2 Strategic Priorities

The feedback received from Woodstock's residents, the stakeholders, and technical agencies was reviewed, and the current transportation network, demand, policies, and programs were assessed to guide the future direction of Woodstock's transportation network. A few key themes were emphasized that were later translated into the vision statement (in the subsequent section).

The strategic priorities to support the evaluation and recommendation of projects are given below:

Mobility Options	Improve the travel options available for the movement of people and goods by providing an increased number of reliable, equitable, and accessible options that meaningfully respond to the mobility needs of the community and ensure an efficient use of the transportation system.
Community Building	Develop a transportation network to support the growth of healthy and vibrant communities in the region.
Safe, Livable Communities	Enhance the safety of the transportation system for all users. Ensure that investments in the transportation network serve all modes and enhance equity and accessibility by expanding access to jobs, services, and amenities regardless of age, ability, and travel choice.
Climate Mitigation	Provide protection against the negative impacts to the natural environment and reduce vehicle emissions to achieve the Province of Ontario's Climate Change goals.
Economic & Financial Prosperity	Leverage transportation investment to catalyze economic growth and promote tourism through enhancing access to jobs, services, and amenities to support a more resilient regional economy. Invest strategically in new capital projects that will provide long-term benefit to the City, while ensuring that existing assets are maintained and supported.

5.3 Vision Statement

The vision statement is a declaration of the project's aspirations, and it articulates the future state of the City of Woodstock as it relates to its transportation network. It shapes decision-making and provides a road map for where the City wants to be at the end of the TMP planning horizon. The vision statement also reflects the City's priorities for transportation planning, which were established through the extensive consultation and engagement process undertaken in developing the TMP.

The vision for the City of Woodstock's TMP is stated below and was informed by existing City legislation, with feedback from the public and stakeholders.

Vision Statement

The City of Woodstock's transportation network is envisioned as a safe, efficient, and accessible multi-modal system that is designed for all ages and abilities. The transportation network will also provide connectivity and efficient movement of goods and people, supporting its growing economy.

5.4 Alternative Solutions

Phase 2 of the MCEA process includes identifying an opportunity or alternative solution to the problems for the study area. These are the different approaches that the City can take to design the future transportation network to solve the issues identified.

Four alternative strategies have been identified for the TMP and are provided below:

Alternative 1: Do Nothing

Maintain the current transportation network and policy/programming. This alternative would not include further development of roads under the jurisdiction of the City of Woodstock, but all Oxford County improvements would proceed as planned.

Alternative 2: Status Quo

Continue infrastructure development and expansion at its current pace, with new or refined policies/programming. New infrastructure development will happen in response to local development (as it occurs).

Alternative 3: Road Network Strategy

Focus investment on strategic road network improvements, such as road urbanization, local traffic operation, and safety improvements. Corresponding strategic investment will be made towards providing safer pedestrian and cycling facilities but will focus on improving the network predominantly for motorists.

Alternative 4: Multi-Modal Network Strategy

Focus on strategic road network capacity improvements, promoting and enhancing active transportation network and transit opportunities. Take on a multi-modal approach, which includes a balance of traditional road network improvements and sustainable modes through policy and significant capital investment.

5.5 Selection of Preferred Solution

The alternative solutions were evaluated against the strategic priorities and transportation vision to select the preferred alternative. Each strategy was ranked based on a relative score: Low, Medium, and High, related to how well each alternative supports the given TMP priority. Evaluation of the four identified alternatives (based on the strategic priorities) is highlighted in **Table 10**.

Based on the evaluation, the **Multi-Modal Network Strategy (Alternative 4)** is the preferred approach to be carried forward. This approach best aligns with the vision and strategic priorities of the TMP and provincial policy objectives to maintain and improve connectivity as part of a multi-modal transportation system. It also supports the feedback heard during public and stakeholder consultation and provides the highest potential to adapt to the changing and emerging transportation trends in the City. The Multi-Modal Network Strategy strikes a balanced approach, addressing localized congestion and road network inefficiencies, with investments in infrastructure and policies that support sustainable travel modes to improve system performance by reducing automobile dependency.

Table 10 Evaluation of Alternative Strategies

TMP Priority	Alternative 1: Do Nothing	Alternative 2: Status Quo	Alternative 3: Road Network Strategy	Alternative 4: Multi-Modal Network Strategy
Provide Mobility Choice & Efficient Use of Existing Transportation System	**Low** – Does not address mobility issues, nor optimizes the existing infrastructure to manage future growth.	**Medium** – Gradually enhances mobility through incremental improvements to the active transportation system.	**Low** – Adds roadway capacity to the network rather than making use of the existing capacity, limited improvements to the active transportation system or non-auto mobility options.	**High** – New policies and programming will help shift travel demand to more sustainable modes, to make better use of existing infrastructure.
Support Safe and Healthy Communities	**Low** – Does not address existing safety concerns.	**Medium** – the City addresses some safety concerns through its current approach (e.g. new pedestrian crossovers).	**Medium** – Expanding/Improving the road network may reduce collision occurrences related to congestion and the speeding problem.	**High** – A balanced approach has the highest potential to improve safety outcomes by addressing both the active transportation and road network 'hot-spots' and refining or adding to polices that enhance safety. This also encourages residents to use active modes of travel ensuring a healthier community.
Create an Inclusive and Accessible Transportation System	**Low** – Does not address existing barriers and challenges for more vulnerable road users.	**Medium** – Current "as needed" approach will have limited potential benefit for inclusivity and accessibility.	**Low** – Expanding/improving the road network in isolation does not support inclusivity or improve opportunities to those without access to a vehicle and may potentially increase barriers to vulnerable users.	**High** – A balanced approach that focuses on optimizing the existing system, and directing resources to support more sustainable, affordable, and accessible modes is likely to have the highest benefit to vulnerable users.
Minimize Negative Environmental Impacts	**High** – Maintaining existing network will reduce construction impacts to the natural environment.	**Medium** – Planned improvements will have some negative impacts to the natural environment.	**Low** – Focuses expansion of the road network will have the highest potential negative impacts to the natural environment from construction.	**Medium** – A balanced network expansion approach will have some negative impacts to the natural environment.
Support Climate Change Mitigation	**Low** – Does not help mitigate climate change impacts associated with auto-use and congestion	**Medium** – Maintains status-quo, which has limited focus on sustainable travel modes and lower potential to mitigate climate change.	**Low** – Encourages auto-use through focused road network expansion, creating the highest potential negative impact on mitigating climate change.	**High** – A balanced approach will have the greatest potential to mitigate climate change impacts by investing in sustainable travel modes to reduce congestion by reducing auto-use.
Support Financial Stability	**High** – Only requires maintaining existing infrastructure.	**High** – Future capital costs have already been planned.	**Low** – A road network expansion focus has higher potential capital and maintenance costs.	**Medium** – A balanced approach between road and active travel network has moderate potential capital and maintenance costs.
Support Economic Development	**Low** – does not address existing congestion and network connectivity issues that would restrict economic growth potential in the City.	**Medium** – Addresses some of the existing network issues, but unlikely to accommodate anticipated growth in the City.	**High** – Addresses several existing network issues through road network expansion and localized improvements.	**Medium** – Addresses network issues through strategic network expansion/improvements and reducing auto-dependency.

6.0 TMP Supportive Policies

6.0 TMP Supportive Policies

A range of City policies to support the management and operation of the transportation system, particularly the City's road network has been prepared as part of this TMP. This policy review included assessing existing guidance and emerging issues to ensure the transportation policy framework reflects industry best practice and remains relevant for objective decision-making now and into the future. The policy review was examined based on the following categories:

Roadway Network Planning	Establishes the policy framework for planning the road network, encompassing road classification, Special Character roads, and recommended design parameters.
Safety Operations	Summarizes the safety and operational considerations for the City's road network, including policies for traffic calming, speed limit, and special speed zones.
Traffic Control and Crossing Facilities	Summarizes policies to ensure the safe and efficient movement of pedestrians and vehicles at intersections and along roadways.
Additional Planning Policies	Provides an overview of the additional policies completed as part of the TMP, which include the Transportation Impact Assessment (TIA) Guidelines and Downtown Parking Management.

6.1 Roadway Network Planning

Improving the policies and standards related to road network planning is a significant priority for the City of Woodstock. Ensuring roads are planned, designed, and operated according to their intended function not only improves operations of all users but ensures the road network is well positioned for future growth. Aspects such as access control, lane widths, and right-of-way widths all have significant impacts on how the overall network performs.

6.1.1 Road Classifications

As discussed in **Section 3.2.1**, the Oxford County Official Plan outlines the City of Woodstock road classification system, which includes Local, Minor and Major Collectors, and Arterial Roadways. While the Official Plan provides some description and general requirements from those types of roadways, the City of Woodstock generally does not have a developed policy which would ensure

these roadways are designed and function as intended. Development of a Road Classification Policy specific to the City of Woodstock is critical to ensuring its roads function in its best interest and are able to accommodate growth. While in principle the current hierarchical classification system employed by the County is adequate, there are currently minimal standards attached to these classifications. As such, there is opportunity through this review to provide recommendations for further refinement of the network.

The Transportation Association of Canada (TAC) Geometric Design Guidelines for Canadian Roads (2017) provides comprehensive descriptions for various road classifications, as summarized in **Table 11**. Overall, the TAC hierarchy remains the same as the County's, consisting of Local, Collector, and Arterial roads. However, the significant differences in the two systems are the secondary designations (Major versus Minor) and consideration of land use considerations. TAC also identifies different classifications for Urban and Rural roads; however, it is assumed that all City roads are currently (or will be) urban roads.

The current classification system identifies Arterial roads but provides no accommodation for differentiating County roads and local municipal roads. In principle, County roads should provide a higher level of service than a local municipal road. As such, it is recommended that City-owned Arterial roads within Woodstock be considered as Minor Arterials.

The Official Plan identifies Major and Minor Collector Roads; however, aside from some provisions revolving around sidewalks, there is very little tangible difference between the two. TAC identifies Collector roads as an overall classification but recognizes the difference in usage associated with land use, specifically residential compared to industrial / commercial. Overall, the principle of the roadways is the same for either land use (access control, design speed, intersection spacing requirements, etc.); however, the characteristics of the two vary. This same distinction is afforded to Local roads as well. Local roads are also compared by residential versus industrial / commercial but share the same overall general principles.

The term 'Special Character Road' is used to describe a road corridor with unique natural, cultural, historical, and/or recreational attributes or qualities that differentiate the facility from others in the network. These roads are identified by their distinctive structural, topographic, and visual characteristics, as well as their cultural landscape, and/or historical significance. For example, some "downtown" roadways are not focused solely on either the movement of traffic or land access. These roads serve critical roles in the economic health of the City and are used to promote tourism, used for special events, or night life, etc. By classifying a road as "special character", a greater level of flexibility is granted to the roadway. Lower posted speed limits and different design specifications can be used to convey the significance and value of the facility. While some may contend that "reducing the design standard" compromises safety for the sake of economy, this is not necessarily

the case due to reduced exposure to collision risk (because traffic volumes are usually lower) and heightened driver awareness of unique conditions (aided with careful selection of design elements).

The goal of this review is to arrive at a functional classification of roads that balances land access and mobility needs while supporting a full range of travel modes. Based on review of the existing definitions and TAC definitions, **Map 18** illustrates the recommended functional classification for roads within the City of Woodstock. The illustrated road classifications consider future growth trends, AADT projections, and existing and future land use patterns.

Overall, it is recommended that the City of Woodstock adopt the road classification system identified within the TAC Geometric Design Guide. This includes the following classifications:

- Local Roads;
- Collector Roads;
- Minor Arterial Roadways; and
- Special Character Roads.

Land use should be considered in the selection process for new roads or for any consideration of classification changes. Overall, the recommended road classification changes are minor and reflect anticipated travel patterns and growth needs.

It is noted that the City of Woodstock has a fairly well-developed grid type network of roads. Many of the roadways have direct access for residential developments, regardless of road classification. In some instances, this can serve to restrict traffic volume, which would be desirable on roads such as Local roads. However, traffic volumes within residential areas do appear to be relatively evenly distributed along Collector and Local roads. Putting greater emphasis on traffic movement on collector roads and less on property access can serve to accommodate additional capacity and therefore result in reduced travel times. In doing so, there will be less traffic dispersion and thereby decreased traffic volumes on local roads. As such, while minimal changes were recommended, some collector roadways were considered as local roadways, while the following road sections were recommended to be upgraded from Collectors to Minor Arterials:

- Lansdowne Avenue from Nellis Street to Devonshire;
- Juliana Drive from Keyes Drive to Norwich Avenue (currently a designated EDR);

Recognizing its function through the downtown core, Dundas Street between Wilson Street and Mill Street is also recommended for consideration as a Special Character Road.

Table 11 Characteristics of Urban Road (TAC Geometric Design Guidelines)

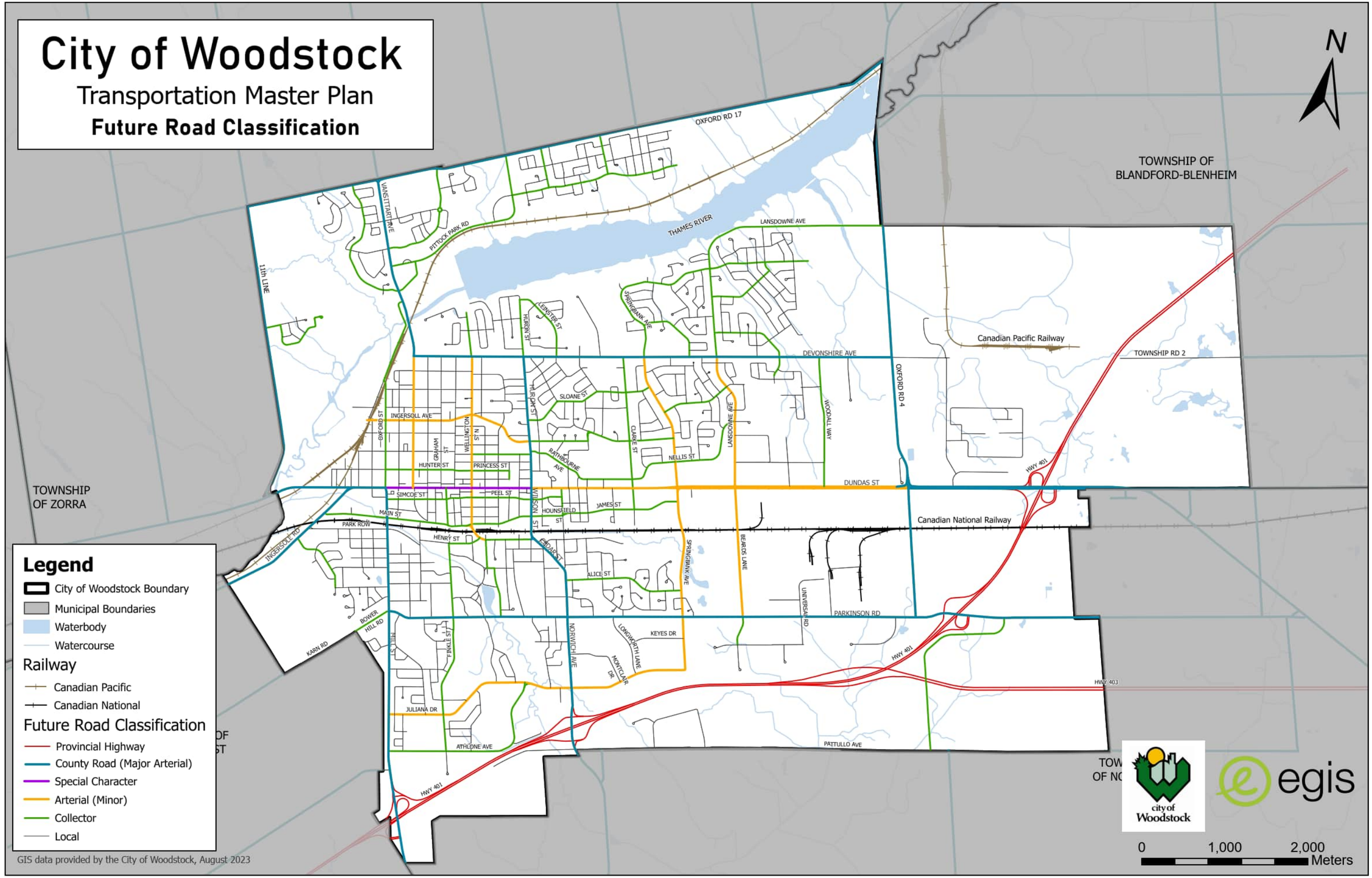
	Locals		Collectors		Arterials	
	Residential	Industrial / Commercial	Residential	Industrial / Commercial	Minor	Major
Traffic service function	Traffic movement not a consideration		Traffic movement and land access of equal importance		Traffic movement major	Traffic movement primary consideration
Land service / access	Land access only function		Traffic movement and land access of equal importance		some access control	rigid access control
Traffic volume (veh/day) (typical)	< 1,000	< 3,000	< 8,000	< 1,000 - 12,000	5,000 - 20,000	10,000 - 30,000
Flow characteristics	Interrupted flow		Interrupted flow		Uninterrupted flow except at signals and crosswalks	
Design speed (km/h)	30 - 50		50 - 80		50-70	60-100
Average running speeds (km/h) (off-peak)	20 - 40		30 - 70		40 - 60	50 - 90
Vehicle type	Passenger and service vehicles	All types	Passenger and service vehicles	All types	all types	all types up to 20% trucks
Desirable connections	Private roads, locals, collectors		Locals, collectors, arterials		collectors, arterials, expressways, freeways	
Transit service	generally avoided		permitted		express and local buses permitted	
Accommodation of pedestrians	Sidewalks normally on both sides	Sidewalks provided where required	Sidewalks normally on both sides	Sidewalks provided where required	sidewalks may be provided, separation for traffic lanes preferred	
Accommodation of cyclists	No restrictions or special facilities		special facilities considered		No restrictions; special facilities considered	
Parking (typical)	No restrictions or restrictions one side only		Few restrictions other than peak hour		Peak hour restrictions	Prohibited or peak hour restrictions
Minimum intersection spacing (m)	60		60		200	400
Right-of-way width (m) (typically)	15 - 22		20 - 24		20 - 45	

Source: TAC Geometric Design Guide for Canadian Roads (2017)

City of Woodstock

Transportation Master Plan

Future Road Classification



Map 18 Recommended Road Classification

6.1.2 Corridor Management

As discussed, one of the primary concerns for the City of Woodstock is access densities that do not support the roadway's intended operations according to its functional classification. As such, it is recommended that elements of corridor management be included in the City Road Classification and Design policy.

