THE CITY OF Waterloo

TRANSPORTATION MASTER PLAN 2020 UPDATE

VOLUME 1 – FOUNDATIONS

TRANSPORTATION MASTER PLAN UPDATE
LOOKING AHEAD

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2 COMMUNITY AND STAKEHOLDER ENGAGEMENT

2.1 Program Overview

Consultation is a core component of the MCEA process and vital component of a master planning study. The **Engagement Program** for the project offered the public, review agencies, other municipalities and First Nations and Aboriginal Peoples a variety of opportunities to learn about the WTMP and provide input into the development of the long-range transportation strategy for Waterloo.

Through the study, the City was able to inform and educate interested parties about local transportation opportunities and challenges, especially pertaining to active transportation modes. Promoting the environmental, health, equity and sustainability benefits of walking, cycling, and rolling was a fundamental goal of the study.

The engagement program reached over 1,800 people.

The Engagement Program featured a wide range of consultation, outreach, and communication initiatives to involve a broad spectrum of participants. Designed to satisfy MCEA requirements pertaining to future infrastructure projects, the program focussed on the following key messages:

- The City is planning for growth in population and employment within the community;
- The City wants to provide users with a range of safe, efficient, and accessible mobility choices, with an emphasis on promoting active travel; and
- Involving residents, businesses, agencies, and other stakeholders throughout the study would ensure the final plan is pragmatic and meets community needs now and into the future.

Appendix A contains the **Engagement Summary Report**, which provides a synopsis of the consultation approach, outreach methods, engaged stakeholders and program milestones, as well as supporting documentation with the feedback received.

2.2 Notices of Study Initiation and Completion

The WTMP study formally launched on May 2, 2019 with the Notice of Study Commencement published on the City's Engage Waterloo platform [1], in the Waterloo Chronicle and sent to potentially impacted regulatory agencies, known members of the public and relevant First

[1] For the online notice, visit: https://www.engagewr.ca/transportation-master-plan-looking-ahead

Nations representatives per the MCEA. The Project Contact List generated for the distribution of notices was maintained throughout the study.

The City issued the Notice of Completion on June 10, 2021 signifying the conclusion of the study per the MCEA.

2.3 Online Engagement

The following online engagement methods were used to enhance the reach and value of stakeholder engagement for the WTMP study:

- The **project webpage** on the City's Engage Waterloo Platform[2] served as the primary communication portal for the study. The webpage contained all project-related information including engagement materials and pertinent study reports and background documents. Links to the online survey and interactive map were also provided.

- **Email addresses** were provided on the project webpage and in all communication materials for people to contact the team on topics of interest or inquiries about the study.

- **Social media posts** were issued at key junctions in the study to publicize upcoming engagement events, provide information about the study, and improve general awareness about transportation issues in Waterloo. Existing City communication channels (e.g., Twitter, Facebook) were leveraged to reach established followers.

- An **online survey** hosted on Engage Waterloo invited input on current transportation conditions, concerns, needs and expectations in the City. Barriers and motivators to the use of active transportation facilities and services were also explored.

- An **interactive map** hosted on Engage Waterloo allowed respondents to offer location-specific feedback on the transportation system serving the City.

2.4 Phase One Summary

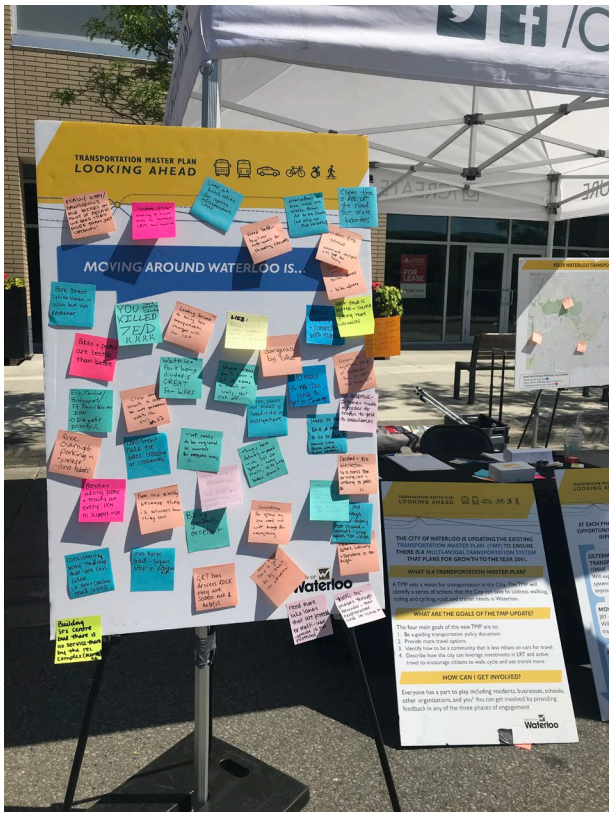
The objectives for the first phase of engagement were to:

- Raise awareness about the project;
- Collect public and stakeholder feedback to contribute to an understanding of existing conditions; and

[2] For the project website, visit: https://www.engagewr.ca/transportation-master-plan-looking-ahead

- Assist in the development of the stakeholder and interested party contact list.

The community had both in-person and digital opportunities to engage and shape the TMP. The following engagement tools were used during Phase One:



- **Pop-up Events** – In-person engagements at key locations and events across the City where participants were asked to share their experiences moving around Waterloo, where they like to go, challenging points on their route, and places that are hard to get to, and were directed to the online survey via postcards.
- **Stakeholder Meeting** – An in-person two-hour session where participants were asked:
  - How has moving around Waterloo changed since the last Transportation Master Plan (in the last 7-8 years)?
  - What are the challenges related to transportation in Waterloo?
  - What are the opportunities related to transportation in Waterloo?
  - What would your ideal transportation system be like for Waterloo?
  - Are there any other things we need to consider?
- **Engage Waterloo (engagewr.ca/waterloo)** – An online project page where visitors were able to ask questions; sign-up for the project mailing list; comment on the project; pin places they like to go, challenging points on their route, and places that are hard to get to on a map; and complete an online survey.

The opportunities above were promoted to the community through a public notice of project commencement, the project e-mail list, and the City's social media channels (Facebook and Twitter).

> **City of Waterloo** @citywaterloo · Jun 19, 2019
> We're updating the city's transportation master plan and your input is important. With Waterloo changing and growing, our transportation system needs to adapt to who we are today and where we want to be in 25 years. Tell us what you think! bit.ly/2IWiv51

Over 826 people were reached through Phase One engagement activities in June and early July of 2019, with a total of 245 active participants. **Table 2.1** summarizes the results of community engagement efforts.

TABLE 2.1: PHASE ONE COMMUNITY ENGAGEMENT SUMMARY

Details	Date (2019)	Number Reached	Number Participated
Pop-Up Events			
Public Works Open House	June 8	65	30
Stork YMCA and Library	June 10	63	20
ION Launch at Conestoga Mall	June 21	24	5
Open Streets Festival	June 22	90	42
Stakeholder Meeting			
RIM Park	June 26	24+	21
Engage Waterloo			
Total Visitors	June 8 – July 7	463	127
Places Tool (Map)	June 8 – July 7	97	23
Comment Section	June 8 – July 7	N/A	2
Online Survey	June 8 – July 5	N/A	102
Total Participants		**826+**	**245**

During this period, several comments were received from the community through the project e-mail address (WaterlooTMP@ptsl.com).

The Phase One Engagement Program also included outreach to three Advisory Committees to City Council. Members of the Study Team attended meetings of the following committees to provide an overview presentation and solicit feedback from members:

- **Waterloo Advisory Committee on Active Transportation (WACAT)**, which advises Council on existing and proposed methods of transportation (June 11, 2019);
- **Grand River Accessibility Advisory Committee (GRAAC)**, which advises seven municipalities within the Region of Waterloo regarding the removal of all levels of barriers per the *Accessibility for Ontarians with Disabilities Act* (June 27, 2019); and
- **Sustainability Advisory Committee (SAC)**, which advises Council on the implementation and promotion of the City's sustainability program and strategy (September 12, 2019).

The following key themes summarize the community feedback collected through the Phase One engagement activities (pop-up events, stakeholder meeting, online survey and project e-mail). Key messages communicated through the Phase One engagement activities include:

- Need to increase safety for pedestrians and make Waterloo more pedestrian friendly (e.g., benches, lighting);
- Interest in pedestrian only streets;
- Lack of consistent signage between adjacent municipalities;
- Desire for more traffic calming throughout City;
- Need to improve and prioritize winter sidewalk maintenance for public safety;
- Need for cycling infrastructure that is safe for adults and children to use during all seasons;
- Request for additional off-road cycling infrastructure;
- Praise for separated pathways, but need better street crossings;
- Mixed feelings about roundabouts;
- Excitement for ION light rail transit (LRT);
- Support for electric vehicles;
- Willingness to leave cars at home and use active transportation modes; and
- Misunderstanding of Regional versus City transportation infrastructure and services.