6.1.2.1 Driveways

Many development accesses for both commercial and residential developments within the City are generally not designed for optimal operational and safety performance. While zoning by-laws provide some provisions for developments, there is opportunity to provide enhanced development criteria to ensure access efficiently serves their purpose without compromising the safety or operations of a roadway and ensure accesses are located in consideration of a road's classification.

Access management is a comprehensive process whereby the road authority manages the provision of access to the public road system for new development or re-development. The main goal is to provide safe and orderly access consistent with the function operational requirements of the road and the accessibility needs of the adjacent land uses. The TAC Geometric Design Guide for Canadian Roads, Chapter 8, provides guidance on access management practices and recommended design domains for various access geometric features, such as widths, density, spacing, clear throat length, etc. The following sections provide a high-level summary and descriptions of the critical considerations for driveways within the County.

Access management is intended to be applied to roads based on their functional design classifications (to ensure that roads are designed to operate in accordance with their intended use). The following sections outline desirable access density and locations based on the adjacent roadway classification.

Arterial Roads: The primary consideration of arterial roads is the movement of traffic, while land access is a secondary function. Collectors generally serve a range of land uses, including residential, industrial, and commercial properties. For Rural Arterials, a limit of one private access every 400 m is desirable. Existing accesses in excess of one access per 400 m may remain on a temporary basis and may be eliminated at the time of future road upgrading. Urban Arterials generally carry high volumes of traffic, requiring a high degree of access control. Accesses to major commercial, industrial, or residential properties essentially act as T-intersections with relatively high volumes. As such, accesses on Urban Arterials should be avoided, and adjacent collector roads should be used instead.

Collector and Local Roads: For urban collectors, land access and movement of traffic are considered equally important, and the Local road's main function is land access. For Collector roads and Local roads, an effective means of ensuring reasonable spacing between adjacent driveways needs to be established. **Table 12** illustrates the recommended maximum number of accesses for new developments based on the site frontage.

Table 12 Maximum Number of Driveways Based on Property Frontage

Frontage (m)	Minimum number of Driveways [a]
15	1 [b]
16-50	2
51 - 150	3[c]
> 150	4 or more [c]

a. Subject to TAC spacing guidelines
b. Single family residential properties should be restricted to one driveway, irrespective of frontage.
c. For large developments, the location and design elements of driveways should be assessed as part of the transportation impact studies.

6.1.2.2 Driveway Widths

Driveway widths play an important role in the overall function of the roadway environment. Driveways must be sufficiently wide to accommodate efficient site ingress and egress; however, without maximum limits on driveway widths, they can be potentially unwieldly, with large, paved areas and poorly defined travel widths. Wide driveway accesses can also negatively impact pedestrian movements by increasing overall exposure time to traffic. In addition to driveway widths, entry radii play a similarly critical role and serve to promote acceptable operating speeds. **Table 13** provides a summary of typical design domains for driveway throat widths and radii for both two-way and one-way operations. It is noted that these widths are desirable; however, consideration should be given to anticipated design vehicles accessing the sites.

Table 13 Typical Driveway Widths

Dimension	Land Use		
	Residential	Commercial	Industrial
Width (W)			
One-Way	3.0 [a] - 4.3	4.5 [a] - 7.5	5.0 - 9.0
Two-Way	2.0 [a] - 7.3	7.2 [a] - 12.0 [c]	9.0 [a] - 15.0 [b]
Right turn Radius	3.0 - 4.5	4.5 - 12.0	9.0 - 15.0

a. Minimum widths are normally used when radii are near the upper end of the specified range.
b. Increased widths may be considered for capacity purposes. Where 3 exit lanes and 2 entry lanes are used, a maximum width of 17 m may be used (exclusive of medians).
c. Applicable to driveways only, not intersections.

6.1.2.3 Clear Throat Length

For major driveways to operate efficiently both from the roadside and internally, it is desirable to provide a "no conflict and storage zone" within the driveway. This zone is commonly referred to as "set-back distance" or "clear throat length". The clear throat length is calculated as the distance between the driveway curb return radii at the roadway and the point of first conflict on-site. Inadequate clear throat lengths can result in frequent blocking of on-site circulation roads, which can in turn create queues for ingressing vehicles. **Table 17** summarizes the recommended clear throat lengths based on land use and development size.

Table 14 Clear Throat Lengths by Land Use and Road Classification

Land Use	Development Size	Minimum Clear Throat Length (m)	
		Collector	Arterial
Light Industrial	< 10,000 m^2	8	15
	10,000 - 45,000 m^2	15	30
	> 45,000 m^2	15	60
Discount Store	> 3,000 m^2	8	15-25
Shopping Centre	< 25,000 m^2	8	15
	25,000 - 45,000 m^2	15	25
	45,001 - 70,000 m^2	25	60
	>70,000 m^2	40	75

Land Use	Development Size	Minimum Clear Throat Length (m)	
		Collector	Arterial
Supermarket	< 2,000 m^2	15	25
	> 2,000 m^2	25	40
Apartments	< 100 units	8	15
	100 - 200 units	15	25
	> 200 units	25	40
Quality (Sit Down) restaurant	< 1,500 m^2	8	15
	> 1,500 m^2	8	25
Fast Food restaurant	< 200 m^2	8	25
	> 200 m^2	15	40
General Office	< 5,000 m^2	8	15
	5,000 - 10,000 m^2	8	25
	10,001 - 20,000 m^2	15	30
	20,0001 - 45,000 m^2	30	45
	> 40,000 m^2	40	75
Motel	<150 rooms	8	25
	>150 rooms	8	30

6.1.3 Recommended Design Standards

Cross-section elements for the roadway, such as lane and shoulder widths, should be based on design classifications. Lane widths play a fundamental role in influencing driver speed on a roadway. While lane widths must be wide enough to provide adequate levels of service to vehicle traffic, lanes that are too wide encourage higher operating speeds. **Table 15** summarizes the recommended lane widths based on design speed ranges.

Table 15 Through Lane Widths - Urban Roadways

	Design Domain			
Design Speed	**Practical Lower Limit**	**Recommended Lower Limit**	**Recommended Upper Limit**	**Practical Upper Limit**
60 and less	2.7 m	3.0 m	3.7 m	4.0 m
70 to 100	3.0 m	3.3 m	3.7 m	4.0 m
110 and higher	3.5 m	3.7 m	3.7 m	4.0 m

Roadways in the City should be designed to provide acceptable levels of service and safety for all users of the roadway, including pedestrians and cyclists of all ages and abilities. Standardization of roadway cross-sections is important in helping ensure existing and future roads in the City support the safe movement of people and goods.

At a strategic planning level, it is critical to determine the width of a roadway's right-of-way (ROW) and the elements within it. These widths are the primary consideration of this section. The ROW width determines the available space to accommodate travel paths for all users, drainage, and utilities. If additional ROW is required through land acquisition to accommodate additional roadway elements, such as additional lanes or pedestrian facilities, the cost of the land acquisition can be significant. In summary of this section and in consideration of cross-section standardization, **Table 16** summarizes the TAC Geometric Design Guideline requirements for urban roads with design speeds less than 60 km/h.

Table 16 Urban Roadways ≤ 60 km/h Design Speed

Element	Recommendations	Reference
Right-of-Way Width	20 - 45 m	TAC 2017 Table 2.6.5
Through Lane Width	3.0 - 3.7 m (Min. 3.3 m where buses and larger trucks are expected regularly)	TAC 2017 Table 4.2.3
Auxiliary Lane Width	Generally, the same as the through lane. May be 0.2-0.25 m less than the through lane, but not less than 3.25 m	TAC 2017 Section 4.3
Median Width (when provided)	2.0 - 6.0 m	TAC 2017 Section 4.5.3

Element	Recommendations	Reference
Curb	Standard Curb and Gutter (OPSD 600.040)	TAC 2017 Section 4.7
Boulevard Width	2.0 - 3.0 m (1.5 m min.) (when provided)	TAC 2017 Section 4.6.2
Sidewalk Width	1.8 – 2.0 m (1.5 m min. if constrained)	TAC 2017 Section 2
Parking Lane Width	2.4 m (when provided)	TAC 2017 Section 4.3.2.4
Minimum Horizontal Alignment Radius	80 m	TAC 2017 Table 3.2.4
Max Superelevation	4% (General Standard for Ontario)	TAC 2017 Section 3.2.2.4 and Table 3.2.4

Source: TAC Geometric Design Guide for Canadian Roads (2017)

6.1.4 Complete Streets Framework

Complete Streets is an approach to street design that prioritizes safety and comfort for all road users (pedestrians, cyclists, transit, and vehicles), regardless of their age, ability, or mode of transportation. Complete Streets create places for people and support the development of a vibrant and animated public realm.

From a planning and design perspective, complete streets deal with the combination of roadway elements that make up the road cross-section. These elements include sidewalks, cycling facilities, parking lanes, travel lanes, boulevards, and transit stops. **Figure 5** shows the typical cross-section elements of a complete street. Complete streets respect the function of the road corridors within the overall network of pedestrian, cycling, transit, and road facilities.

Streets that are designed for all users, that are attractive and full of activity, are an important element of livable communities. Such streets are equitable and ensure that all residents are able to fully participate in society. By improving conditions for pedestrians and cyclists, such streets also support healthy lifestyles and provide a safer environment for active modes. Complete Streets accomplish all of the above. They enhance the public realm and provide significant social, economic, and environmental benefits. Complete Street 'makeovers' can also help to revitalize corridors and are thus expected to play a key role in downtown revitalization as the City moves forward with its Downtown Streetscape Masterplan.

Given the importance of Complete Streets in creating a balanced, sustainable transportation system, one of the key recommendations of the Transportation Master Plan is to adopt a Complete Streets approach for the City. Such a policy will confirm the City's commitment to providing roads for all users in an efficient, safe, and equitable manner. Therefore, Complete Streets should be considered

for all road construction and reconstruction projects, but flexibility should be allowed to address financial and right-of-way constraints. This type of incremental approach allows Complete Streets to be implemented gradually as new roads are built and existing roads are reconstructed, providing a cost-effective way to gradually transition to a more multi-modal network. However, in certain cases, it may also be beneficial to identify "priority" Complete Street projects; for example, roads that are part of the downtown or that fall within the cycling network should be prioritized.

The adoption of Complete Streets principles does not imply that improvements to walking, cycling, and transit occur at the expense of traffic flow, although trade-offs may be necessary in certain cases where the right-of-way is constrained. While it is important to accommodate all people and all modes, it is also important that traffic continue to move well to support the local economy, accommodate emergency services, and enhance the quality of life for residents.

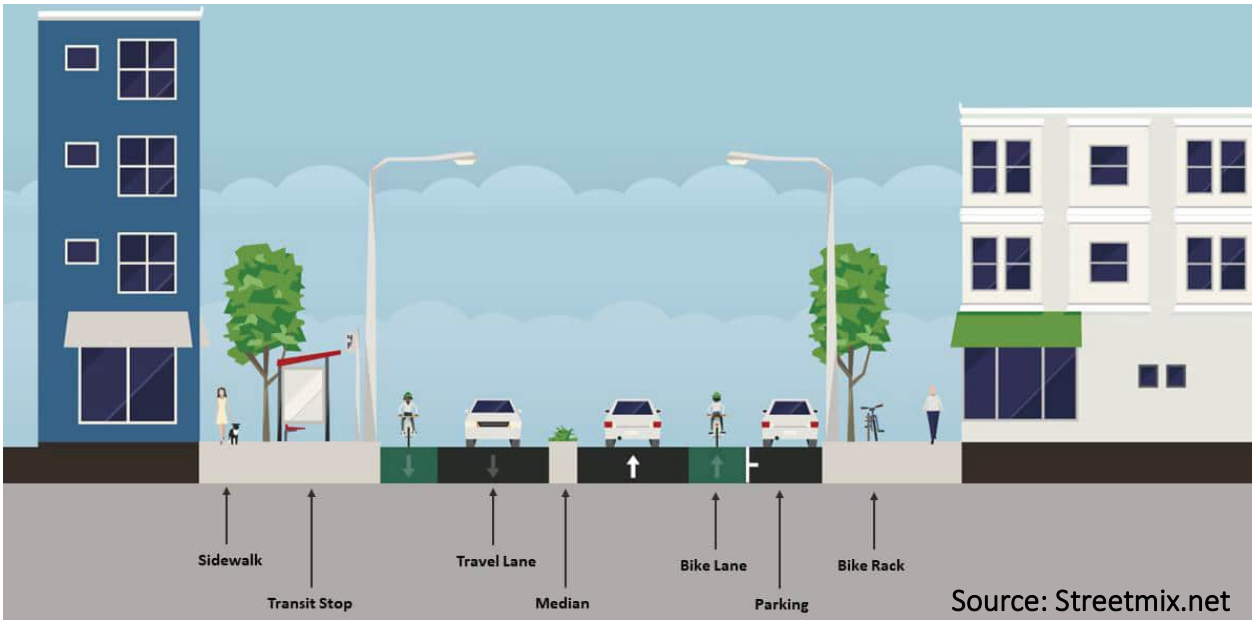


Figure 5 Cross-Section Elements of a Complete Street

The City of Woodstock currently has typical cross-sections for its roadways, considering 18 m, 20 m, and 26 m right-of-way widths. However, in consideration of the recommended Complete Streets approach and recommended design parameters, a number of typical cross-sections have been developed for consideration in developing a road classification and design policy as shown in **Figure 6** through **Figure 11**. It is noted that these cross-sections are typical and in some instances may not be feasible for various design restrictions; however, the overall theme should be considered by the City in most instances. The cross-sections have been developed for the recommended road classifications and general ROW widths currently used by the City. Specific design guidelines should

be developed for Special Character roads which emphasise streetscaping and beautification elements and which put greater emphasis on economic and commercial attractions.