2.5 Phase Two Summary

The objectives for the second phase of engagement were to:

- Collect public and stakeholder feedback on the draft policy directions; and
- Understand how the implementation of the draft policy directions would impact transportation in Waterloo from the community's perspective.

Community members had both in-person and digital opportunities to engage and provide feedback. The following engagement approaches were used during Phase Two:

- **Stakeholder Meeting** – An in-person two-hour session on March 10, 2020 where participants were asked for feedback on the draft policy direction by theme area and the potential impacts to transportation in Waterloo.
- **Public Information Center** – A two-hour in-person meeting hosted on March 10, 2020. Participants were able to review information on the draft vision and goals and policy directions for the TMP and had opportunities to provide feedback on engagement boards

and feedback forms. If participants were short for time, they were directed to the online survey via postcards.

- **Engage Waterloo (engagewr.ca/waterloo)** – Online project page where visitors were able to ask questions; sign-up for the project mailing list; comment on the project; and complete an online survey.

The opportunities above were promoted to the community through a public notice of project commencement, the project e-mail list, and the City's social media channels (Facebook and Twitter).

Approximately 1033 people were reached from the close of Phase One through to the end of the Phase Two engagement activities, which took place primarily in March of 2020. **Table 2.2** summarizes the participation in community engagement efforts.

TABLE 2.2: PHASE TWO COMMUNITY ENGAGEMENT SUMMARY

Details	Date(s)	Number Reached	Number of Participants
Public Information Centre			
Public Information Centre	March 10, 2020	50+	37
Stakeholder Meeting			
Stakeholder Meeting	March 10, 2020	24+	12
Engage Waterloo			
Total Visitors After Phase One	July 8, 2019 – February 29, 2020	767	13
Comment Posts	July 8, 2019 – February 29, 2020	N/A	13
Total Visitors for Phase Two	March 1 – April 9, 2020	192	54
Comment Posts	March 1 – April 9, 2020	N/A	0
Document Downloads (Open House Boards and Phase One Reports)	March 1 – April 9, 2020	N/A	50
Online Survey	March 1 – April 9, 2020	N/A	4
Total Participants		**1033**	**116**

During this period, comments were received from the community through the project e-mail address (WaterlooTMP@ptsl.com).

The Phase Two Engagement Program also included outreach to two Advisory Committees to City Council. Members of the Study Team attended meetings of the following committees to provide an overview presentation and solicit feedback from members:

- **Waterloo Advisory Committee on Active Transportation (WACAT)** virtual meetings on July 14 and August 11, 2020; and
- **Grand River Accessibility Advisory Committee (GRAAC)** virtual meeting on June 25, 2020.

The following key themes summarize the feedback collected through the Phase Two engagement. The key themes below are organized by the WTMP theme areas.

- Guiding Principles and Strategies:
  - Stated the need to increase communication and education to influence a gradual mode shift and culture change to support more active and sustainable forms of transportation;
  - Identified the need for education to support Vision Zero;
  - Encouraged the City to use the original language and goals for Vision Zero, and to achieve Vision Zero, more enforcement and improved road design is required;
  - Suggested priority locations for complete streets policy implementation;
  - Requested incorporating climate lens in the WTMP to promote a shift towards sustainable development and transportation;
  - Discussed the need for a parking strategy to encourage people to switch to transit. Ideas include modifying the pricing structure, infrastructure to support multi-modal transportation, and better integrating transit and parking;
  - Suggested providing free parking during off-peak hours to accommodate the senior population; and
  - Mentioned involving the universities in transportation projects, increasing carsharing promotion, increasing the number of electric vehicle charging stations and widening multi-use paths for safety.
- Planning and Design
  - Recommended designing the road network to support traffic calming, safety for all users, efficient travel, and modal shift away from automobiles;
  - Suggested the City implement stricter parking policies; and
  - Requested improving connectivity between West Waterloo and Uptown Waterloo and measures to discourage traffic diversion into residential streets are required.

- Operations and Maintenance
  - Identified the need for alignment between the City of Waterloo and City of Kitchener when it comes to winter maintenance of active transportation infrastructure and trail networks;
  - Stated the need for adequate enforcement for snow clearing and prioritizing sidewalks and transit stops;
  - Discussed concerns about the overuse of salt and impact on the natural environment;
  - Supportive of traffic calming and slower speeds, including reducing to 40km/h on residential streets; and
  - Mentioned other maintenance activities, such as pruning street trees and potholes, were missing from the plan.

2.6 City Council

The City of Waterloo Council participated throughout the WTMP study process, receiving updates on project progress, and providing valuable feedback. There were five points of contact with City Council during the study, being:

- Introductory Presentation on June 24, 2019 to provide an overview of the WTMP study. The presentation outlined study goals and objectives, connections to other plans, the work plan, and engagement program;
- Key Themes Workshop on September 9, 2019 to obtain Council input on three key themes of the plan – Complete Streets, Vision Zero, and Active Transportation;
- Update Presentation on July 13, 2020 to present the key directions and proposed recommendations of the WTMP;
- Presentation of Draft Report on January 18, 2021 to receive Council authorization to circulate the draft WTMP for consultation and feedback; and
- Presentation of Final Report on April 19, 2021 to Council for approval.

Through the Key Themes Workshop, Council provided important insight for consideration in updating the WTMP. Council emphasized a need to balance the requirements of pedestrians and cyclists more equally with those of vehicles, indicating current systems are still designed primarily with vehicles in mind. Council also spoke of the desire to have an active and safe city, where all travel modes connect without gaps, where roads are safe for all users, and where people live and care about one another. Recognition that a whole-systems mindset would bring the City into the next iteration of the WTMP. In addition, Council suggested that the WTMP identify solutions to bridge the gap between short-term actions and a longer-term vision, and consider including lighter, quicker options that will demonstrate immediate benefits while working towards longer-term aspirations.

3 PLANNING CONTEXT

3.1 Overview

The WTMP is based on the land use and transportation planning policy context defined by the City of Waterloo, Region of Waterloo, Province of Ontario, and other public agencies, many of which have changed since the 2011 TMP was completed. **Figure 3.1** summarizes the myriad of municipal and provincial plans and policies that have informed the WTMP.

FIGURE 3.1: POLICY FRAMEWORK

Province of Ontario	Region of Waterloo and Other Agencies	City of Waterloo
▸ Provincial Policy Statement ▸ *Places to Grow Act, 2005* and Growth Plan for the Greater Golden Horseshoe ▸ *Accessibility for Ontarians with Disabilities Act* ▸ Metrolinx 2041 Regional Transportation Plan ▸ MTO Transit Supportive Guidelines ▸ #CycleON ▸ Ontario Trails Strategy	▸ Region of Waterloo Official Plan ▸ Region of Waterloo Transportation Master Plan ▸ Walk Cycle Waterloo Region	▸ City of Waterloo Official Plan ▸ City of Waterloo Strategic Plan ▸ City of Waterloo Transportation Master Plan (2011) ▸ Northdale Land Use and Community Improvement Plan Study ▸ Uptown Public Realm Strategy ▸ Rapid Transit Station Area Plans

3.2 Province of Ontario

Provincial plans set the framework for growth and development in Ontario, with municipalities required to implement their direction in planning. The WTMP addresses the requirements and actions set out in the following plans and incorporates any of the planned Provincial transportation initiatives:

3.2.1 Provincial Policy Statement (2020)

Ontario's Provincial Policy Statement (PPS) provides policy direction matters of provincial interest related to land use planning and development, including transportation facilities. The

Planning Act requires that all planning decisions "shall be consistent with" the PPS. With respect to infrastructure and public service facilities, the PPS policies indicates municipalities should:

- Provide infrastructure and public service facilities in a coordinated, efficient, and cost-effective manner, considering climate change impacts while accommodating projected growth;
- Coordinate and integrate with land use planning to ensure financial viability and ability to meet current and projected needs;
- Promote green infrastructure in complement with infrastructure;
- Consider optimization and adaptive re-use of current infrastructure and public service facilities before developing new;
- Strategically locate to support effective and efficient delivery of emergency management systems, and to ensure the protection of public health and safety; and
- Co-locate public service facilities in community hubs to promote cost-effectiveness, facility service integration and access to transit and active transportation.

Furthermore, the PPS sets out Transportation Systems policies which focus on the movement of people and goods through a safe and energy efficient transportation system, and promotes a multimodal transportation system, which includes transit and active transportation. This direction is supported through compact, mixed land uses and transportation demand management initiatives that minimize the length and amount of required motor vehicle trips.

Finally, with respect to transportation and infrastructure corridors, the PPS directs municipalities to:

- Plan and protect corridors and rights-of-way for transportation, transit, and infrastructure facilities to meet current and projected needs;
- Provide long-term protection for major goods movement facilities;
- Restrict development in planned corridors that could preclude or negatively affect the use of the corridor for the purpose(s) for which it was identified;
- Encourage preservation and reuse of abandoned corridors for purposes that maintain the corridor's integrity and continuous linear characteristics;
- Promote the co-location of linear infrastructure where appropriate; and
- Consider the environmental impacts when planning for corridors and rights-of-way for significant transportation infrastructure facilities.

3.2.2 Places to Grow Act and A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019)

The Growth Plan is a provincial growth management plan that articulates a long-term strategic vision and tools for how the Greater Golden Horseshoe and surrounding areas should grow over the next 20 years. The Plan was developed to guide planning decisions in a way that will promote economic development and strong communities. The Plan directs municipalities to optimize the use of existing and new infrastructure to support growth, as well as coordinate infrastructure planning, land use planning and infrastructure investment to implement the Growth Plan.

Many policies in the Growth Plan deal with planning for transportation infrastructure, with emphasis on encouraging municipalities to plan for transportation systems that are adequate for the level of anticipated growth, reduce reliance on the automobile, offer multi-modal access to destinations, provide safety for users, and are sustainable, interconnected and planned for in a coordinated manner. The Growth Plan also mirrors policies found in the PPS with respect to transportation corridors.

The Growth Plan also focuses heavily on planning for transit service levels that support higher density areas (such as the Uptown Waterloo Urban Growth Centre, *Major Transit Station Areas*), and increasing the modal share of transit. Further, municipalities are directed to integrate pedestrian and bicycle networks into transportation planning for both existing and new communities.

The Growth Plan contains a series of policies regarding community infrastructure. These policies provide direction for community infrastructure planning, land use planning and community infrastructure investment to be coordinated, to use such community infrastructure efficiently, and to plan for an appropriate range of community infrastructure to accommodate population changes.

3.2.3 Accessibility for Ontarians with Disabilities Act (2005)

The *Accessibility for Ontarians with Disabilities Act, 2005* (AODA) was enacted for the purpose of improving accessibility standards for Ontarians by 2025. The AODA outlines mandatory standards for private, public, and non-profit sectors to remove barriers and ensure equitable access for all individuals with disabilities. Ontario Regulation 191/11 under the AODA establishes accessibility standards to apply when planning, designing, and building transportation facilities, which is an integral part of the WTMP.

3.2.4 2041 Regional Transportation Plan for the Greater Toronto and Hamilton Area (2017)

The 2041 Regional Transportation Plan – the 2041 RTP - is about providing even more people with access to fast, frequent and reliable transit, and making it easier for travellers to use transit, or travel by bike or on foot. The 2041 RTP guides the continuing transformation of the transportation system in the Greater Toronto and Hamilton Area (GTHA) and the Region of Waterloo. It is the blueprint for an integrated multimodal regional transportation system that puts the traveller's needs first.

Developed in partnership with municipal partners and many others, the 2041 RTP builds on the successes of The Big Move (2008), the first regional transportation plan for the GTHA. It presents a vision for the future, and sets out creating strong connections, complete travel experiences, and sustainable and healthy communities as the 2041 RTP's three goals. To achieve this vision and these three goals, the 2041 RTP outlines five strategies:

- Complete the delivery of current regional transit projects;
- Connect more of the region with frequent rapid transit;
- Optimize the transportation system;
- Integrate transportation and land use; and
- Prepare for an uncertain future.

With a view to reducing traffic congestion, improving air quality and supporting economic viability, the 2041 RTP provides a framework for the development of the TMP that considers all modes of transportation, promotes integration of local and regional public transit, and promotes transit-oriented development. The 2041 RTP includes improvements that will benefit mobility in Waterloo, specifically the action to strengthen connections between the GTHA and the Region of Waterloo, to support the economic prosperity of the GGH and the growth of one of North America's largest technology clusters.

3.2.5 Ministry of Transportation Transit Supportive Guidelines (2012)

The Province's Transit Supportive Guidelines promote transit-oriented planning and design throughout the province based on transit-friendly land use planning, urban design, and operational best practices. The aim is to assist practitioners in creating environments that are supportive of transit and develop services and programs to increase transit ridership in communities over time. The document is structured into four key chapters with strategies applicable to all community scales including:

- Community-Wide Guidelines to create transit-supportive communities through a range of higher-level planning strategies:

- District-Level and Site-Specific Guidelines detailing design guidelines relating to streets, buildings infrastructure, and unique uses:
- Transit Improvement Guidelines noting transit improvement programs, innovations and services that can help to increase transit ridership; and
- Implementation tools that can be used to achieve the principles and guidelines within the document.

3.2.6 #CycleON Ontario's Cycling Strategy (2013)

#CycleON: Ontario's Cycling Strategy is the province's 20-year plan designed to encourage the growth of cycling and improve the safety of people who cycle across the province. The Strategy's Vision is to have cycling in Ontario recognized, respected, and valued as a core mode of transportation that provides individuals and communities with health, economic, environmental, social, and other benefits by 2033. Achieving the Strategy's Vision requires a commitment from all partners for integrated action to:

- Design healthy, active, and prosperous communities;
- Improve cycling infrastructure;
- Make highways and streets safer;
- Promote cycling awareness and behavioural shifts; and
- Increase cycling tourism in Ontario.

3.2.7 Ontario Trails Strategy (2005)

The Ontario Trails Strategy is a long-term plan that establishes strategic directions for planning, managing, promoting, and using trails in Ontario. The Strategy recognizes trails as key economic and tourism assets for Ontario communities that, in addition to their economic benefits, bring important health benefits and contribute to a high quality of life. With a Vision to develop a world-class system of diversified trails, planned and used in an environmentally responsible manner, that enhances the health and prosperity of all Ontarians, the Strategy focuses on:

- Improving collaboration among stakeholders;
- Enhancing the sustainability of Ontario's trails;
- Enhancing the trail experience;
- Educating Ontarians about trails; and
- Fostering better health and a strong economy through trails.

3.3 Region of Waterloo

The following documents set the vision and framework for land use and transportation planning in the Region of Waterloo. As an area municipality within the Region, the City's policies and actions should align and, in some case, must comply with the upper-tier plans. In this regard, the WTMP has incorporated the transportation goals and actions detailed in the plans below, including initiatives these documents identify the City to lead:

3.3.1 Region of Waterloo Official Plan

The Regional Official Plan (Plan) is the Regional Municipality of Waterloo's guiding document for directing growth and change for the next 20 years. The Plan represents a fundamental shift in shaping Waterloo Region towards a more balanced community structure, building from a strong, long standing planning policy framework that has supported substantial historical growth and change. The Plan lays out the Region's policies for achieving key physical, transportation, environmental, social, and economic objectives.

The vision of the Plan is that "*Waterloo Region will be an inclusive, thriving, and sustainable community committed to maintaining harmony between rural and urban areas and fostering opportunities for current and future generations".* With respect to infrastructure the Region's overall goal is to undertake infrastructure planning, development and asset management which optimizes the use of existing infrastructure, accommodates forecast growth, and promotes sustainability and a healthy population.

The transportation system policies seek to improve connectivity among transportation modes for the efficient movement of people and goods. The Region's transit system is a specific focus because of the strong link between land use and transportation planning, and the fact that the Region is the municipal transit authority. The transportation policies emphasize the need for collaboration between the Region and Area Municipalities when planning the transportation system.

3.3.2 Region of Waterloo Transportation Master Plan (2018)

Moving Forward is the 2018 Transportation Master Plan Update (RTMP) for the Region of Waterloo. It is a strategic document that outlines the needs for active transportation (cycling and walking), public transit, and Regional roads to the year 2041. The TMP includes a series of Regional policies to encourage and shape sustainable travel and economic growth, to support land-use planning, and to support the Region as "a community where people matter and ideas grow."

Four overall goals for the plan were carried forward from the 2010 RTMP, being:

- Promote travel choice;

- Foster a strong economy;
- Support sustainable development; and
- Optimize the transportation system.