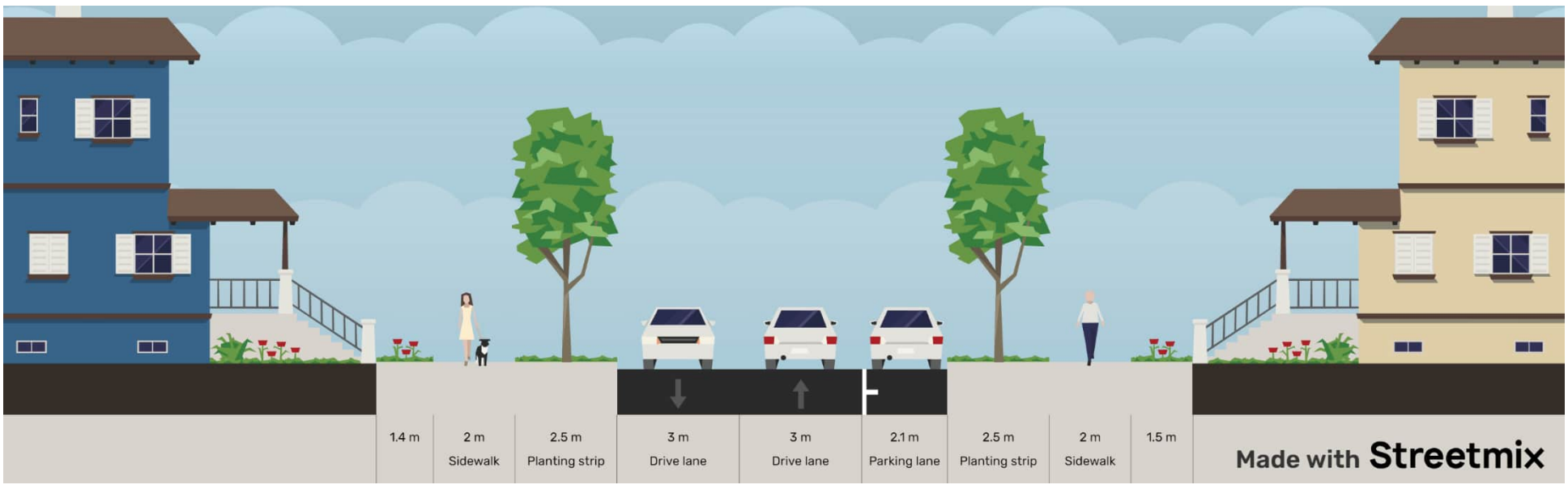


Figure 6 Local Road (20 m Right-of-Way) – On-Street Parking (One-Side)

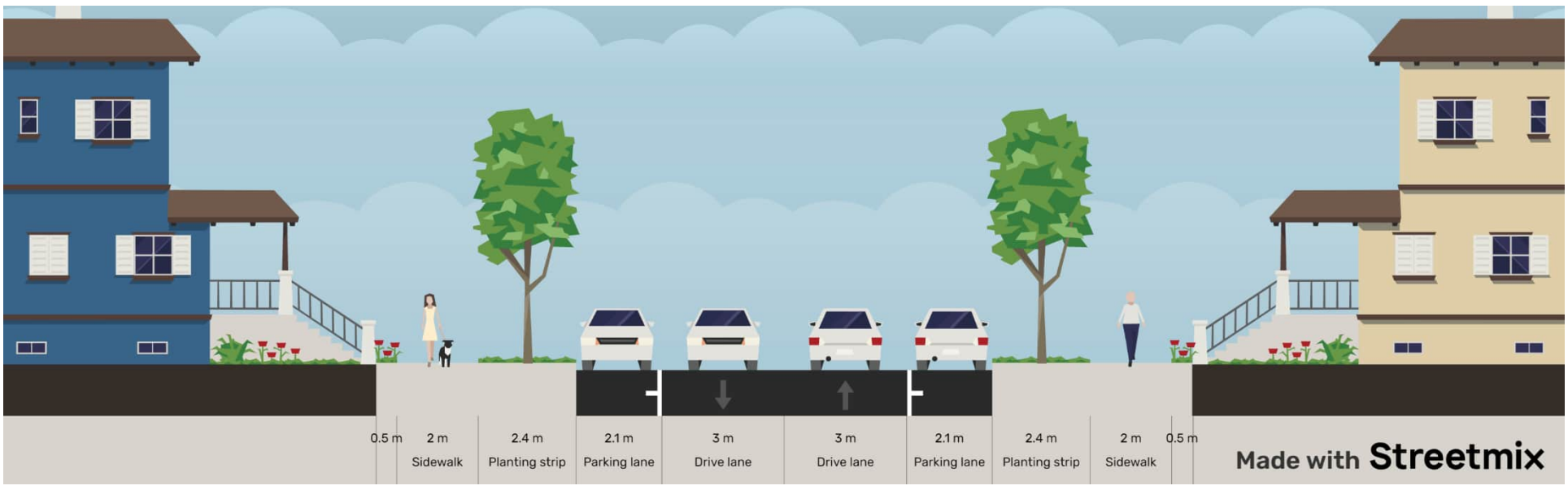


Figure 7 Local Road (20 m Right-of-Way) On-Street Parking (Both-Sides)

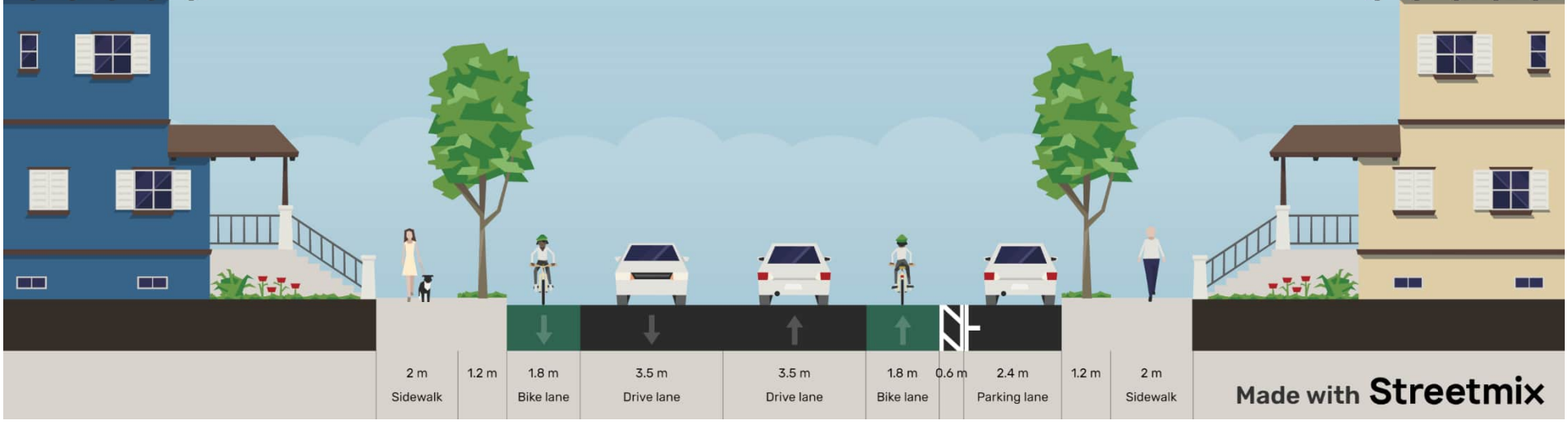


Figure 8 Collector (20 m Right-of-Way) On-Street Parking (One-Side) with Bike Lanes

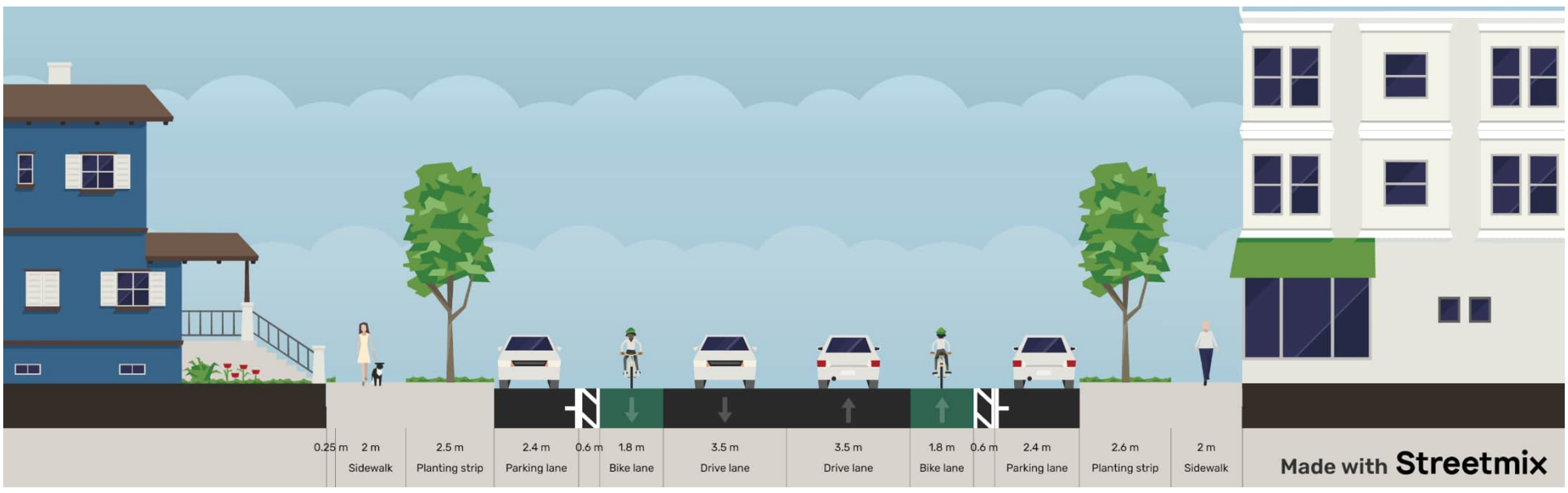


Figure 9 Collector (26 m Right-of-Way) On-Street Parking (Both-Sides) with Bike Lanes

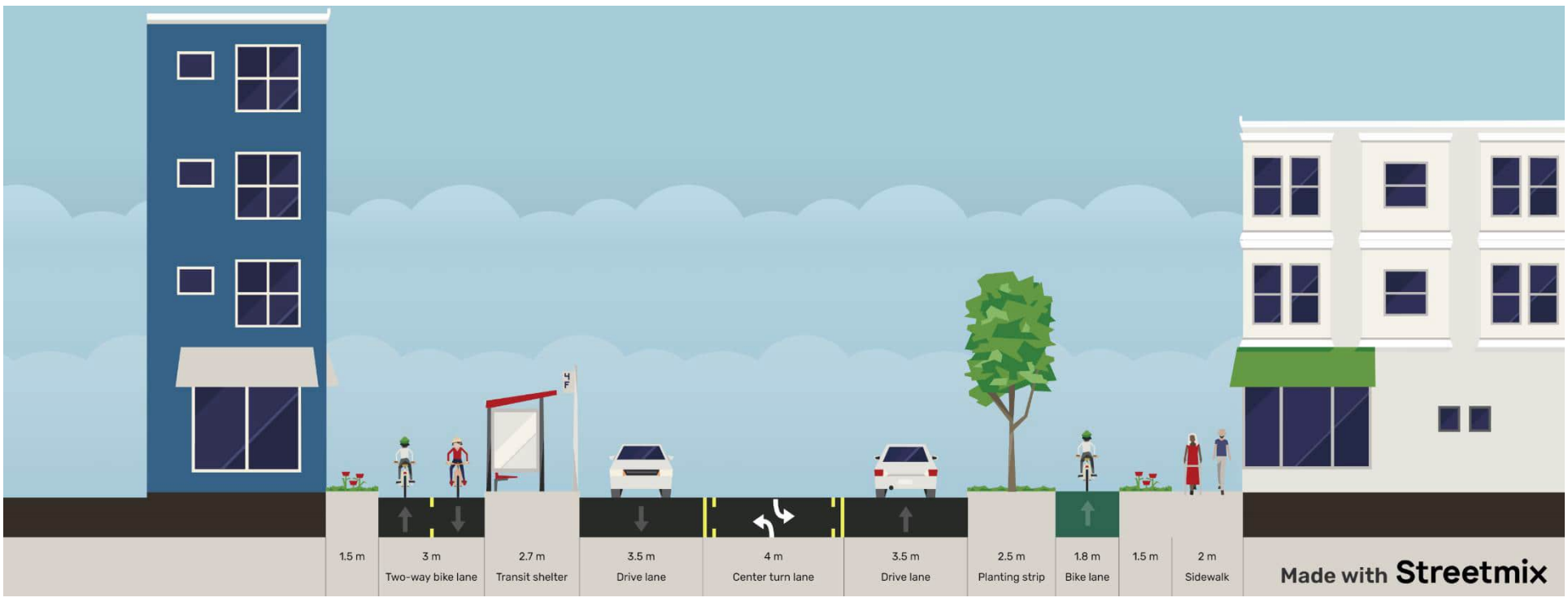


Figure 10 Arterial (26 m Right-of-Way) with TWLTL

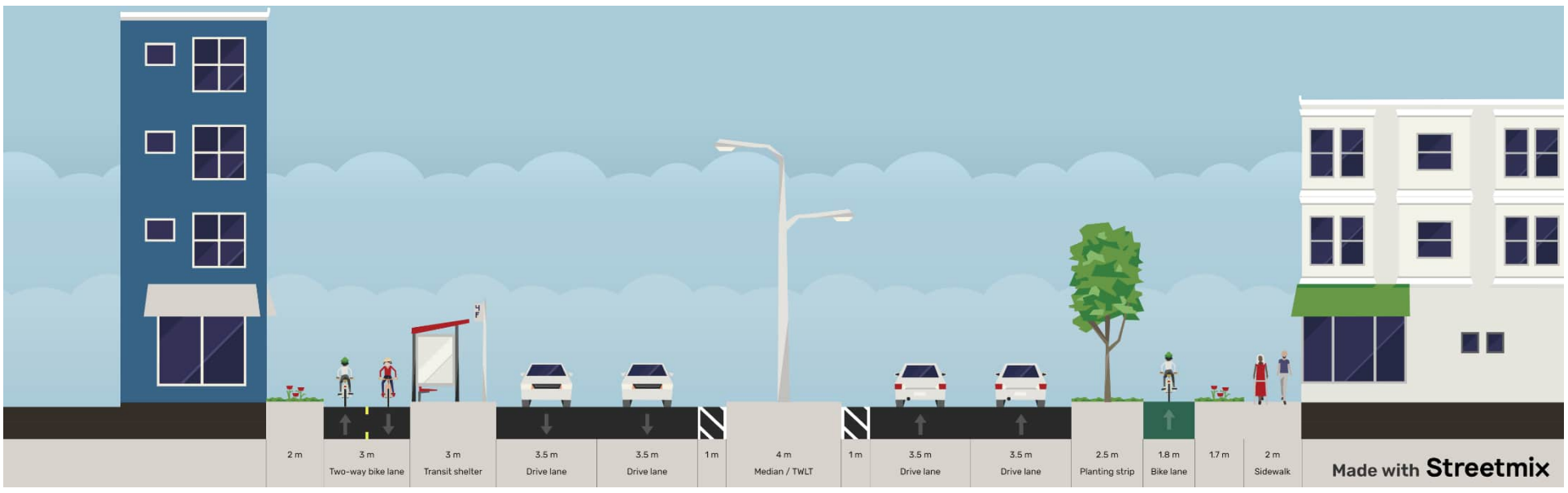


Figure 11 Arterial (36 m Right-of-Way) with Median / TWLTL

Recommendations:

1. Adopt the recommended road classifications provided in Map 18.
2. Develop a Road Classification and Design Standards Guideline which includes provisions for corridor management and complete streets approach appropriate cross-sections.
3. Develop Special Character Roadway Design Guidelines (Streetscaping and Beautification)

6.2 Safety Operations

Roadway safety was a big priority for the City, and the policies developed included improving safety for all users, such as pedestrian, cyclists, motorists, and vehicle passengers. This section summarizes the safety and operational considerations for the City's road network.

6.2.1 Speed Limit Policy

Road safety may be enhanced through credible posted speed limits (that match the expectation of drivers for a given roadway and its surrounding area). Speed limits set lower than the design speed make a significant number of reasonable drivers "illegal" for each 10 km/h increment of speed decreased, place unnecessary burden on law enforcement personnel, lead to lack of credibility of speed limits, and lead to increased tolerance by law enforcement. Therefore, speed limits should be carefully set to reflect the classification, function, and physical characteristics of the road. The selection of posted speed limits must also take into consideration legislative regulation, public recognition and understanding, ease of implementation, and adherence to recognized engineering standards and practices.

The Highway Traffic Act (HTA) establishes the regulatory framework for setting speed limits in Ontario. HTA Subsection 128.(1) states that no person shall drive a motor vehicle at a rate of speed greater than the following:

- 50 km/h on a roadway within a local municipality or a built-up area.
- 80 km/h on roads not within a built-up area and within local municipality that had the status of a township on December 31, 2002.

These legislative provisions are more commonly known as statutory speed limits and apply to all roads without a Maximum Speed sign posted. HTA Subsection 128. (2), however, permits municipal councils to prescribe rates of speed that differ from these statutory limits on roads under their jurisdiction so long as they are posted less than 100 km/h.

The City currently does not have a speed limit policy. The TAC Canadian Guidelines for Establishing Posted Speed Limits (2009) were developed to provide guidance and to enhance constancy in the evaluation of posted speed limits. As part of the guidelines, an automated spreadsheet was developed to facilitate application of the procedures involved in determining the recommended posted speed limit. As part of the TMP process, the spreadsheet was circulated to the City for future reference.

It should be noted that, while it is bad practice, there are circumstances when there is a desire to have a speed limit posted lower than the design speed of a road. In these circumstances, a road may have been designed to accommodate higher speeds; however, development and land use changes over time warrant consideration for a speed lower than the road was initially designed for. This is often observed in rural roads in areas that have seen some degree of urbanization and development. In these circumstances, consideration must be given to reducing the roadway design speed to that of the posted speed limit. This can be achieved through traffic calming, which is discussed in **Section 6.2.4.**

Recommendations:

4. Apply the methodology set out in TAC Canadian Guidelines for Establishing Posted Speed Limits in setting speed limits on City Roads and refer to the City's Traffic Calming Policy in instances where the recommended posted speed is lower than the desired (in response to public or Council requests).
5. Maintain the statutory 50km/h speed limit on roads within Urban Communities and Rural Villages, except for designated School or Community Safety Zones.
6. Conduct a comprehensive review of posted speed limits every five years.