Five broad strategies were developed to achieve the RTMP's goals, each serving as an "umbrella" policy under which various actions should be undertaken:

- Build a transportation network that supports all modes of travel;
- Promote a healthy community;
- Develop a frequent transit network;
- Enhance inter-regional connections; and
- Position the network for new mobility.

The RTMP is an important foundational document for the City's Transportation Master Plan update. The plan provides important background information and forms a basis for elements of the policy direction, network plans and infrastructure improvements to be captured in the WTMP.

3.3.3 Walk Cycle Waterloo Region (2014)

Walk Cycle Waterloo Region is the Region of Waterloo's plan for making it easier to walk and cycle in the community. By promoting and integrating active forms of transportation, Walk Cycle Waterloo Region will help to achieve the Region's "Vision for a Sustainable and Liveable Waterloo Region" articulated in the Regional Official Plan.

Walk Cycle Waterloo Region looks at the people who live, work, study and play in the Region and considers where there is the potential for them to choose walking and cycling for short trips. The walking and cycling networks and supportive policies developed in the plan are designed to encourage cycling and walking. It consists of five Action Plans, plus new policy directions and a design guide intended to help the Region of Waterloo achieve the vision and goal of increasing the PM peak hour mode share for walking and cycling trips to 12% by 2031. The recommendations include a:

- Network Action Plan;
- Strategic Signage Action Plan;
- Winter Network Action Plan;
- Behavioural Shift Action Plan; and a
- Performance Monitoring Action Plan.

3.4 City of Waterloo

The City's Strategic Plan and Official Plan provide the foundation for the WTMP. In turn, the WTMP supports these guiding documents by providing a framework to implement their transportation goals and actions. Other City strategies, initiatives, projects, and studies also influenced the WTMP, with relevant elements and actions emanating from these documents incorporated into the plan, as follows:

3.4.1 City of Waterloo Strategic Plan (2019 – 2022)

The City of Waterloo Strategic Plan serves as a community strategic plan that reflects the goals and priorities of the community, as well as a corporate strategy that serves to guide how it will operate and deliver its services. The Strategic Plan outlines the framework and the steps that will be undertaken over the next four years to put conditions in place to realize the City's vision: *"Waterloo is an equitable community that leads the world in learning, discovery and caring."*

The Strategic Plan outlines six strategic pillars or areas of focus that comprise the plan, guided by the principles of equity and inclusion, sustainability, fiscal responsibility, healthy and safe workplace, effective engagement, personal leadership, and service excellence:

- Equity, inclusion, and a sense of belonging;
- Sustainability and the environment;
- Safe, sustainable transportation;
- Healthy community and resilient neighbourhoods;
- Infrastructure renewal; and
- Economic growth and development.

3.4.2 City of Waterloo Official Plan

The Official Plan is the primary long-range, comprehensive municipal planning document that outlines a framework for land use decision-making for the City of Waterloo. The Plan sets a broad, coordinated vision for all lands within the City, and supports the overall goal of achieving a healthy community built on the principles of diversity and adaptability, accessibility and equity, connectivity, health, and vitality. Section 2.3 of the Plan outlines the following network and transportation trends and factors that are considered to have a significant influence on the land use policies and designations of the Plan:

- Encourage active transportation as an alternative to the automobile;
- Plan for and support a shift in focus from providing roads to move cars, to providing streets where people can interact and travel on, whether by foot, bicycle, transit or other motorized vehicle;

- Support and contribute to the success of the public transit system;
- Continue to provide bicycle and vehicular parking that meets community needs while balancing needs of motorists and active transportation users; and
- Plan for trails and open space networks and supporting facilities that are interconnected and service transportation functions.

Achieving a healthy and livable City and a transportation system that is sustainable into the future will require placing increased emphasis on efficiently and sustainably moving people – managing travel in order to reduce reliance on the automobile in favour of transit and more active forms of movement such as walking and cycling. Chapter 6 of the Plan outlines the following key areas of focus when planning for the most efficient use of new and existing networks that support the transportation system:

- Ensuring compact, mixed-use land use patterns, providing people with the opportunity to live close to where they are working, learning, shopping, and playing;
- Planning for a comprehensive, multi-modal, well-connected transportation system that offers safe and convenient alternatives to automobile travel;
- Planning for safe and convenient pedestrian and cyclist movement, giving priority to these travel modes in the planning, design, and operation of the City's networks (road and trails/open space) as well as in the design of sites and buildings;
- Increasing the proportion of trips made by transit travel by planning for a more compact, mixed-use City form that supports a comprehensive and efficient transit system, including rapid transit; and
- Planning for the provision of appropriate bicycle and vehicular parking, balancing the desire for convenience with the desire to reduce automobile reliance.

3.4.3 Northdale Land Use and Community Improvement Plan Study – Urban Design and Built Form Guidelines (2012)

The City's Official Plan provides special design policies for several land use designations and the general urban design policy section. The Northdale Land Use and Community Improvement Plan (CIP) Study Official Plan Amendment provides supplemental design guidelines for the Northdale neighbourhood. The Official Plan provides policies that support a high standard of urban design for both public and private projects that contribute to an attractive and liveable City. The policies are further augmented with the City's Urban Design Manual, that provide more detailed guidelines for urban design, built form and landscaping.

The Northdale neighbourhood will develop incrementally with a more consistent built form and streetscape pattern. The Guidelines provide guidance to facilitate intensification in the Northdale neighbourhood with emphasis on a compact, sustainable, mixed use built form that

promotes active transportation, transit-oriented development, vital main streets and social neighbourhoods.

The purpose of the Northdale Urban Design Guidelines is to:

- Foster design excellence in the Northdale neighbourhood;
- Implement the Northdale Land Use and Community Improvement Plan Study Official Plan Amendment recommendations;
- Implement the City's Urban Design policies established in the Official Plan;
- Incrementally implement the vision for the Northdale neighbourhood;
- Provide specific built form, landscape and sustainable site and building design guidelines to assist Council in achieving the vision and principles established for Northdale;
- Provide eligibility criteria for the CIP's Financial Incentive Programs, with respect to design and sustainable development;
- Provide the City with a tool for the review and evaluation of development applications and financial incentive programs and supporting materials; and
- Provide supporting strategies for development implementation.

3.4.4 Uptown Public Realm Strategy (2019)

The City of Waterloo's Uptown Public Realm Strategy (UPRS) documents the study, engagement, visioning, and strategizing for the public realm of the civic, commercial, and cultural heart of Waterloo. The vision for Waterloo's Uptown is to create a truly accessible, walkable, bikeable and transit supportive community with a high-quality public realm. The UPRS strives to seamlessly integrate a network of public and private parks and spaces to serve as nodes of dynamic public life.

The UPRS organizes the proposed improvements to Uptown into goals and actions based on five public realm systems: Parks and Open Space, Connectivity; Urban Form, Heritage and Public Art and Culture. Furthermore, the public consultation process found reoccurring patterns, ideas, and desire lines, which led to the development of three Priority Initiatives:

- **Laurel Greenway**, to transform the Laurel Trail into a linear park, characterized by open space, dense trees, attractive landscape, the Laurel Creek, and the multi-use Laurel Trail. With the new ION LRT station at its centre and the established Waterloo Park to the West, the greenway creates a connected linear park and a swath of greenspace through the middle of Uptown.
- **Civic Common**, formed by Brewmeister's Green and Heritage Green marking the location of the original town square, and a new public space enhancing the Regional Waterworks site. The wider Civic District contains City and Region administrative

buildings. These elements create a district of civic importance and symbol of civic pride. Improved streetscapes connect the spaces and tie the district to Allen Street LRT station which acts as the entrance to the Civic District.

- **Willis Way**, an active and attractive commercial street in Uptown. This street provides an east west connection in the middle of Uptown connecting to Barrel Warehouse Park to the west, Waterloo Cenotaph Park to the east, with the Public Square and the Public Square LRT Station in the middle.

These initiatives — the Laurel Greenway, the Civic Common, and Willis Way — will have maximum impact on the overall quality of Uptown's public realm and unite various goals across the five systems.

3.4.5 Rapid Transit Station Area Plans

The introduction of Light Rail Transit (LRT) through the heart of the City of Waterloo will connect significant employment lands, two major universities, Conestoga Mall, Waterloo Park, and several residential neighbourhoods. Introduction of the ION stations presents a tremendous opportunity to improve mobility, support placemaking, and create a series of vibrant, mixed-use communities along the corridor.

Eight of the Region's new LRT stops will fall within the City of Waterloo. The City has identified five for the development of more detailed "Station Area Plans". These areas generally include the lands within reasonable walking distance of the following stations: Laurier-Waterloo Park, University of Waterloo, Research and Technology, Northfield, and Conestoga.

The Station Area Plans will help guide change to capitalize on the opportunity of the LRT investment. The plans define a vision for the areas around the LRT stations and provide policy and design direction to guide development and public realm improvements to create a series of vibrant, attractive places to live, work, play and study.

The five Station Area Plans aim to:

- Encourage intensification around the future ION stations to increase transit ridership, encourage walking and cycling, and make more efficient use of the City's infrastructure and services;
- Promote community-building to support the unique character of each of the station areas and create attractive places for working, living, learning and recreation;
- Stimulate new investment and promote economic development by encouraging job growth and commercial vitality;
- Support placemaking through public realm improvements, public art, new open spaces, and enhanced amenity; and

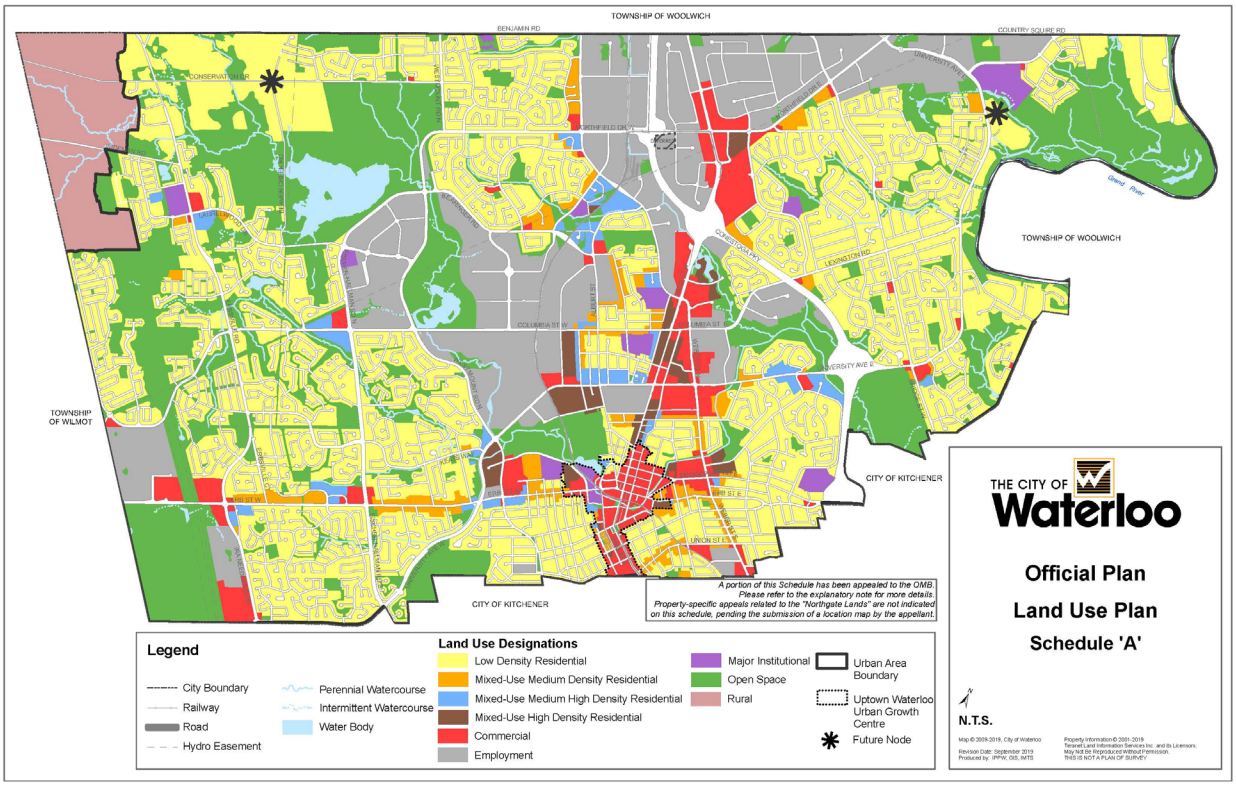
- Create the basis for regulatory amendments, including updates to the Official Plan, Zoning By-law, and urban design guidelines.

4 EXISTING ENVIRONMENT

4.1 Geographic Setting

The City of Waterloo is bordered by the Township of Woolwich to the north and east, City of Kitchener to the south and Township of Wilmot to the west. **Figure 4.1** details the City's land use plan, indicating the majority of Waterloo is built-up, predominantly with low-rise residential or employment areas. A more compact urban form is shown within the Uptown Waterloo Urban Growth Centre and along key corridors. Overall, there is limited open space and rural areas in the City, located mainly at the borders with the surrounding Townships.

FIGURE 4.1: LAND USE PLAN
(Source: City of Waterloo Official Plan[3])



[3] For the current version, visit: https://www.waterloo.ca/en/government/resources/Documents/Cityadministration/Official-plan/2020/OP-Schedule-A1-Commercial-Land-Uses.pdf

4.2 Natural Features

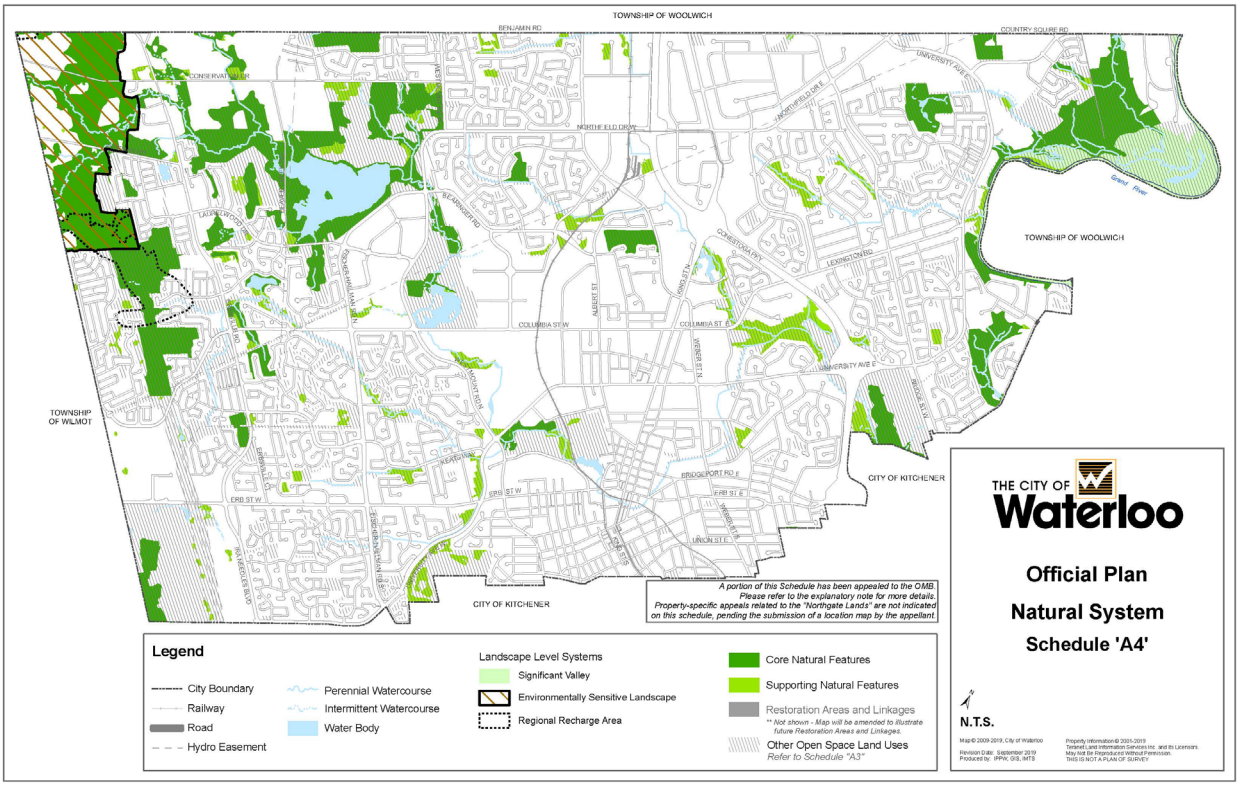
The social, environmental, and economic health of a community is directly linked to and influenced by the quality of its natural environment. Comprised of diverse landscapes and habitats, Waterloo's Natural System contributes to the character of the City and to the quality of life of its residents. The Natural System is important for its natural features and ecological functions, its natural resources, and its scientific, recreational, and therapeutic values. It is also a living system, involving plants, animals, and humans, and is therefore continuously evolving. The Natural System is preserved and protected through numerous policies and regulations, including the City of Waterloo Official Plan, Region of Waterloo Official Plan and other natural heritage plans and watershed studies. The goal of these framework documents is to provide long-term and sustainable environmental, economic, and social benefits for the community.