6.2.2 Automated Speed Enforcement Policy

In 2017, the provincial government amended the HTA as part of the Safer School Zones Act, 2017 to allow municipalities to use Automated Speed Enforcement (ASE) technology to address vehicle speed concerns and collisions involving speeding. ASE is an automated system that uses a camera and a speed measurement device to enforce speed limits in identified areas. The strategy is designed to work in tandem with other road safety measures, such as engineering activities, education initiatives, and traditional police enforcement, to help improve safety for people of all ages and abilities by:

- Increasing speed compliance
- Altering driver behavior
- Increasing public awareness about the consequences of inappropriate vehicle operating speeds and the critical need for drivers to slow down.

If a vehicle exceeds the posted speed limit in an ASE area, the system captures an image and records the speed of the vehicle and date/time of the offence. In Ontario, an appointed officer reviews the recorded information.

ASE can be an effective program if implemented correctly at appropriate locations. Early results of modern deployment show positive safety statistics in the form of reduced vehicle operating speeds and collision activity. Site selection has been a key area of consideration for many municipalities, with selection primarily being based on vehicle operating speeds, collision activity, pre-existing Community Safety Zone and School Zone presence, and community input. To ensure program effectiveness, there is a need to work with other municipalities and agencies in a coordinated manner. ASE program size needs to match the needs of the municipality but also reasonably align with realistic constraints, such as potential capital and labour costs.

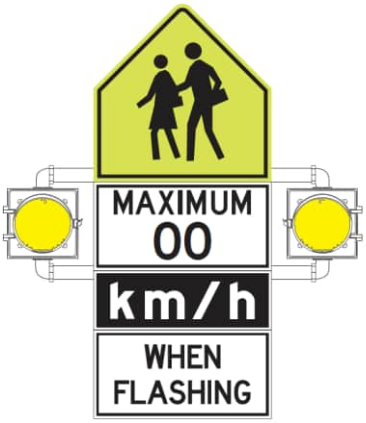
Recommendations:

7. Assess the merit of implementing Automated Speed Enforcement, including review of safety statistics, potential sites, financial implications, and Administrative Monetary Penalty System for adjudicating fines.
8. Liaise with other agencies for opportunities to share resources.

6.2.3 Special Speed Zone

Traffic conditions near school zones and playgrounds represent particular concern to communities. The safety of vulnerable road users as they arrive and depart from these community nodes is a sensitive issue that demands particular attention. One way to enhance safety near schools is to alert drivers that they are entering a section of roadway with a school or playground. This is accomplished through signing and pavement marking to define the area. Under the HTA, the City has authority to designate (through the installation of regulatory signs) the following types of zones for heightened safety and enforcement emphasis on roads abutting schools and community facilities:

6.2.3.1 School Zones and Areas



Advise drivers to reduce speed at certain times because they are entering an area where school children are present and may be crossing the road in increased frequency. The TAC School and Playground Areas and Zones: Guidelines for Application and Implementation (2006) provides a procedure for establishing and defining school zone areas. The procedure includes warrants based on a number of criteria and assigns a maximum point value (MPV) to each criterion, reflecting its relative importance. The criteria refer to the specific factors evaluated in the school zone input worksheet provided in **Appendix H**. Below is a concise summary of each criterion:

- T – School Type: Includes elementary, middle/junior, and high school, with the most points for elementary, as children for elementary school are considered to be the most vulnerable.
- C – Road Classification: Includes local, collector, arterial, and expressway/freeway, with most points for local roads as school zones should be avoided on arterial roads and freeways.
- F – Fencing: This can significantly reduce the need for a school zone, acting as a physical barrier that can prevent errant pedestrian movements onto the roadway. The effectiveness depends on its traversability, i.e. how easily it can be bypassed or traversed, with most points dedicated to fully traversable, as it describes fencing that is absent or easily traversed.
- L – Property Line Separation: Considers the separation between the property line of the school and the candidate roadway. An intersecting roadway that is separated from the school grounds by only a sidewalk or fence is said to abut the roadway and has the most points because children are likely to enter the candidate roadway.
- E – School Entrance: A school entrance can be a driveway to the school, the closest point along the road to the school's main door, or a designated on-street pick-up and drop-off. The entrances become a focal point of congestion and pedestrian activity. Where a school has multiple access points from the road, the activity is typically concentrated at one entrance, referred to as the main entrance and has the most points dedicated to it.
- S – Sidewalks: The purpose of sidewalks is to provide safe conveyance of children between the school grounds or opening in the fence and a defined crossing point on the roadway or link to the surrounding sidewalk network. If sidewalks are provided between the school and the roadway, children are less likely to walk on the roadway; therefore, the most points are dedicated to no sidewalks or sidewalks on the non-school side.

Table 17 provides a summary of the appropriate selection based on the total score, and **Appendix H** provides the full School Zone and Area Selection Input Worksheet. Section 3 of the TAC guidelines provides details on the sign layouts for School Zones and School Areas based on site-specific conditions.

Table 17 Summary of Score Thresholds for School Zone and Area Selection

Total Score	Area or Zone
0 - 40	None
41 - 64	School Area
65 - 80	School Area or School Zone
81 - 100	School Zone

Source: School and Playground Areas and Zones: Guidelines for Application and Implementation (2006)

6.2.3.2 Playground Zones and Areas

Playground zones or areas can be considered for facilities used by children where there is a possibility of them entering the roadway. These facilities include playgrounds, recreation facilities (such as sports fields), indoor or outdoor skating rinks, baseball diamonds, etc. Similar to school zones and areas, the TAC School and Playground Areas and Zones: Guidelines for Application and Implementation (2006) provides a procedure for establishing and defining playground areas and zones. The procedure includes warrants based on a number of criteria and assigns a maximum point value (MPV) to each criterion, reflecting its relative importance. The criteria refer to the specific factors evaluated in the playground zone input worksheet provided in **Appendix H**. Below is a concise summary of each criterion:

- T – Playground Type: Reflects the likely level of utilization of the playground facility and its exposure to the roadway. Playgrounds that have higher capacity, that are part of a field, and that are not enclosed, are more likely to warrant a reduced speed zone. The need for playground areas and zones increases with the likely exposure of children to traffic, which in turn is a function of the capacity of the playground that can be estimated according to the capacity of playground equipment provided.
- C – Road Classification: Includes local, minor collector, major collector, minor arterial, major arterial and expressway/freeway with most points for local roads as playgrounds should be avoided on higher roadway classification.

- F – Fencing: Presence of fencing can significantly reduce the need for a playground zone, acting as a physical barrier that can prevent errant movement of children onto the roadway. The effectiveness depends on its traversability, (i.e. how easily it can be bypassed or traversed), with most points dedicated to fully traversable because it describes fencing that is absent or easily traversed.
- L – Property Line Separation: Considers the separation between the property line of the playground and the candidate roadway. For a playground with play equipment, the distance between the equipment and the intersecting roadway should also be considered. An intersecting roadway that is separated from the playground by only a sidewalk or fence is said to abut the roadway and has the most points.
- E – Playground Entrance: A playground entrance can be a driveway to the playground, the closest point along the road to an indoor facility's main door, or a designated on-street pick-up and drop-off. The entrance can become a focal point of congestion and pedestrian activity. Where a playground has multiple access points from the road, ingress and egress activity is typically concentrated at one entrance (referred to as the main entrance), and has the most points dedicated to it.
- S – Sidewalks: The purpose of sidewalks is to provide safe conveyance of children between the playground or opening in the fence to a defined crossing point on the roadway or link to the surrounding sidewalk network. If sidewalks are provided between the playground and the roadway, children are less likely to walk on the roadway; therefore, the most points are dedicated to no sidewalks or sidewalks on the non-playground side.

Table 18 provides a summary of the appropriate selection based on the total score, and **Appendix H** provides the full Playground Zone and Area Selection Input Worksheet. Section 3 of the TAC guidelines provides details on the sign layouts for playground areas and zones based on site-specific conditions.

Table 18 Summary of Score Thresholds for Playground Zone and Area Selection

Total Score	Area or Zone
0 - 40	None
41 - 80	Playground Area
81 - 100	Playground Zone

Source: School and Playground Areas and Zones: Guidelines for Application and Implementation (2006)

6.2.3.3 Community Safety Zones

Community Safety Zone signs (Rc-9) and optional Begins tab signs (Rb-85t) inform drivers entering an area the community has deemed paramount to the safety of its citizens. These sections of roadway are typically near schools, playgrounds, community centers, senior citizen residences, hospitals, etc. Traffic-related offences within these zones carry increased fines, and in many cases are doubled. Implementation of Community Safety Signage and monetary penalty are established through municipal by-law. The signage does not change the rules of the road but increases the mentalities associated with any traffic act violation. The signage is installed to define the legal limits of the zone as prescribed in the zoning by-law and installed at the beginning and end of the zone. Depending on the length of the zone, signage may be installed within the zone as well.

6.2.3.4 Reduced Speed Zone Areas

World Health Organization (WHO) statistics show a significant improvement in survival rates when speed limits are decreased. For example, there is a reported 1.5 in 10 survival rate for pedestrians being struck at 50 km/h. However, at 30 km/h, the survival rate is 9 in 10.

In May 2018, the HTA was amended to allow for speed limits other than 50 km/h without block-by-block signage in bounded zones. When a road authority (through municipal by-law), designates an entire area to have a speed limit other than the default 50 km/h speed limit, standard Maximum Speed signs must be used with the Area tab sign. OTM Book 5 provides detailed application of the signage with respect to sign types and locations. It is recommended that the City begin implementing reduced speed zone areas within areas designated as Established Residential and Low / Medium Density Residential areas within the City's Official Plan. 40 km/h gateway signage should be utilized (40 km/h Maximum Speed signs with Area tab sign) at all entrance and exits to the zones. Additional 40 km/h Maximum Speed signs should be considered to ensure proper coverage of the area. In addition to the reduced speed zone areas, and in consideration of the previous sections,

School Zones should be reduced to 30 km/h with appropriate signage and identified as Community Safety Zones.

Due the scope of the proposed changes to the overall City network, implementation is recommended to be phased, with sufficient time to assess adherence to the reduced speed areas and implementation of traffic calming measures as necessary.

Recommendations:

9. Utilize the TAC School and Playground Area and Zones: Guidelines for Application and Implementation when considering new and revising existing School and Playground Zones or Areas.
10. Phase implementation of 40 km/h Neighbourhood zones within the City with proper signage and usage of the Area tab signs installed at the entrances and exits to all neighbourhoods.
11. School Zone speed limits within the Neighbourhood speed areas should be set at 30 km/h and marked as a Community Safety Zone.
12. Implement traffic calming measures as necessary to facilitate new speed limits.
13. Assess the merit of implementing Automated Speed Enforcement, including reviews of safety statistics, potential sites, financial implications, and Administrative Monetary Penalty System for adjudicating fines. Initial implementation should be considered along Arterial and Collector Roads.

6.2.4 Traffic Calming Policy

Traffic calming is a way to slow down traffic that is too fast for the environment or divert traffic that is short-cutting through neighbourhoods to avoid congestion. It is a retroactive process whereby measures are applied by road authorities to address concerns about behaviour of motor vehicles on existing roads. Controlling vehicle speed is important for the safety of all road users and can prevent collisions and reduce their impact when they happen. It is also essential to consider traffic calming measures during the design and implementation of reconstructed streets and new residential subdivisions.

The City's Traffic Calming Policy provides policy directives for the application of traffic calming measures within the City. It provides screening criteria for identifying neighbourhoods for implementation of traffic calming, along with a tool kit of potential measures that can be applied when traffic calming is justified. Typically, a trial solution is used to assess a traffic calming solution prior to a final installation. **Appendix I** provides the full Traffic Calming Policy for the City.

There are several efficient and cost-effective traffic calming measures that could be used successfully, such as:

Speed Display Device: An interactive sign that alerts drivers of their speeds. These can be solar powered and portable, making them quite versatile and adaptive. They have the added benefit of illustrating speeds not only to drivers passing by but to the general public within the vicinity, which can assist in addressing a public speeding perception which may not be supported by empirical data.

Speed Posted Bollard: Vertical posts installed at the edge of traffic lanes with the speed limit displayed. These alert drivers of a separation requirement without physically constraining the roadway. The objective is to narrow the road, guide traffic, and encourage drivers to slow down so they can pass through safely. One disadvantage is that maintenance and roadway operations time may be increased.

Speed Hump: A raised area built across the entire roadway which causes vertical upward movement of a traversing vehicle. The objective is to cause a discomfort for drivers travelling at higher speeds, resulting in reduced vehicle speeds. Seasonal speed humps can also be used, in place of constructing a permanent one; they are a rubber unit placed across an entire roadway width.

Raised Crosswalk: A marked pedestrian crosswalk constructed in a higher elevation than the adjacent roadway. The objective is to enhance awareness of pedestrian crossings, reduce vehicle speeds, improve pedestrian visibility, and reduce pedestrian-vehicle conflict. It may include the implementation of an appropriate level of PXO per OTM Book 18. Raised crosswalks should only be implemented at mid-block, unprotected pedestrian crossing locations and should be signed properly.

Curb Extension: A horizontal intrusion of the curb visually and physically narrowing the roadway width. The curb may be on one or both sides of the roadway. The objective is to reduce vehicle speeds, reduce crossing distance for pedestrians, and prevent parking too close to an intersection. However, it can result in a potential loss of on-street parking.

It is essential to design the road for the posted speed. Signage is considered to be only marginally effective at controlling the operating speeds of a roadway. Drivers naturally operate at speeds appropriate to the features of a roadway that are reflective of the design speed. Should the City reduce the posted speed limit of a roadway which has previously been designed for higher operating speeds, measures must be taken to ensure the roadway is designed for the new posted speed limit. This could include traffic calming measures which encourage operating speeds that are more in line with the posted speed limit.

A number of concerns have been raised regarding speeding on Dundas Street and Wellington Street; however, the area did not qualify for a traffic calming measure to be implemented because the 85th percentile speed was not 10 km/h over the speed limit, as per the eligibility criteria.

Several locations were reviewed based on analyzing the posted speed limits versus the 85th percentile speeds, as shown in **Map 19**, to note areas of concern. An assessment for Clarke Street from Devonshire Avenue to Nellis Street, Pittock Park Road from Vansittart Avenue to Summit Crescent, and Springbank Avenue from Lansdowne Avenue to Algonquin Road, was done to see if these locations met the warrants for traffic calming. The full evaluation is also provided in **Appendix I**. After conducting the assessment, it was concluded that Clarke Street and Pittock Park Road met the warrants for traffic calming.

Speed display devices, speed posted bollards, and lane narrowing are some of the traffic calming measures recommended that can be implemented on Clarke Street and Pittock Park Road to slow down traffic and ensure safe roadway operations.

It is recommended that the City purchase a portable radar traffic counting device which has the ability to collect traffic data without the need for in-road traffic sensors to identify speeding and aggressive driving. This can help the City respond to public concerns quickly.