Figure 4.2 illustrates the Natural System identified in the City's Official Plan, which includes:

- Landscape Level Systems – Macroscale natural features or significant concentrations of natural features;
- Core Natural Features – Key habitat for native flora and fauna, representing the most significant elements of the regional landscape;
- Supporting Natural Features – Ecological communities and habitats considered significant at the local level that play an important role in maintaining ecological functions;
- Fish Habitat – Areas that supply fish with their life cycle requirements for food, shelter, reproduction, and movement;
- Restoration Areas – Lands that have the potential to be enhanced or restored to a natural state; and
- Linkages – Areas that provide connectivity, allowing for the movement of plants and animals.

FIGURE 4.2: NATURAL SYSTEM

(Source: City of Waterloo Official Plan[4])



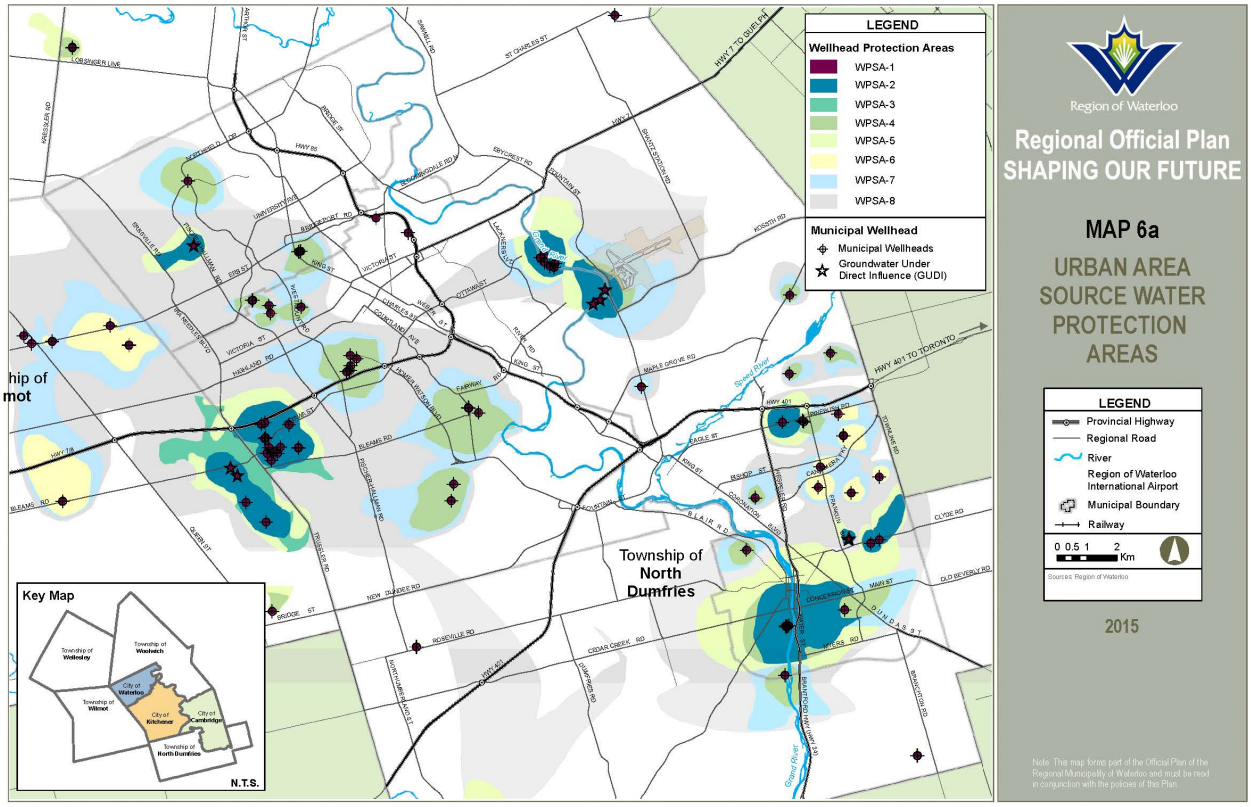
Each element of the Natural System has unique functions and attributes, in addition to different levels of significance and sensitivity, which together dictate appropriate land use, development intensity, and human use.

With its location adjacent to the Grand River, the City and surrounding area also features several significant groundwater sources subject to the provisions of the *Clean Water Act*, 2006. The purpose of the Act is to protect sources of municipal drinking water including lakes, rivers and well water. Pursuant to the legislation, local Source Protection Plans (SPPs) have been developed, containing policies to protect municipal sources of drinking water. The SPPs identify vulnerable areas including Wellhead Protection Areas (WHPAs), Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based areas (EBAs), and Issues Contributing Areas (ICAs).

[4] For the current version, visit: https://www.waterloo.ca/en/government/resources/Documents/Cityadministration/Official-plan/2020/OP-Schedule-A4-Natural-System.pdf

Figure 4.3 details the source water protection areas in Waterloo. There are three wells located into Waterloo, as well as one Groundwater Under Direct Influence (GUDI) protection area. The figure indicates about half of the City is identified as a wellhead protection area.

FIGURE 4.3: WELLHEAD PROTECTION AREAS
(Source: Region of Waterloo Official Plan[5])



The projects identified in the WTMP are subject to the applicable policies outlined in the Grand River Source Protection Plan. For any project specific environmental assessments completed for Schedule B and C projects identified in the WTMP, the Project File reports/Environmental Study Reports will have to identify and describe the specific source protection policies that apply to those undertakings.

4.3 Cultural Heritage

Heritage makes cities more interesting and appealing places to live. Historic places reveal important information about past social structures, political movements, architectural styles, craftsmanship, and local traditions. Newer places may hold special meaning because they

[5] For the current version, visit: https://www.regionofwaterloo.ca/en/resources/Regional-Official-Plan/Map_6a_-_Wellhead_Protection_Sensitivity_Areas-access.pdf

support emerging cultural practices, contemporary architecture and design, or scientific/technological innovation.

Heritage places come in all shapes and sizes. While most people recognize and appreciate individual historic buildings, larger landscapes containing multiple buildings, structures and/or natural features can also serve as important heritage places. These places are important because people attach memories, stories, and value to them. By conserving significant cultural heritage resources, people keep alive those stories that are important and that help to give community its character and sense of place.

Conservation of cultural heritage resources is an integral part of the City's Official Plan, recognizing that such resources contribute to Waterloo's identity, economic potential, and quality of life. The City anticipates growth through intensification while recognizing the importance of conserving Waterloo's cultural heritage resources in a way that allows culturally significant buildings, structures, and landscapes to be experienced and appreciated by existing and future generations. The City has developed a Built Heritage Strategy to provide a framework for the identification, protection, and management of Waterloo's cultural heritage resources. Additionally, the Cultural Heritage Landscape Inventory[6] (2019) documents 27 significant Cultural Heritage Landscapes in Waterloo.

The City also has one Heritage Conservation District (HCD) designated under the *Ontario Heritage Act*, containing over 100 properties, in the MacGregor-Albert area. The goal of the MacGregor-Alberta HCD Plan[7] is to guide physical change over time so it contributes to, and does not detract from, the district's historical character. The plan also introduces an HCD procedure that among other things requires property owners to obtain a Heritage Permit from the City to complete external alternations and additions, new construction, building demolition, and signs in the district.

Special consideration will be given to conserving the heritage attributes of streets identified in the Cultural Heritage Landscape Inventory while maintaining the key principles of the following guiding and mandatory documents:

- WTMP, including the philosophy of complete streets detailed in **Section 9.1**;
- 2019-2022 Strategic Plan, including the philosophy to adopt vision zero practices; and
- 2018-2022 Multi-Year Accessibility Plan, continuing to prevent, identify and remove barriers for persons with disabilities

[6] For the current version, visit: https://www.waterloo.ca/en/government/studies.aspx#Cultural-Heritage-Landscapes-Study

[7] For the current version, visit: https://www.waterloo.ca/en/living/resources/Building--Renovating/MacGregor-Albert-Heritage-District-Plan.pdf

Many properties contain heritage value or interest but are not included in a municipal heritage register. Future projects may require a Cultural Heritage Evaluation Report and/or Heritage Impact Assessment, which are to be conducted by a qualified professional. Further, the City contains archaeological resources and areas of archaeological potential. Archaeological assessments are to be undertaken by an archaeologist licensed under the *Ontario Heritage Act,* with the archaeological assessment reports submitted to the Ministry of Heritage, Sport, Tourism, and Culture (MHSTCI) for review prior to the completion of the environmental assessment and prior to any ground disturbance.