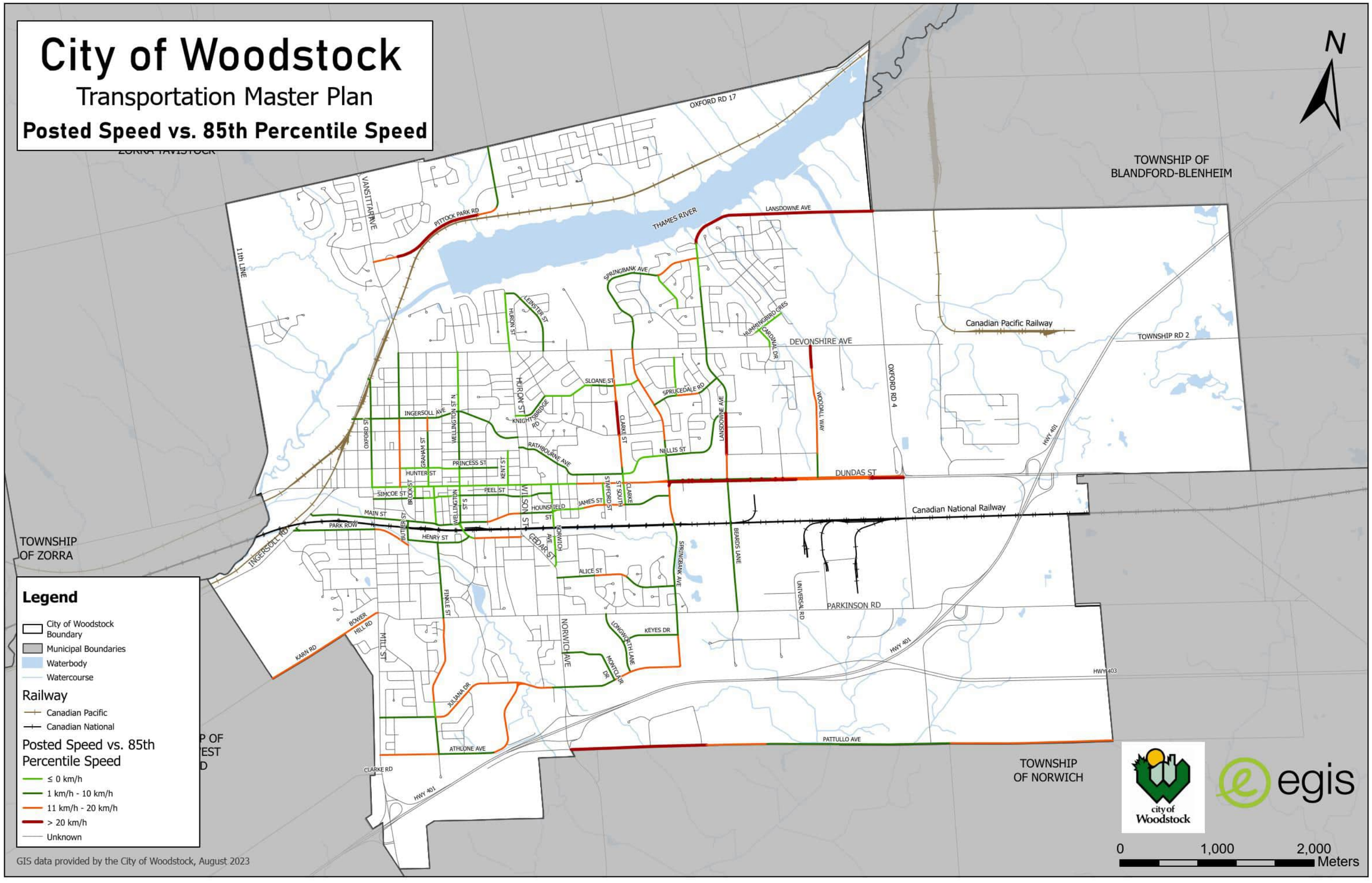
Recommendations:

14. Council should adopt a traffic calming policy for the City.
15. City should prioritize the following traffic calming measures: speed display devices, speed posted bollards, speed humps, raised crosswalks and curb extensions.
16. Traffic calming measures should be considered during the design and implementation of reconstructed streets and new residential subdivisions.
17. City should purchase a portable radar traffic counting device to collect speed data.

City of Woodstock

Transportation Master Plan

Posted Speed vs. 85th Percentile Speed



Map 19 Posted Speed vs. 85th Percentile Speed

6.3 Traffic Control and Crossing Facilities

The management of the movement of people and vehicles is critical to ensure the safety and efficiency of the transportation network. However, the appropriate selection of the traffic control treatment or pedestrian crossing facility is of utmost important and is governed by existing or anticipated conditions and complexity of the surrounding environment. The selection of the most appropriate type of traffic control and pedestrian crossing treatment should be done based on the hierarchy of controlled crossing treatment systems shown in **Figure 12**, as well as current policies and guidelines.

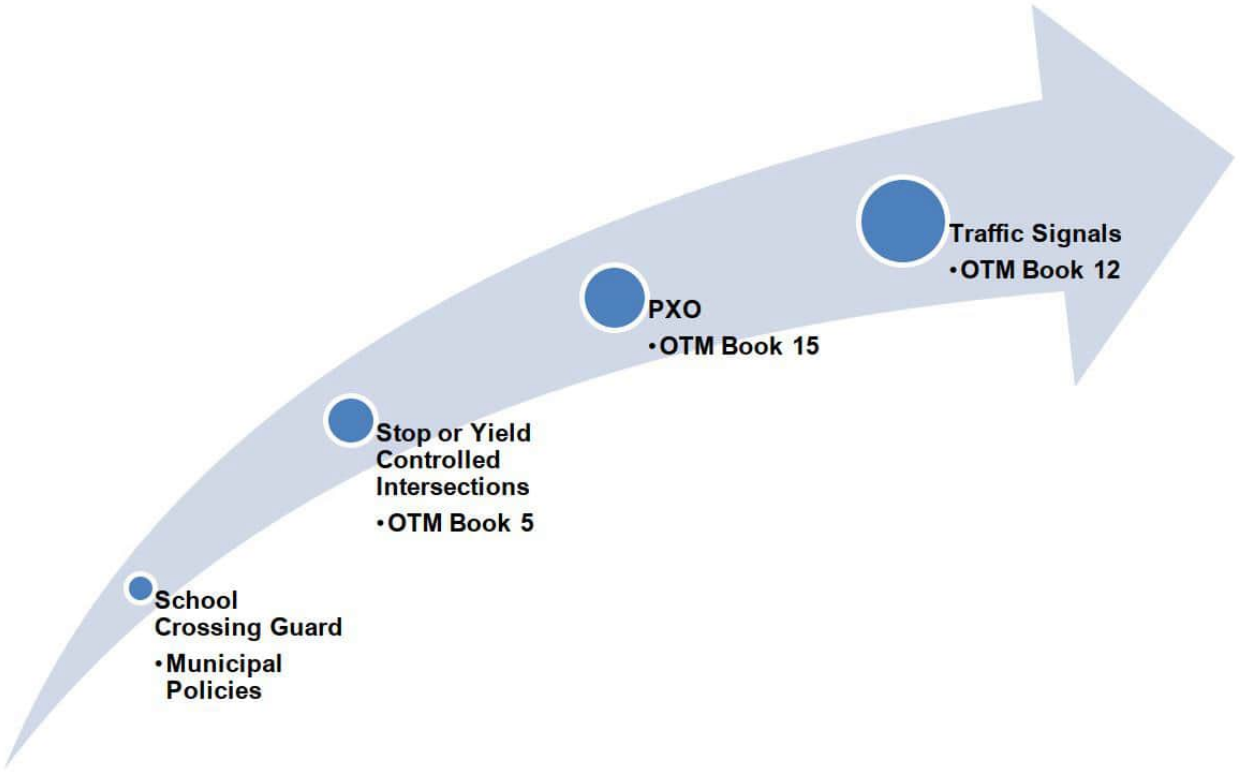


Figure 12 Hierarchy of Controlled Crossing Treatment Systems (OTM Book 15)
Source: Ontario Traffic Manual – Book 15 (2016)

This section discusses the policies developed for traffic control treatment and pedestrian crossing facilities that should be adopted by the City to ensure the efficient deployment of the treatment systems.

6.3.1 Supervised School Crossing

Designated school crossings are locations close to schools where school children must cross enroute between home and school. They are supervised by school patrollers or adult crossing guards during specified hours and during regular school periods. It should be noted that marked school crossing locations (in the absence of a traffic control), without the presence of an adult crossing guard, are considered uncontrolled crossings, as they create a false sense of security on the part of pedestrians who may enter the crossing expecting that approaching drivers will see them and stop.

The role of the crossing guards is to direct and supervise the movement of persons across a roadway by creating necessary gaps in vehicular traffic to provide safe passage at designated school crossing locations. School crossing guards must display a mandatory stop sign, as specified in Ontario Regulation 615 Section 112, to direct the vehicular traffic to stop. The Ontario Traffic Council (OTC) School Crossing Guard Guide is an information document published in 2017 that provides various guiding principles for the consideration, implementation, and maintenance of school crossings and should be used for the implementation of supervised school crossings. It is recommended that the City's current crossing guard warrant system be replaced with the current OTC School Crossing Guard Guide.

School crossing guards may be stationed at otherwise uncontrolled midblock/intersection locations with required marked school crosswalks and school crossings signs within the school area where school children must cross. They may also be stationed at all controlled crossings in conjunction with other pedestrian treatment systems where the school crossing guard will be treated as an additional component of the base treatment system. **Table 19** provides the components of a designated supervised school crossing.

Table 19 Components of School Crossing

Required Components	Desirable Components	Optional Components

• Crossing Guard
• School Crosswalk Markings for supervised crossing according to OTM Book 11 (different requirements from urban and rural locations)
• School Crossing Sign (Wc-2, Wc-102)
• School Crossing Tab Sign (Wc-2t, Wc-102t)
	• Refuge Islands and Centre Medians with mandatory:
	  ○ Pavement markings on approaches to obstructions
	  ○ Keep Right Sign (RC-25, Rb-125)
	  ○ Object Marker Sign (Wa-33L)
		• Raised Crosswalk
		• Textured Crosswalk
		• Advance Stop Bar
		• Safety elements including Barricades, Pedestrian Fencing, Gates, Walls, Bollards, and Barriers

Required Components	Desirable Components	Optional Components
• School Crossing Ahead Tab sign (Wc-2At, Wc-102At) • Parking and other sight obstructions prohibition within at least 30 m of crossings • Stopping prohibition for a minimum of 15 m on each approach to the crossing, and 10 m following the crossing	• School Zone Maximum Speed Sign (Rb-6) • School Zone Maximum Speed When Flashing Sign (Rb-6A) • Stopping prohibition for a minimum of 30 m on each approach to the crossing, and 15 m following the crossing	

Source: Ontario Traffic Council School Crossing Guard Guide (2017)

Recommendations:

18. All marked school crossing locations should either have some form of traffic control in place or an adult crossing guard present.
19. The City should replace its current crossing guard warrant system with the Ontario Traffic Council (OTC) School Crossing Guard Guide (2017).

6.3.2 All-Way Stop Control Policy

As part of this TMP, an all-way stop control policy was developed with City staff. The policy followed the OTM Book 5 – Regulatory Signs, which states that all-way stops should only be considered under the following situations:

- As an interim measure where traffic signals are warranted but cannot be installed immediately.
- At locations having a high collision frequency and less intrusive measures have not resulted in decreased collision frequencies.
- As a transitionary period to accustom drivers to a change in right-of-way (ROW).

It is important to note that all-way stops should not be used as a traffic calming measure, which is to slow traffic or to deter traffic movement through residential areas. **Appendix J** provides the full all-way stop control policy that was prepared as a part of this TMP.

Recommendations:

20. Adopt an all-way stop policy to ensure fair access to the right-of-way for similar volumes of traffic travelling in opposing directions.
21. Ensure all-way stop control is not relied upon to manage or reduce vehicle speeds.
22. Ensure all-way stop control is not used as a traffic calming measure.

6.3.3 Pedestrian Crossover (PXO) Policy

OTM Book 15 recognizes the need for local policies, practices, and engineering judgement. It states that, "municipalities may need to adopt policies that reflect local conditions'" and, "The traffic practitioner's fundamental responsibility is to exercise engineering judgement on technical matters in the best interests of the public and workers. Guidelines are provided in the OTM to supplement professional experience and assist in making those judgements." It is also essential to implement an awareness campaign, as it will enhance public awareness and educate both pedestrians and motorists on the proper use and function of PXOs. This can be done through the City website, social media, school newsletters, and other outreach channels.

The City has installed multiple pedestrian crossovers and, after reviewing them, various deficiencies were noted as mentioned in **Section 6.3.** Therefore, a pedestrian crossover policy was prepared as part of this TMP and is provided in **Appendix K**. It enhances the OTM Book 15 warrant procedures with the local requirements for various treatment options to help the City upgrade the existing crossings and install new crossings that meet industry best practices.

Recommendations:

23. Adopt a pedestrian crossover (PXO) policy to create safer and more pedestrian-friendly environments.
24. Ensure all current PXOs meet the standards set in the PXO policy and industry best practice.
25. Install all new PXOs following the process set forth in the PXO policy and industry best practice.
26. Enhance public awareness and educate both pedestrians and motorists on the proper use and function of PXOs through the City website, social media, school newsletters, and other outreach channels.

6.4 Planning Policies

6.4.1 Transportation Impact Assessment Guidelines

A Transportation Impact Assessment (TIA) serves to identify on-site and off-site measures to be undertaken by a developer to align the transportation network's performance with the goals set forth by the City. The City of Woodstock's TIA guidelines assess potential impacts of traffic changes caused by a proposed development on municipal roads. They aim to identify any infrastructure improvements or mitigation measures needed to ensure the road network will operate acceptably and safely upon completion of the proposed development.

The TIA guidelines have been prepared to provide a structured framework for conducting TIAs and to ensure methodologies, data collection, and analysis approaches are consistent with industry best practices. **Appendix L** provides the full TIA Guidelines that have been prepared for the City to assist with informed decision-making regarding land use approvals, infrastructure investment, and mitigation measures.

As part of ongoing development and growth, the City should also develop a comprehensive data collection program focused on turning movement count data; costs of data collection can be offset by providing TMC data to consultants (undertaking TIA studies) for a nominal fee.

Recommendations:

27. The City should adopt the TIA guidelines prepared as part of the TMP to provide a structured framework for conducting TIAs and should ensure analysis approaches are consistent with industry best practices.
28. Expand data collection program to include turning movement counts.

6.4.2 Downtown Parking Management

The City of Woodstock has an extensive parking program with 351 municipal on-street parking spaces and 590 municipal off-street parking spaces located in the downtown core, as shown on **Map 8** in **Section 4.5**. As per the data provided by the City, the average parking utilization is approximately 50%. The surplus parking, if managed properly, could effectively serve the increased future demand caused by traffic growth and any new developments without the need for expanding the existing parking infrastructure.

There are several parking measures that can be further explored to accommodate greater parking demand over time and to manage the existing supply efficiently.

Wayfinding and Signage

A comprehensive and uniform wayfinding and signage program for the City's parking system can help inform drivers of the available parking options and reduce confusion about payment and restrictions. Improved signage can alleviate demand by providing directions to nearby destinations and other peripheral parking lots. Signage can also be used to clearly identify parking lots that are available to the general public and those that are restricted to monthly pass-holders, providing information on fines and discouraging non-compliance.

Streetscaping and Landscaping

The use of shading (natural or artificial) and promoting cleanliness for outer city parking lots can make them more appealing and encourage people to want to park there. In addition, making walks from distant parking lots desirable and shaded will make it enjoyable for people to walk from the parking lot to their destination. Improving walkability expands the range of parking facilities that serve a destination. It increases the feasibility of sharing parking facilities and encourages the use of remote parking facilities. By improving walkability, "park once," trips are also increased (parking in one location and walking rather than driving to other destinations), reducing vehicle trips and the amount of parking required at each destination.

Recommendations:

29. Conduct parking counts more frequently, including weekend and evening parking counts, to understand variation of parking demand, to capture the overall utilization, and to complete a more comprehensive analysis.
30. Have a comprehensive and uniform wayfinding and signage program to guide drivers to the available parking options and reduce confusions about payment.
31. Use streetscaping and landscaping to promote cleanliness of outer city parking lots and encourage people to park there.

7.0 Multi-Modal Network

7.0 Multi-Modal Network

7.1 Active Transportation Strategy

Active transportation provides the opportunity to travel in a safe, affordable, and efficient manner, while incorporating physical activity into residents' daily lives and contributing to healthier lifestyles. One of the priorities of the TMP is to encourage the use of sustainable modes of travel, including walking and cycling, through improvements to active transportation infrastructure. The TMP provides an opportunity to create a new and enhanced pedestrian and cycling culture that will support the City's projected growth and encourage shifts to active travel.

The following process was followed in order to develop the recommended pedestrian and cycling facilities:

- Reviewing of the City's existing active transportation facilities, including sidewalks, trails, and multi-use pathways.
- Anticipating future growth and impacts to the transportation network.
- Identifying key locations, such as schools, community centres, employment hubs, commercial areas, and recreational areas.
- Identifying existing and potential future active transportation gaps that could lead to discontinuities.
- Establishing suitable facility types based on traffic volumes, operation, and design speeds that result in acceptable level of comfort for all users.

Based on the process above, the previous 2011 TMP, and County and Provincial planning documents, the recommended improvements to the City's active transportation facilities have been detailed in the subsequent sections.

7.1.1 Cycling Facilities

The majority of the cycling facilities within the City have limited separation for cyclists and vehicles, making the roads uncomfortable for most inexperienced riders. Furthermore, as mentioned earlier, the existing cycling facilities within the City do not meet the standards set forth in the OTM Book 18 and industry best practice. Therefore, it is recommended to rename and upgrade the existing facilities based on the three levels of separation identified in OTM Book 18, which include shared operating space, designated operating space, and physically separated bikeways.

Table 20 provides further details on the description and facility type options for each of the three levels of separation.

Table 20 was considered in combination with the Average Annual Daily Traffic (AADT) and speed limit data for roads within the City, as shown in **Figure 13**, to recommend the cycling facility type in accordance with the standards set in OTM Book 18.

Table 20 Different Levels of Separation for Cycling Facilities

	Shared Operating Space	Designated Operating Space	Physically Separated Bikeways
			
Description	Cyclists are expected to share traffic lanes with motor vehicles, which may be indicated in pavement markings or signage. This scenario is most appropriate on roads with low motor vehicle traffic volumes and speeds.	Space in the road right-of-way is designated exclusively for cycling, but there are no physical barriers separating people cycling from motorists. These facilities are preferred on corridors with relatively low motor vehicle speeds and volumes.	Cyclists ride on dedicated cycling facilities that are separated from motor vehicle traffic by horizontal space and physical barriers. Various kinds of physical barriers can be used ranging from flexible bollards to curbs, concrete barrier walks and guided rails. These facilities should be considered where motor vehicle volumes and speeds are moderate or high.
Facility Type Options	• Shared Roadway • Neighbourhood Bikeway • Advisory Bicycle Lanes	• Bicycle Lanes • Buffered Bicycle Lanes • Contraflow Bicycle Lanes	• Separated Bicycle Lanes • Cycle Tracks • In-boulevard Multi-use Paths

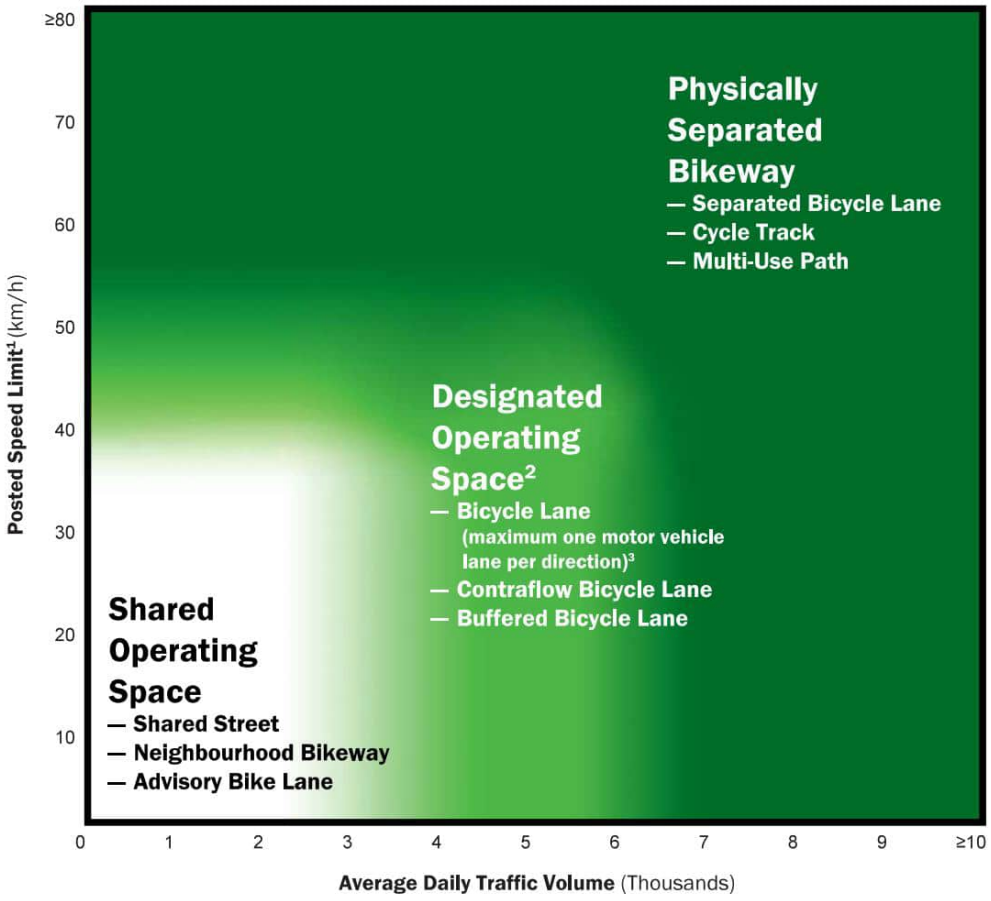


Figure 13 Desirable Cycling Facility Pre-Selection Nomograph Urban/Suburban Context (OTM Book 18)
Source: Ontario Traffic Manual – Book 18

Research shows that one of the most effective measures for improving overall cyclist safety within a road network is increasing the number of cyclists using the system. However, in order to encourage cyclists of different ages and abilities, a variety of bicycle facilities with different degrees of separation between motor vehicles and cyclists must be available. **Table 21** shows the type of cyclists; over 50% fall in the "interested but concerned" category, also known as design cyclists, in which people are open to the idea of cycling but are uncomfortable sharing the street with motor vehicles (except on very low-volume, low-speed neighbourhood streets).

Separation between motor vehicles and cyclists becomes increasingly important as traffic volumes and operating speeds increase (and on corridors with a high propensity for conflicts). The quality and extent of cycling facilities are key factors in determining whether these individuals choose cycling as a viable option for short to moderate length trips. Therefore, the intent is to accommodate the design cyclist group and create a cycling network that is acceptable for cyclists of

all ages and abilities. Furthermore, separate bikeways should be provided wherever possible to ensure the safety of cyclists. By designing facilities to appeal to the design cyclist group, the needs of the other two demographics in **Table 21** are also accommodated, which significantly increases the scale of potential benefits associated with cycling.

Table 21 Type of Cyclists

	DESIGN CYCLIST		
	Interested but Concerned	**Somewhat Confident**	**Highly Confident**
	• Strong preference for separated cycling facilities or very low-volume and low-speed streets • Cycling frequency depends heavily on having a network of low-stress facilities • Can generally negotiate simple low-speed interactions with motor vehicles at intersections	• Comfortable cycling on-street and interacting with moderate-speed traffic • Preference for separated cycling facilities or low-volume and low-speed streets • Cycling frequency increases as network of low-stress facilities expands	• Comfortable cycling on-street and interacting with higher-speed traffic • Preference for cycling facilities that allow for easy overtaking and efficient movement • Cycling frequency not necessarily affected by network
			
% of population	• 51–56%	• 5–9%	• 4–7%
Stress tolerance	• Low	• Moderate	• High
Skill level	• Experience varies • Ability to anticipate and mitigate basic hazards	• Comparatively experienced • Ability to anticipate and mitigate common hazards	• Highly experienced • Well-developed ability to anticipate and mitigate most hazards
Typical demographic profiles	• Age: All* • Gender: any • Ability: includes individuals who may have a disability or are new to cycling	• Age: 18–65+ • Gender: women are under-represented • Ability: individuals with a disability are under-represented	• Age: 18–65+ • Gender: women are under-represented • Ability: individuals with a disability are under-represented
Typical travel speed	• 10–25 km/h	• 15–25 km/h	• 20–35 km/h

Source: Ontario Traffic Manual – Book 18

Most of the roadways within the City which have existing or proposed cycling facilities are in urban or semi-urban environments; however, a few roads classified as rural (according to the City's records) still had considerable residential, commercial, industrial, institutional, or related land uses and were considered as being urban or semi-urban in nature.

The Ministry of Transportation, in partnership with the Ministry of Tourism, Culture, and Sports (MTCS), has completed the Province-Wide Cycling Network Study. The Province-Wide Cycling Network Study is another step in Ontario's efforts to support the growing trend of cycling as a means of transportation, recreation, and tourism. The study is intended to provide a preliminary identification of a province-wide cycling network with high-level recommendations, such as alignment, operation, coordination, and costing aspect for the province, municipalities, and other partners to consider in the future development of the province-wide cycling network.

Within the City, part of the province-wide cycling network is already in place, with a few exceptions that have been proposed as on-road cycling facilities on the following segments:

- Oxford Road 4 from the northern city limit to Pittock Trail, and;
- James Street from Springbank Avenue passing through Hounsfield Street, Main Street and Ingersoll Road to the western city limit.

In addition to these proposed routes, a number of additional cycling routes have been proposed with the purpose of filling in the gaps within the cycling network and connecting key locations. **Map 20** shows the long-term (20+ years) future cycling network for the City of Woodstock.

Generally, there are four types of cycling facilities that are distinguished based on their degree of separation from traffic and placement within the road right-of-way. These facility types and their associated geometric requirements are summarized in **Table 22**.

Table 22 Types of Cycling Facilities and their Requirements per OTM Book 18

Facility	Type	Desired Width	Suggested Minimum Width
Separated Bike Lane	Bike Lanes	• 1.8 m lane • 1.0 m buffer	• 1.5 m lane • 0.5 m buffer
Painted Bike Lane		• 1.8 m lane • 1.2 m buffer (if on-street parking)	• 1.5 m lane • 0.5 m buffer (if on-street parking)
Signed Route		• 4.0 – 4.5 m shared lane	• 3.0 – 4.0 m shared lane

Facility	Type	Desired Width	Suggested Minimum Width
Paved Shoulder	Shared Roadways	• 1.5 – 2.0 m shoulder	• 1.2 m shoulder
Raised Cycle Tracks		• 2.0 m lane • Up to 1.0 m curb	• 1.5 m lane • Up to 1.0 m curb
Multi-Use Path	In-Boulevard Facilities	• 4.0 m two-way operation • Up to 1.0 m curb • 1.5 – 2.5 m buffer (two-way operation)	• 3.0 m two-way operation • Up to 1.0 m curb • 0.6 m buffer (two-way operation)

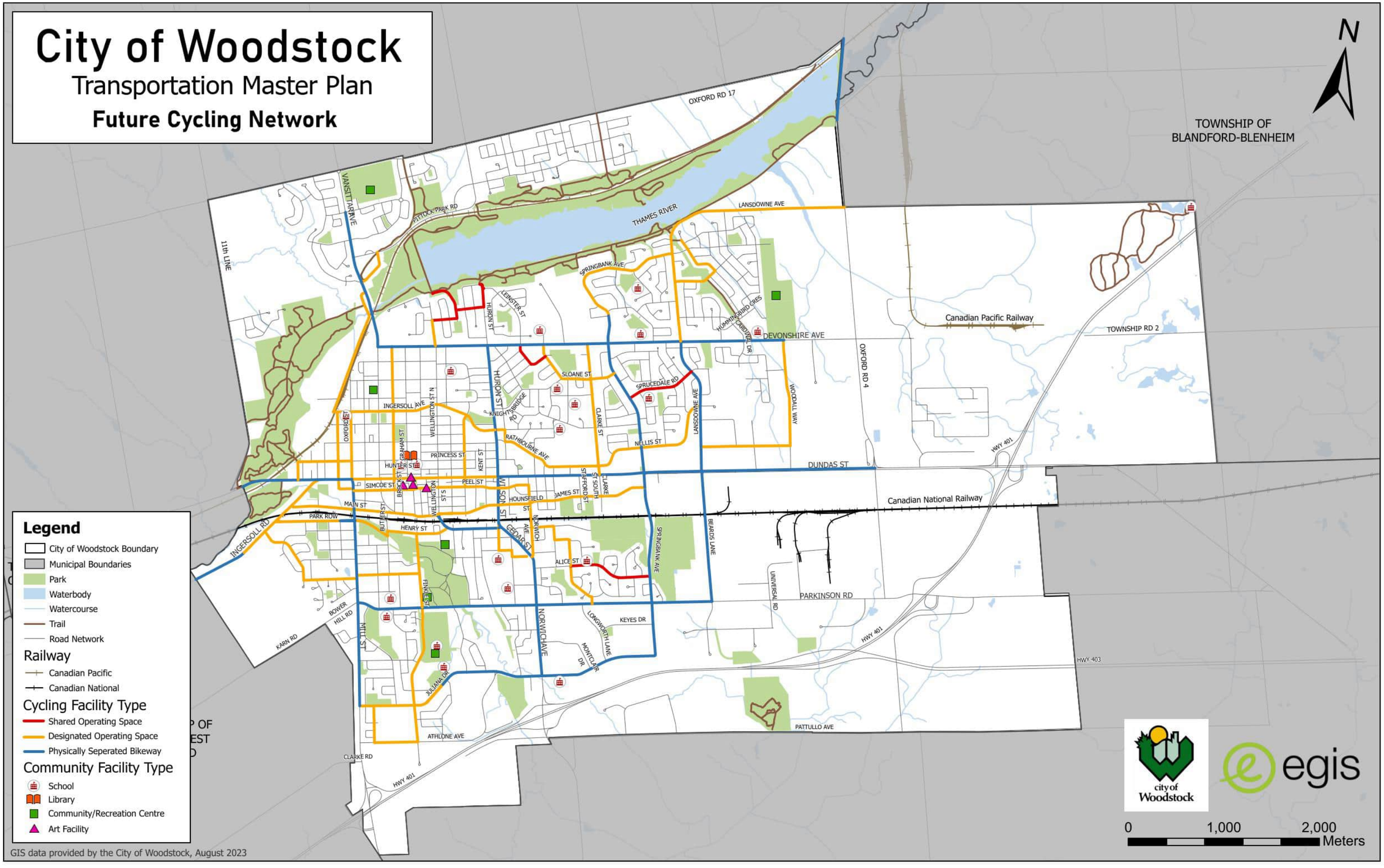
Source: Ontario Traffic Manual – Book 18

When choosing the appropriate facility for roadways with designated on-road cycling facilities where there are sufficiently high traffic volumes and lane widths, the use of conventional bike lanes is recommended. Where traffic volumes and roadway operating speeds are relatively low and lane widths are between 3.25 m and 4.0 m, a signed bicycle route can be considered. For roadways with physically separated bikeways, the use of in-boulevard multi-use paths is recommended. Despite all recommendations provided within this TMP, due process should be conducted in determining the appropriate facility types.

City of Woodstock

Transportation Master Plan

Future Cycling Network



Map 20 Future Long-Term (20+ Years) Cycling Network

7.1.2 Pedestrian Network

Sidewalks are an integral part of the City's infrastructure and provide essential connections within and between neighbourhoods and key destinations. They also serve as an integral part of the City's livability by promoting the health of its residents.

To identify recommended pedestrian facilities, the existing sidewalk network was closely reviewed to identify gaps, particularly near community facilities, along commercial and industrial areas, within the downtown area, and along arterial and collector streets. Input received during the public consultation process was also incorporated. The implementation of sidewalks on County owned roads should be coordinated with the County's implementation plans.

Key pedestrian related recommendations include:

- Sidewalks on Devonshire Avenue between Woodall Way and Oxford Road 4;
- Sidewalks on Woodall Way between Devonshire Avenue and Dundas Street; and
- Sidewalks on Parkinson Road between Brick Pond Lane and Oxford Road 4.

Map 21 provides the recommended future sidewalk network for the City. It should be noted that confirmation of whether sidewalks links are required on one or both sides of the street will be determined during the planning and design of each facility. Furthermore, sidewalks were only recommended on roads where no multi-use pathway was recommended, as multi-use pathways serve both cyclists and pedestrians.

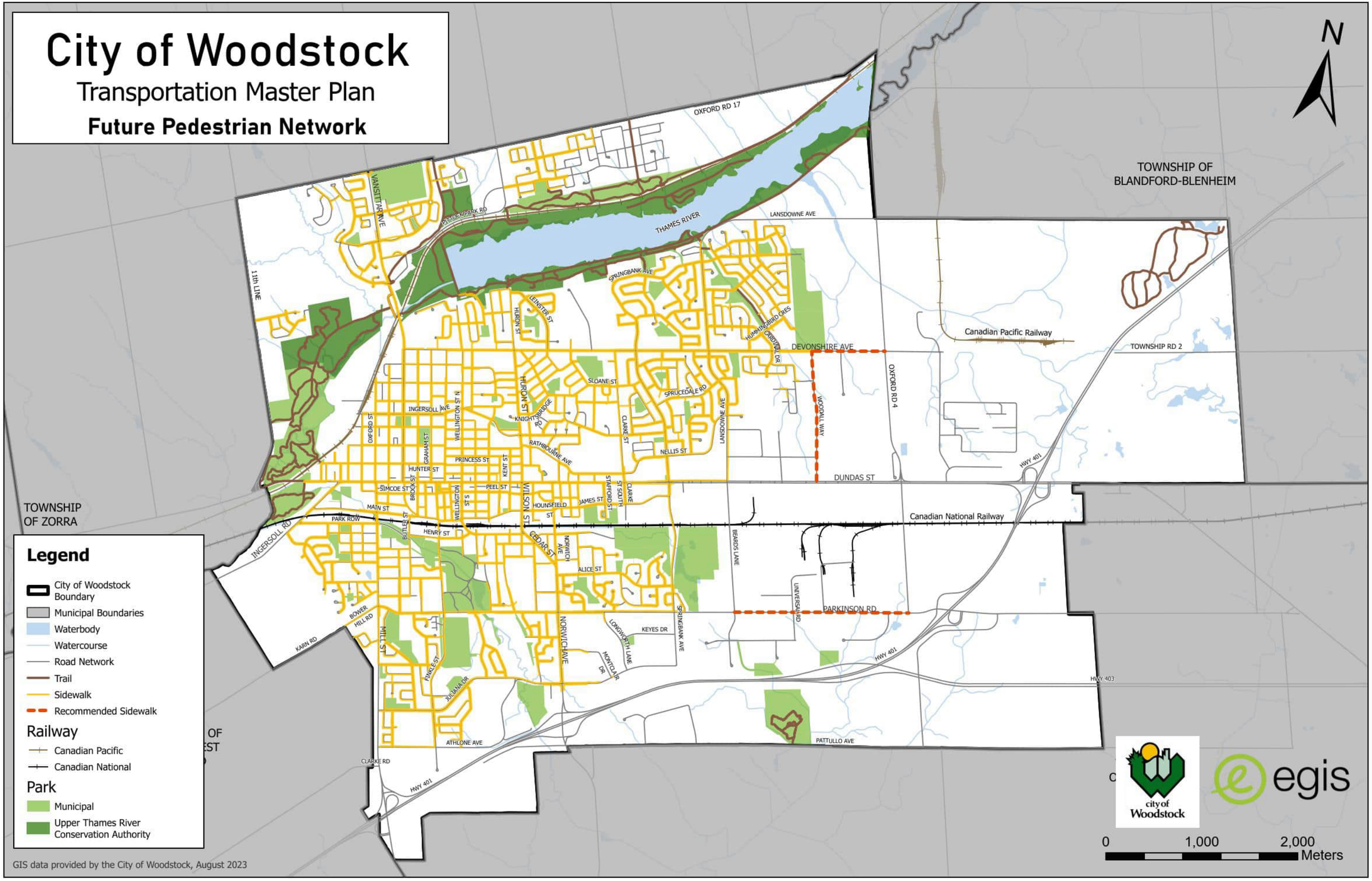
The design of all new or reconstructed sidewalks should meet AODA requirements. Providing 2.0 m of unobstructed sidewalk width is optimal and should be targeted in all contexts if possible. A width of 2.0 m allows wheelchairs to comfortably pass each other or turn around anywhere on the route. If a 2.0 m sidewalk is not feasible, a minimum unobstructed width of 1.8 m is acceptable based on AODA standards. Furthermore, a minimum of 1.5 m unobstructed width may be acceptable, but only in highly constrained locations and in short sections.