4.4 Socioeconomic and Demographic Profile

Research has shown that socio-demographic characteristics have a fundamental influence on travel behaviour in communities. Household income has been found to correlate with the number of trips made and vehicle-kilometres travelled. Age and gender are demographic factors that influence trip purpose and the distribution of trip distance. Cultural factors, such as the acceptance of shared mobility modes, are also becoming increasingly relevant for understanding how travel behavior may evolve.[8] Demographic changes provide valuable insight into travel behaviour, travel markets, and needs and opportunities for the WTMP.

With a population of 104,985 in 2016, the City of Waterloo is the third largest municipality in the Region. Waterloo Region is one of the largest and fastest growing regions in Ontario. It has the tenth largest population in Canada and the fourth largest in Ontario. Waterloo also attracts many students to study at its post-secondary institutions.

Table 4.1 details the change in key socio-demographic characteristics observed in the City of Waterloo between 2011 and 2016 based on data from the Statistics Canada Census of Population and the Transportation Tomorrow Survey. Note the Census data were not adjusted to account for the reported undercount of population.

[8] U.S. Department of Transportation, Federal Highway Administration. *Understanding Travel Behavior, Research Scan*. March 2016.

The following observations were noted from the data:

- The City's population grew by 6.3% over the five-year period (1.2% per annum). The male population rose at a greater rate (7.4%) than female (5.2%). The median age of Waterloo residents increased only slightly (0.1 years);
- The number of households in Waterloo grew at a faster rate (7.6% or 1.5% per annum) than the City's population between 2011 and 2016. While the proportion of households owning their dwelling did not increase significantly (0.6%), the number of households renting rose considerably (27.2%). Average household size did not change, remaining at 2.6 persons per household, while average total household income (before tax) increased by nearly $8,000. While population and households increased, vehicle ownership decreased (-3.1%); and
- The labour force in Waterloo grew at a slower pace (3.7%) than the City's population between 2011 and 2016, which resulted in a slightly lower participation rate (-2.8%). Employed labour force grew at a faster pace (4.1%) than the total, but still caused a decline in the employment rate (-2.4%). The number of jobs in the City increased (4.8%), resulting in minimal change to the labour force-employment ratio (-1.0%).

In 2016:

Population: 104,985

Median Age: 37.7

Number of Households: 40,380

Average income per Household: $108,411

Employment Rate: 61.3%

Table 4.2 summarizes the change in population by ward in the City of Waterloo over the five-year period from 2011 to 2016. Ward 1 – Southwest and Ward 3 – Lakeshore populations decreased by 10% and 24% respectively, while Ward 2 – Northwest and Ward 6 – Central Columbia expanded by approximately 15%. Ward 7 – Uptown experienced the most significant population growth at almost 40%.

TABLE 4.1: CHANGE IN SOCIO-DEMOGRAPHIC CHARACTERISTICS, 2011-2016

Indicator	2011	2016	Change
Population			
Total	98,780	104,985	+6.3%
Male	48,870	52,490	+7.4%
Female	49,910	52,500	+5.2%
Median Age	37.6 years	37.7 years	+0.1 years
Households			
Total	37,515	40,380	+7.6%
Own	27,625	27,790	+0.6%
Rent	9,895	12,590	+27.2%
Average Size	2.6 persons	2.6 persons	0.0 persons
Average Total Income	$100,414	$108,411	+$7,997
Average Vehicles	1.63	1.58	-3.1%
Jobs and Labour Force			
Total Jobs	63,100	66,100	+4.8%
Total Labour Force	55,220	57,275	+3.7%
Employed Labour Force	51,230	53,325	+4.1%
Participation Rate	68.6%	65.8%	-2.8%
Employment Rate	63.7%	61.3%	-2.4%
Labour Force-Employment Ratio	0.88	0.87	-1.0%

Source: 2011 and 2016 Census of Population and 2011 and 2016 Transportation Tomorrow Survey

TABLE 4.2: CHANGE IN POPULATION BY WARD, 2011-2016

Ward	Year		Change	% Change
	2011	2016		
Ward 1 – Southwest	12,400	11,200	-1,200	-10%
Ward 2 – Northwest	14,100	16,100	2,000	14%
Ward 3 – Lakeshore	18,300	13,900	-4,400	-24%
Ward 4 – Northeast	15,400	15,800	400	3%
Ward 5 – Southeast	14,700	15,600	900	6%
Ward 6 – Central-Columbia	12,100	13,900	1,800	15%
Ward 7 – Uptown	11,600	16,000	4,400	38%
City of Waterloo	**98,600**	**102,500**	**3,900**	**4%**

Source: 2011 and 2016 Transportation Tomorrow Survey

5 CURRENT TRANSPORTATION SYSTEM

5.1 City Networks

5.1.1 Active Transportation

Existing facilities for active transportation can be grouped into categories by type: sidewalks, walkways, paths and trails, cycling facilities, and crossing treatments.

Waterloo has over 880 kilometres of active transportation facilities.

Sidewalks

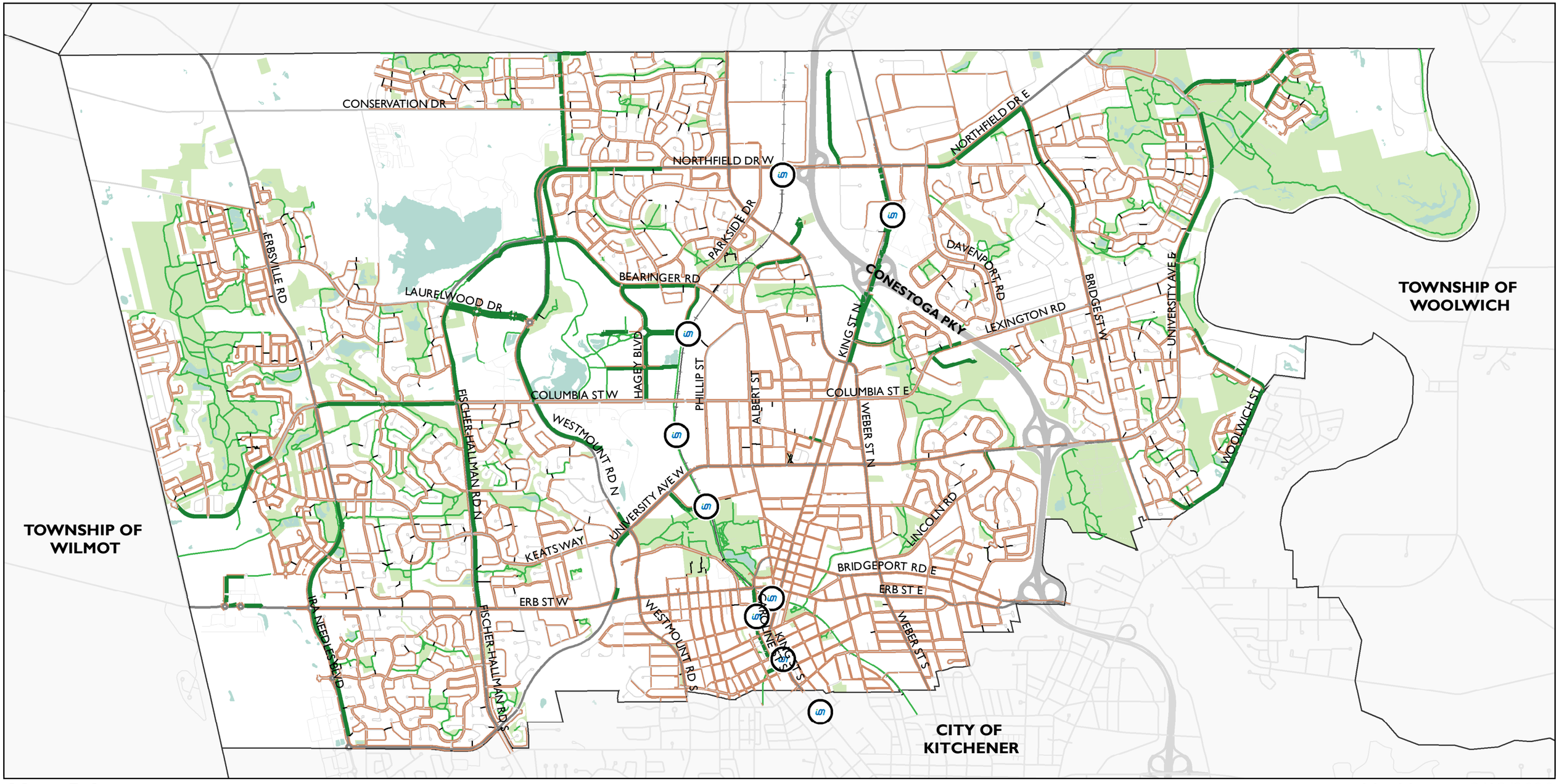
Sidewalks are the most common type of pedestrian facility. Typically constructed of concrete and in combination with a curb, they provide vertical separation from the roadway. Changing a sidewalk's proximity to a roadway can impact the overall pedestrian experience, with small, landscaped buffers or furnishing zones providing a greater level of comfort for people walking than sidewalks immediately adjacent to travel lanes.