Therefore, it is recommended that the City consider an unobstructed sidewalk width of 2.0 m for all new or reconstructed sidewalks and adopt a minimum 1.5 m unobstructed sidewalk width requirement. It is also recommended that the City provide sidewalks on both sides of new or reconstructed collector and arterial roads (and on at least one side of new or reconstructed local roads).

City of Woodstock

Transportation Master Plan

Future Pedestrian Network



Map 21 Future Pedestrian Network

7.2 Transit Network Strategy

Transit is a basic mobility service that provides residents with access to key destinations within the City and beyond. Integrating transit planning into broader economic and land use planning helps to reduce sprawl and creates a sense of community by increasing street presence, which enhances neighbourhood safety and security. A reliable, frequent, and well-connected transit network can also help reduce congestion, travel times, and pollution.

To create more sustainable communities, provide residents with mobility options, and support the forecasted growth, the City needs to engage with T-Go and VIA Rail to enhance viable and accessible transit services for its residents.

One of the largest obstacles for small municipalities to enhance public transit is funding. However, there are certain programs the funding can come from, such as tax rebate programs, federal or provincial grants, as well as municipal investments obtained through property taxes.

A few recommendations have been listed below after consultation with the public and review of the existing transit network:

- Liaise with VIA and T-Go to increase the service hours and frequency to accommodate all-day inter-community and regional travel (seven days a week) and target commuter travel to neighbouring municipalities and the City of Toronto.
- Restructure the transit service to improve access to the VIA Rail Station in order to ensure successful introduction and integration with the rail network.
- Increase local transit service to include Sunday and Statutory Holidays.
- Explore opportunities to partner with neighbouring municipalities and the County to leverage resources, reduce costs, and expand the ridership base to support a wider and more connected transit network.
- Remain committed to supporting commuter and long-distance services provided by VIA.
- Engage Oxford County, VIA, and neighbouring municipalities to support the expansion of existing transit service with emphasis on improving mobility and access between municipalities.
- Look for innovative ways to improve quality of service and increase ridership.
- Improve access to transit by prioritizing pedestrian facilities to transit, ensuring AODA compliance, and ensuring links are prioritized for winter maintenance.

7.3 Road Network Strategy

7.3.1 Road Urbanization

Road urbanization is a critical aspect of transportation planning, aligning infrastructure development with urban growth. As the City continues to grow, a well-designed road network is essential to accommodate increasing traffic volumes, support efficient mobility, and reduce congestion. Therefore, the City intends to urbanize all rural roads within its network, parallel to growth.

Urban road design must consider connectivity, safety, and environmental impact, fostering resilience to future demands. Strategic planning and phased implementation allow for adaptability, ensuring the road infrastructure grows in tandem with urbanization while enhancing the overall quality of life. Therefore, it is recommended that the City adopt a phased approach to urbanize all rural roads listed below and shown in **Map 22**, based on road cross-sections and growth.

- Dundas Street between Springbank Avenue and Oxford Road 4;
- Springbank Avenue between Parkinson Road and Juliana Drive;
- Lansdowne Avenue between Oxford Road 4 and north of Springbank Avenue
- Pittock Park Road between Frederick Street and Oxford Road 17;
- Tecumseh Street between Oxford Street and Vansittart Avenue;
- Athlone Avenue between Mill Street and west of Athlone Place;
- Beards Lane between Dundas Street and Parkinson Road
- Middletown Line between Towerline Road and Pattullo Avenue; and
- Clarke Street between Nellis Street and Warwick Street.

It should be noted that the City has already planned the urbanization of Athlone Avenue between Mill Street and west Athlone Place for 2025; therefore, it was not included as part of the implementation plan for this TMP.

7.3.2 New Roads

Several new roads have been identified in Schedule W-5 of the Oxford County's Official Plan, which include a combination of road extensions, road realignments, and new collector and arterial roads. Furthermore, several new roadways have also been identified as part of new subdivisions. These recommended roads are development-driven, as they will improve access to key areas and link the

new neighbourhoods to the existing transportation network. The construction of future roads and on-road pedestrian and cycling facilities will be phased and coordinated with planned future land uses based on the future land uses and policies of the County's Official Plan.

Table 23 below provides a description of the roadway and **Map 22** shows the future road network, which includes the planned roadways and the recommended road urbanizations.

Table 23 Description of New Roadways

Description of Roadway	Road Classification	Length (km)
East extension of Springbank Avenue	Collector	1.18
New roadway east of Middletown Line	Collector	2.74
New roadway north of Patullo Avenue	Collector	3.33
South extension of Anderson Street	Collector	1.34
East extension of Sprucedale Road to Dunkirk Avenue	Collector	0.68
East extension of Upper Thames Drive	Collector	2.9

7.3.3 Road Reconstruction

There is opportunity for improvements to the existing cross-sections on a number of City roadways. Recommendations for cross-section changes can be made in response to the need for improved traffic capacity, improved operations for different modes of transportation, or as a result of recommended changes (such as road classification changes). In some instances, implementing cross-sections as described in **Section 0** may not be possible on existing roads. In these instances, retrofit options are explored that can be accommodated on the existing road platform. The following identifies a number of recommended reconstruction projects:

7.3.3.1 Two-Way Left Turn Lanes

There are a number of roadways currently (or recommended to be) considered as Arterial roadways that run through residential areas with significant densities of residential private driveways and direct access to the roadway. These roadways accommodate high volumes of traffic; however, the density of accesses significantly increase friction and reduce the overall roadway capacity. In

addition to the capacity concerns, the high density of accesses in combination with high traffic volumes (and wide travel lanes with no provisions for left turning vehicles) results in a higher expected collision frequency.

Many of these roadways are currently comprised of pavement (widths greater than 10.5 m which accommodates two travel lanes and typically an on-street parking lane on one-side of the roadway). Considering the roadways are classified as arterial roadways, on-street parking is generally not recommended. As such, there is opportunity to implement two-way-left-turn lanes (TWLTL) along these roadways within the existing pavement structure by reducing overall lanes widths, appropriate for the design speeds, and removal of on-street parking, as illustrated in **Figure 14**.

The following roads are recommended for a TWLTL:

- Vansittart Avenue from Devonshire Avenue to Dundas Street; however, this would eliminate on-street parking
- Ingersoll Avenue from Oxford Street to Huron Street; however, this would eliminate on-street bike lanes
- Wellington Street from Devonshire Avenue to Dundas Street.

The TWLTL should provide dedicated left turn lanes at all intersection along these segments (where possible).

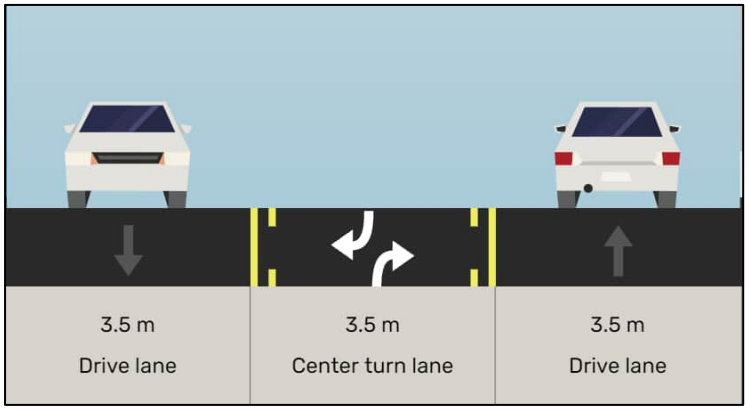


Figure 14 TWLTL on 10.5m Pavement Structure

7.3.3.2 Dundas Street Corridor Review

As part of this TMP, a study of the Dundas Street Corridor was undertaken. Dundas Street, also referred to as County Road 2, is an east-west arterial roadway that runs between the City of London and the Town of Paris, bisecting the City of Woodstock. The study included six intersections between

Springbank Avenue and the Toyota Access located approximately 700 m west of the Highway 401 Terminal. The intersections were all evaluated to determine the existing traffic conditions and the anticipated 2043 horizon year conditions.

It was concluded that the Dundas Street Corridor is absent of active transportation and transit facilities, and by the 2043 horizon year, operation deficiencies are expected at many study intersections. Furthermore, high density accesses, lack of left turn lanes, and poorly defined accesses (typically of rural cross-section) pose geometric and safety concerns. It is recommended to reconstruct Dundas Street with an urban cross-section to include a two-way-left-turn lane, active transportation facilities and consolidation/removal of accesses as much as possible.

A detailed study for the Dundas Corridor is provided in **Appendix M,** which includes information on the existing conditions, capacity and level of service analysis, safety operation recommendations, and geometric and traffic control recommendations.

7.3.3.3 Juliana Drive Corridor Review

As part of this TMP, a study of the Juliana Drive Corridor was undertaken. Juliana Drive is an east-west collector roadway that runs between Mill Street (County Road 12) at the west and Springbank Avenue at the east. It is approximately 3.0 km in length, with 16 intersections along the corridor (including Mill Street and Springbank Avenue). Seven of these intersections were evaluated to determine the existing traffic conditions and the anticipated 2043 horizon year conditions.

It was concluded that, apart from the existing signalized intersection at Norwich Avenue and Juliana Drive, no Juliana Drive intersections meet the provincial warrants for signalization (within the 20-year horizon); however, at its discretion, the road authority may consider other factors (delay, safety, active transportation, connectivity, etc.) in justifying higher-order traffic control devices. Furthermore, by the 2043 horizon year, the intersection of Finkle Street at Juliana Drive could be improved via implementation of dedicated eastbound and westbound left turn lanes and active transportation facilities, such as an in-boulevard multi-use path.

A detailed study for the Juliana Drive Corridor is provided in **Appendix N**, and it includes information on the existing conditions, capacity and level of service analysis, and geometric and traffic control recommendations.

7.3.3.4 Bruin Boulevard Access Realignment

During the analysis for the Juliana Drive corridor, concerns related to the intersection of Juliana Drive at Bruin Boulevard were raised, as it is expected to operate at a Level of Service (LOS) F by 2043. It was recommended to make use of future redevelopment opportunities at the 760 Juliana Drive property to reconfigure Bruin Boulevard, aligning it opposite Lampman Place. Therefore, as

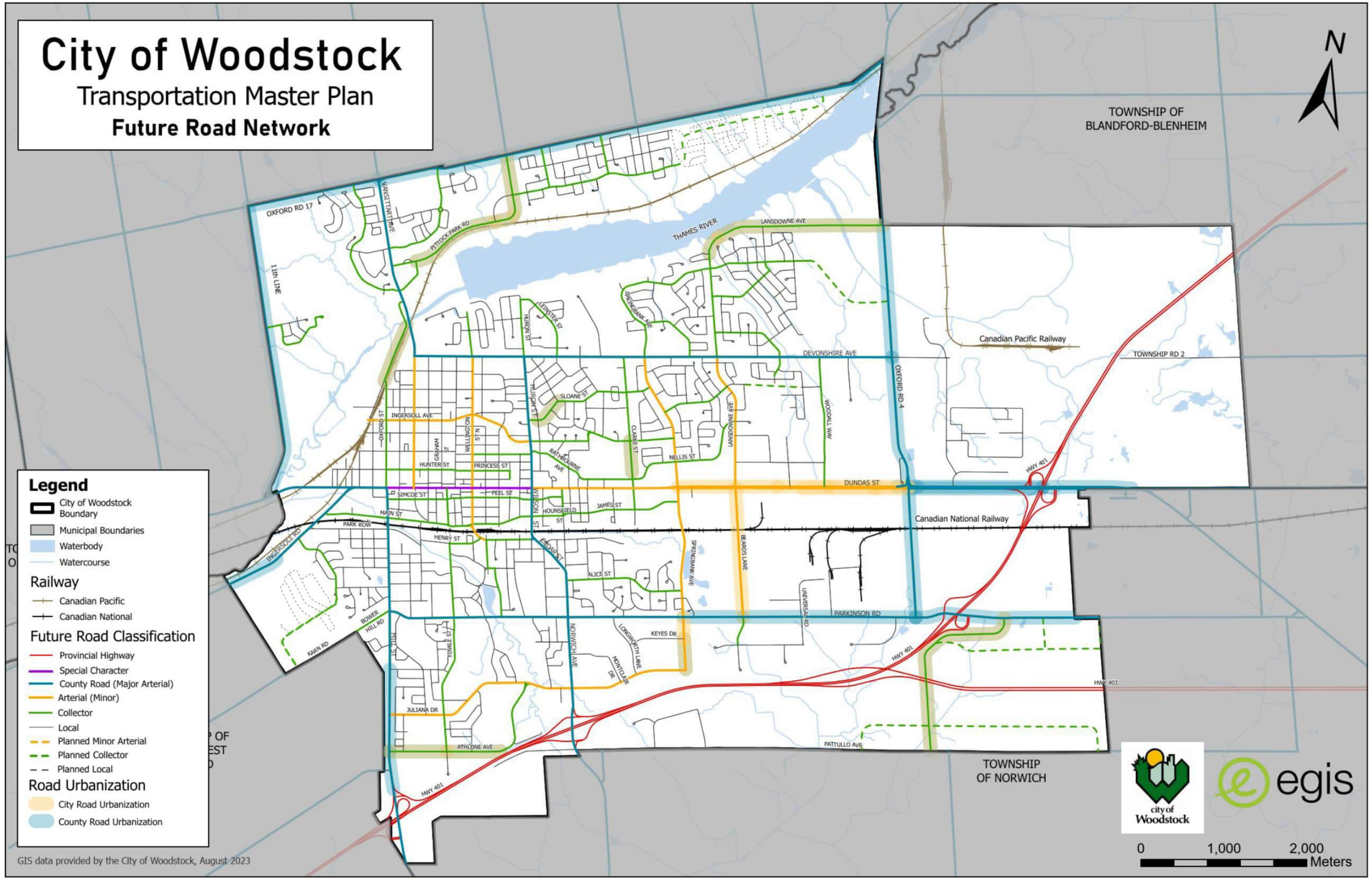
part of the TMP, alternatives related to the Juliana Drive and Bruin Boulevard intersection were assessed, and a preferred solution was identified that will support future traffic demand and development opportunities.

The study area included the area immediately surrounding Bruin Boulevard which was comprised of four intersections. Three alternatives were identified and assessed, which included:

- Alternative 1: Do Northing
- Alternative 2: Do-Minimal
- Alternative 3: Bruin Boulevard Realignment

Following a comprehensive evaluation process, Alternative 3 was recommended because it addresses future development growth and improves access to and from area developments by alleviating capacity constraints and operational deficiencies projected for 2043.

A detailed study for the Bruin Boulevard Access Realignment is provided in **Appendix O**; it includes information on area developments, evaluation of alternatives, and the preferred solution.



Map 22 Future Road Network and Recommended Road Urbanization

8.0 Implementation Plan and Cost

8.0 Implementation Plan and Cost

8.1 Capital Investment

The 2024 TMP update contains important recommendations throughout the document that include a range of physical infrastructure projects and additional studies intended to enhance Woodstock's transportation network and to make the City more resilient to changing travel patterns and growth. However, not all recommendations are required immediately or concurrently, nor is there available capital budget to complete all projects immediately. Based on population and employment forecasts, anticipated level of achievable operational improvements, and a feasible timeline that can be reasonably achieved, the following planning horizons have been set for the proposed improvements:

- Short-Term (within 5 years);
- Medium-Term (6 to 10 years); and
- Long-Term (11 to 20 plus years).

To ensure efficiency of capital investment, projects that involve multiple improvement types at the same location, such as proposed road improvements and new active transportation facilities, should be completed concurrently. This results in a more cost-effective and efficient measure than revisiting the same site to implement incremental improvements over time, which results in greater overall costs.

This Implementation Plan outlines the process for advancing the identified projects within this TMP update. The plan includes high-level descriptions of the projects and low-order conceptual cost estimates. It is important to note that each project identified in the plan must undergo further definition, budget allocation, and approvals before advancing. The Implementation Plan provides the framework for effective and efficient progress of identified projects.

The capital investment required for the recommended projects are intended as conceptual order-of-magnitude cost estimates. These conceptual costs were developed based on the benchmark unit cost assumptions illustrated in **Table 24.** It should be noted that the benchmark costs are exclusive of property acquisition and structural works, which can vary widely from project to project and require specific evaluation.

Budgetary estimates (in 2024 dollars) have been provided for each proposed project. These conceptual costs were developed based on the following unit cost assumptions (based on typical unit costs and recent construction pricing). It should be noted that all cost estimates presented in this report are planning-level budget estimates expressed in 2024 dollars. These estimates are

conceptual in nature and intended for comparative and high-level planning purposes only. They do not reflect detailed design, site-specific conditions, or potential future cost escalations due to inflation, market conditions, or project-specific requirements.

The estimated cost for the City to construct the 20-year build-out of recommended infrastructure projects within the TMP is approximately **$55,360,000** (or **$2,768,000** per year) over the next 20 years. This excludes the cost for development-driven project recommendations. The estimated costs and timings of these infrastructure investments will be further refined through the City's annual capital budgeting process. The following sections will break down the different elements within the total cost estimate.

Table 24 Benchmark Costs

Construction Type	2024 Costs ($ per kM)
Urbanization	$2,500,000 per lane
Reconstruction	$2,000,000
Reconstruction (within existing pavement structure)	$75,000
Widening (2-4 Lanes)	$1,000,000
New Roadway (2-4 Lanes)	$2,400,000
Multi-use Path (3.0 m wide)	$270,000
Sharrows (20 / km)	$4,000
Painted Bike Lanes	$28,000 including buffer
Sidewalks (1.5 – 2.0 m)	$200,000
Traffic Signals	$900,000
PXO	$175,000

8.2 Policies and Studies

Table 25 details the recommended phasing and indicative costs of the transportation policies, studies, and proposed contingency costs for implementing measures anticipated to be an outcome of the respective policies/studies.

Table 25 Recommended Phasing and Indicative Costs of Proposed Policies, Studies, and Implementation

Policy	Consultation Required (YES / NO)	Indicative Cost	Comments
Short-Term (0 – 5 Years)			
Road Classification & Design Standards Special Character Design Guidelines	Yes	$ 0	Assumed to be done in house
Posted Speed Limit Review	No	$ 10,000	Costs contingent on signage requirements
Automated Speed Enforcement Review	No	-	
School and Playground Assessment	No	$ 10,000	Costs associated with contingency for additional signage
Expand Traffic Data collection program	No	-	Utilization of traffic counting devices used for Traffic Calming Policy
Community Safety Zone Implementation	No	$ 10,000	Costs associated with contingency for additional signage
Adopt Traffic Calming Policy and Begin implementing Measures	No	$ 385,000	Assumes $65,000 / year for temporary traffic calming measures + $60,000 for two portable radar traffic counting device (BlackCat, MioVIsion or similar)
Crossing Guard Warrant assessment	No	-	
Adopt All-Way Stop Control Policy	No	$ 25,000	Signage for right-of-way change where required
Adopt Pedestrian Cross-Over Policy and begin assessment / implementation of treatments	No	$ 875,000	Assumes installation of 5 PXOs over five-year period
		Short-Term Total:	**$1,315,000**
Medium-Term (6 – 10 Years)			
Continued Traffic Calming Implementation	No	$ 250,000	Assumes $50,000 / year for temporary and permanent traffic calming measures
Implement 40 km/h neighbourhood zones	No	$ 10,000	Costs associated with contingency for additional signage
Adopt Pedestrian Cross-Over Policy and begin assessment / implementation of treatments	No	$ 525,000	Assumes installation of 3 PXOs over five-year period
		Medium-Term Total:	**$785,000**
Long-Term (10 – 20+ Years)			
Continued Traffic Calming Implementation	No	$ 400,000	Assumes $40,000 / year for temporary and permanent traffic calming measures
Adopt Pedestrian Cross-Over Policy and begin assessment / implementation of treatments	No	$ 525,000	Assumes installation of 3 PXOs over five-year period
		Long-Term Total:	**$925,000**

8.3 Active Transportation Network Implementation Plan

The active transportation network implementation plan consists of three phases:

- Short-Term (0-5 years);
- Medium-Term (6-10 years); and
- Long-Term (10-20+ years).

The implementation considered potential integration with other capital projects, creating north-south and east-west spine cycling routes to connect across the City, urgency of need (e.g. safety, locations, proximity to community facilities), lower-cost projects that can be advanced for quick implementation, and input received from the public. It should be noted that the projects will be categorized as Schedule 'A+' if they fit within the existing right-of-way and may trigger a Schedule 'B' or 'C' project if any deviations to property limits or additional property protection is required. The suggested phasing of the active transportation network, with planning level budget estimates have been detailed in **Table 26** and **Table 27**.

The City's prioritization of new sidewalks and cycling facilities may ultimately be tied to the asset management life cycle of existing roadways. A review of sidewalks in relation to community facilities was conducted and generally, the City has a well-established network of sidewalks surrounding all community facilities; however, if funding is available for the construction of new sidewalks, it is recommended that the sidewalks noted in **Table 26** be prioritized for implementation.

Table 26 Pedestrian Network Implementation Plan and Cost

Road Name	From	To	Length (km)	Cost
Short-Term (0-5 Years)				
Devonshire Avenue	Woodall Way	Oxford Road 4	1.06	$145,000
Woodall Way	Devonshire Avenue	Dundas Street	1.18	$270,000
Long-Term (10 – 20+ Years)				
Parkinson Road	Brick Pond Lane	Oxford Road 4	2.31	$460,000

In terms of cycling network recommendations, the cycling routes shown in **Appendix P** should be prioritized during the short-term, medium-term, and long-term, respectively with the cost breakdown for each segment. These timelines are based on Oxford County TMP recommendations

and utilization that was tracked through Strava, which is an online tracking service that tracks outdoor cycling and running activities. Furthermore, big active transportation generators (such as community facilities) were reviewed to see where gaps exist within the network; safety was also a significant priority, so future areas of growth were also reviewed to ensure that the appropriate active transportation infrastructure is provided in the long-term. It should be noted that implementation for some cycling network facilities will need to be coordinated with the County of Oxford, as some of the infrastructure falls within the County's jurisdiction. It is recommended that, when the County rehabilitates the road, the active transportation facilities proposed on County roads should be implemented simultaneously based on the County's asset management plan.

It is recommended that all shared operating spaces be implemented in the short-term. Furthermore, all existing cycling facilities should be upgraded in the short-term and medium-term (to meet the standards set out in the OTM Book 18 and industry best practice). **Table 27** shows the cycling facilities, their implementation year, and cost.

Table 27 Summary of Cycling Facility Types and their Cost

Facility Type	Key Roads	Total Km	Total Cost	Total Value / Horizon Yr.
Short-Term (0 – 5 Years)				
Shared Operating Space	Alice Street, Sprucedale Road	3.9	$15,000	$5,725,000
Designated Operating Space	Dundas Street, Finkle Street, Lansdowne Avenue, Springbank Avenue, Rathbourne Avenue, Ingersoll Avenue	15	$420,000	
Physically Separated Bikeway	Dundas Street, Springbank Avenue, Lansdowne Avenue	19.6	$5,290,000	
Medium-Term (6 – 10 Years)				
Shared Operating Space	-	0	-	$2,770,000
Designated Operating Space	Finkle Street, Park Row, Henry Street	5.5	$150,000	
Physically Separated Bikeway	Juliana Drive, Springbank Avenue, Wellington Street	9.7	$2,620,000	
Long-Term (10 – 20+ Years)				
Shared Operating Space	-	0	-	$1,710,000

Facility Type	Key Roads	Total Km	Total Cost	Total Value / Horizon Yr.
Designated Operating Space	Finkle Street, Athlone Avenue, Wilson Street, Norwich Avenue, Main Street, Clarke Street	17.7	$495,000	
Physically Separated Bikeway	Beards Lane, Dundas Street	4.5	$1,215,000	

It should be noted that the proposed implementation plan is intended to be used as a guide, with the actual level of priority being dependent on available funding and opportunities. Since the cost of implementing the plan will be lower when undertaken concurrently with other infrastructure projects, the timing and priority of projects may be adjusted to take advantage of the opportunities that arise.

8.4 Road Network Implementation Plan

Table 28 details the recommended phasing and indicative costs of the road network implementation plan, including road urbanization, road reconstruction, and the development of new roadways. It also summarizes future projects within the City that will be development-driven. In summary, the recommended road projects (by planning horizon) total:

- Short-Term: **$5,725,000;**
- Medium-Term: **$24,855,000;** and
- Long-Term: **$29,420,000.**

Furthermore, **$39,260,000** is required for development-driven projects which are mainly new road construction and urbanization.

Table 28 Recommended Phasing and Implementation Cost for Road Network Projects

Project Type	Extent	Length (km)	Costing
Short-Term (0 – 5 Years)			
Urbanization	Springbank Avenue between Parkinson Road and Juliana Drive	0.55	$2,750,000
Urbanization	Clarke Street between Nellis Street and Warwick Street	0.39	$1,950,000
Road Reconstruction (TWLTL)	Vansittart Avenue from Devonshire Avenue to Dundas Street	1.38	$105,000
Road Reconstruction (TWLTL)	Ingersoll Avenue from Oxford Street to Huron Street	1.61	$120,000
Road Realignment	Bruin Boulevard Access Realignment	0.25	$800,000
Medium-Term (6 – 10 Years)			
Urbanization	Pittock Park Road between Frederick Street and Oxford Road 17	1.79	$8,950,000
Urbanization	Tecumseh Street between Oxford Street and Vansittart Avenue	0.62	$3,100,000
Urbanization	Beards Lane between Dundas Street and Parkinson Road	1.34	$6,700,000
Road Reconstruction (TWLTL)	Wellington Street from Devonshire Avenue to Dundas Street	1.37	$105,000
Road Reconstruction	Juliana Drive Corridor Review	3.00	$6,000,000

Project Type	Extent	Length (km)	Costing
Long-Term (10 – 20+ Years)			
Road Reconstruction	Dundas Corridor Review*	3.41	$6,820,000
Urbanization	Dundas Street between Springbank Avenue and Oxford Road 4	2.42	$12,100,000
Urbanization	Lansdowne Avenue between Oxford Road 4 and north of Springbank Avenue	2.10	$10,500,000
Development Driven			
Urbanization	Middletown Line between Towerline Road and Pattullo Avenue	2.01	$10,050,000
New Roadway	East extension of Springbank Avenue	1.18	$2,830,000
New Roadway	New roadway east of Middletown Line	2.74	$6,580,000
New Roadway	New roadway north of Patullo Avenue	3.33	$7,990,000
New Roadway	South extension of Anderson Street	1.34	$3,220,000
New Roadway	East extension of Sprucedale Road to Dunkirk Avenue	0.68	$1,630,000
New Roadway	East extension of Upper Thames Drive	2.90	$6,960,000

*Can be implemented in a phased approach between medium to long-term according to the City's current programming

8.5 Potential Funding Sources

The implementation of the TMP will require significant investment from the City, with additional funding support from contributing partners, including the Federal, Provincial, and Regional governments, as well as other key stakeholders. It is recommended that future investment options be monitored by the City to leverage opportunities and increase funding to implement the various facets of the TMP. The City will have to build a business case for each specific project and go through an application process with the respective funding source stream that is most relevant to the nature of the project. The following section outlines the potential funding sources that can be explored to support the implementation of the TMP. Municipal staff should continue to explore external funding sources to help fund implementation of the proposed transportation network improvements.

8.5.1 Federal Funding

Federal Gas Tax Fund: Provides municipalities with long-term funding for the construction and rehabilitation of public infrastructure, including roads, bridges, public transit, and recreational facilities.

Community Improvement Fund: This fund consists of the Gas Tax Fund and the incremental Goods and Services Tax Rebate for Municipalities. It provides over $32 billion to municipalities across Canada for projects such as roads, public transit, recreational facilities, and other community infrastructure.

Investing in Canada Plan: Starting in 2016, the federal government has committed more than $180 billion over the next 12 years in five main infrastructure priorities, including public transit, green infrastructure, social infrastructure, rural and northern communities, and transportation infrastructure. The program is being delivered by Infrastructure Canada in partnership with other federal departments and agencies, including Natural Resources Canada, the Canada Mortgage and Housing Corporation, Employment and Social Development Canada, and Transport Canada.

Active Transportation Fund, Infrastructure Canada: The first ever Active Transportation Fund is a national, merit-based contribution program intended to support projects that improve active transportation infrastructure across Canada. Announced in March 2021, the Fund will make available $400 million over five years to help build new and expanded networks of pathways, bike lanes, trails, and pedestrian bridges, as well as support of Active Transportation planning and stakeholder engagement activities.

The program offers two funding streams, the first of which is the planning projects stream which involves the development or enhancement of formal active transportation strategic planning

documents or stakeholder engagement funded through grants up to 100% of the eligible costs (to a maximum of $50,000). The second stream is the capital projects stream, which involves new construction, enhancement of existing infrastructure, and/or improvements to design and safety features that encourage active transportation, funded through contributions up to $50 million, with maximum contribution rate between 40-100%, depending on the recipient and project location.

8.5.2 Provincial Funding

Provincial Gas Tax Program: The program provides long-term funding to reduce congestion, support economic growth, and improve the overall quality of life of municipal residents. As part of the program, Ontario currently provides two cents to municipalities for every litre of gasoline sold to help fund local public transit improvements. The Ontario government invested almost $380 million in 2023-24 to help municipalities improve local transit.

Infrastructure Ontario (IO): IO offers a loan program that provides long-term financing to public sector clients to help renew infrastructure. IO loans have been used by several Ontario municipalities to revitalize roads and bridges, build recreational facilities, and improve the overall mobility of municipal residents.

Federation of Canadian Municipalities Green Municipal Fund (GMF): The GMF provides funding for municipal environmental initiatives that improve air, water, and soil, and reduce greenhouse gas emissions. Funding is available to all Canadian municipal governments and their partners for eligible projects.

8.5.3 Regional/Local Funding

Oxford County: Proposed infrastructure improvements located on roads and lands under the jurisdiction of Oxford County should be funded through the County's capital budget and other available funding sources. Capital projects are identified on an annual basis, and they include the construction and rehabilitation of roadway and active transportation projects. Active transportation improvements can be completed at the same time as roadway projects to achieve improved cost efficiencies.

Local: Other sources of funding may include local business donations, local charity events, and development charges.

8.6 TMP Monitoring

A monitoring program will allow the City to track both the progress of implementing the TMP's recommendations and the impact of the TMP on shaping the way people and goods travel within

and through the City. Key performance indicators will help the City determine whether it is making progress towards the vision and objectives of this plan.

The following is a list of key performance indicators that should be tracked on an annual basis, if possible. The one exception is a survey of residents' travel behaviour, which can be collected from the Canadian Census or through Big Data platforms that provide multi-modal information (e.g. StreetLight). Much of the data required to track these metrics are accessible from existing sources (e.g. transit service operators or OPP). In some cases, however, additional data collection may be necessary (e.g. traffic counts). The TMP recognizes that the City may not be able to initiate data collection and monitoring immediately; the aim is to record and measure each indicator and to measure progress on a regular basis.

- Percent of Plans Implemented (AT Network Strengthening Plans)
- Cycling and Pedestrian safety at strategic locations (to assess demand and capacity of MUP network)
- Transit ridership and service hours on local and regional services (e.g. VIA Rail, T-Go, Local Bus Service)
- Collision Incidents (detailed reports on the number of vehicles/pedestrians/cyclists, type of impact, severity, road condition, etc.)

8.7 TMP Updates

The TMP is a living document. As the City of Woodstock evolves and grows, the TMP will need to be updated to reflect the new realities that may not have been contemplated when this plan was being developed. It is recommended that a review of the TMP be conducted at regular intervals to ensure that its underlying assumptions continue to apply. The trajectory of the City over the next two decades has been considered in the development of this TMP. Regularly updating the TMP ensures that it remains relevant and useful in guiding the City up to 2043. The Municipal Class Environmental Assessment process recommends a review of master plans every five years. This review will determine whether there is a need to undertake a formal TMP update.