Sidewalk next to roadway

Sidewalk with small buffer

Sidewalk with furnishing zone

There are approximately 550 km of existing sidewalks throughout Waterloo, with most streets having sidewalks on at least one side, as shown in **Map 5.1**. The heaviest concentration of sidewalks is in Uptown Waterloo and near Wilfrid Laurier University, and generally sidewalks exist in areas with the greatest pedestrian density.



Map 5.1
EXISTING PEDESTRIAN NETWORK

Map Version: 3/13/2020

Pedestrian Facilities
- Sidewalk
- Walkway

Trails
- Community Trail
- Multi Use

Points
- ION Station

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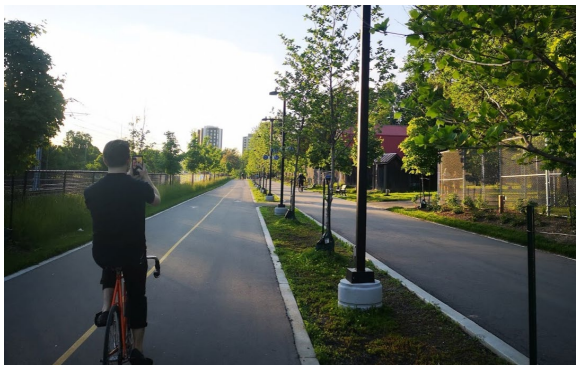
Walkways

In addition to sidewalks, other walkways such as stairs and short distance off-street paths, help to increase pedestrian connectivity throughout the City. **Map 5.1** illustrates the 18 kms of walkways in Waterloo.

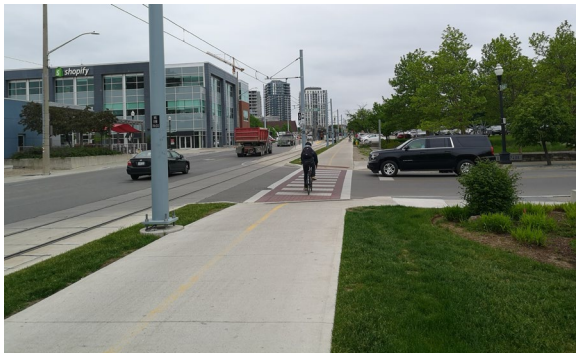
Pathways and Trails

The City has two designations of pathways and trails, which provide longer-distance pedestrian and cycling connections:

- **Community Trails** primarily provide cycling and walking connections through local parks for recreational use. **Map 5.1** illustrates Waterloo's existing 113 km of community trails. Some community trails, like the Laurel Trail, also provide direct, low stress connections between parks. The design for community trails can vary, with surface materials ranging between concrete, asphalt, stone dust, and mulch.
- **Multi-Use Paths** follow along road rights-of-way, providing low-stress, off-street utilitarian routes for people cycling and walking. The City's existing 37 km of multi-use paths vary in design, with different surface materials (concrete or asphalt), presence of a boulevard, and crossing treatments.



Laurel Trail in Waterloo Park



Multi-use Path on Caroline Street South

Multi-use Path on Wes Graham Way

Cycling Facilities

The City's cycling network is illustrated in **Map 5.2** and consists of the following cycling facilities:

- **Signed Routes** highlight 26 km of preferred routes for bicycle travel along low-speed, low-volume collector, or local roadways across the City.
- **Paved Shoulders** include signage and visually separated space on the edge of the

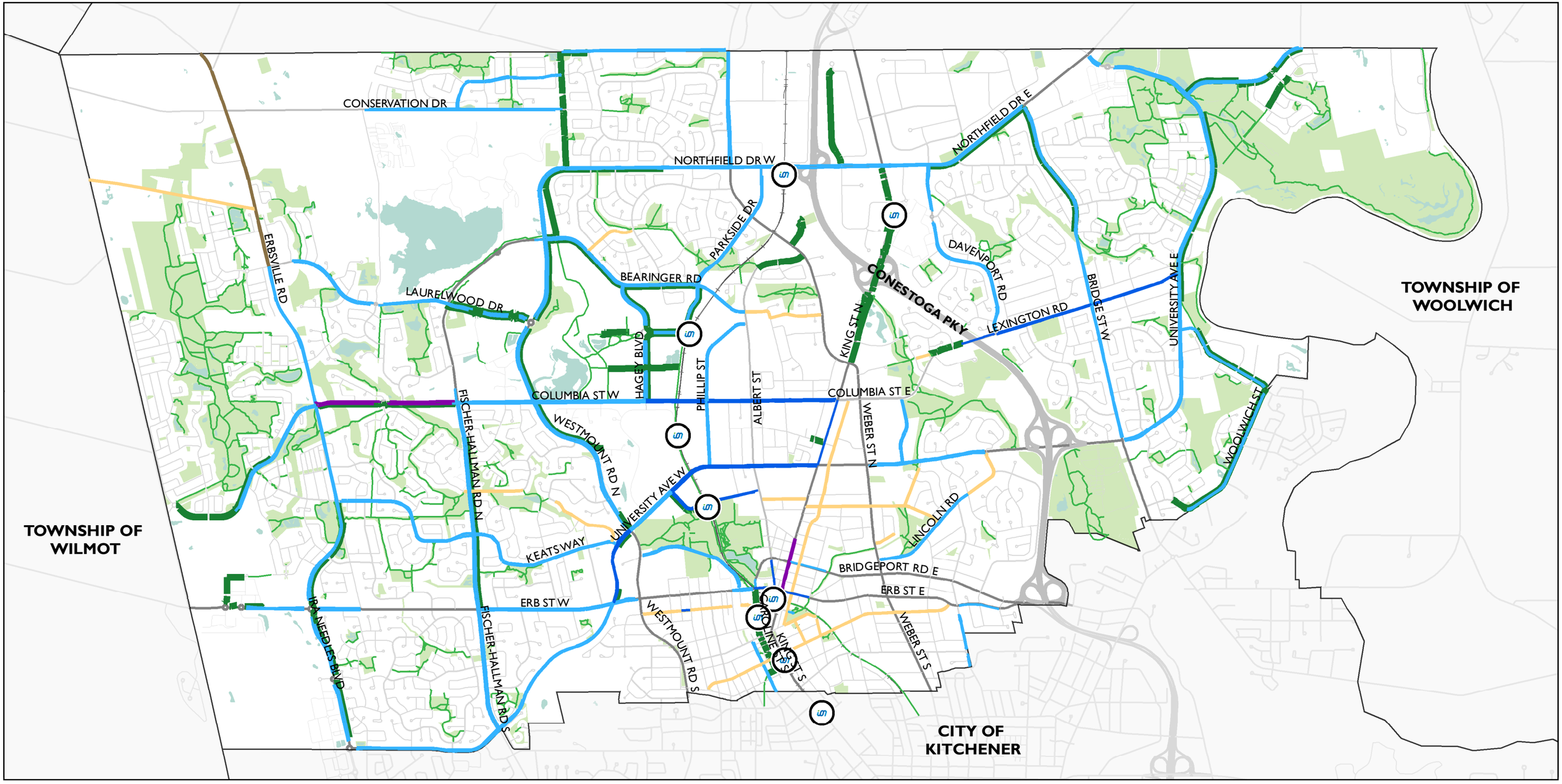
roadway. Waterloo's lone instance of a signed bicycle route on a paved shoulder is an approximately 2 km stretch along Erbsville Road north of Laurelwood Drive to the City boundary.

- **Painted Bike Lanes** represent the most common bikeway in Waterloo, with 122 km of existing conventional bicycle lanes covering most of the City arterial roadways. Painted bike lanes are visually separated spaces within the roadway demarcated by a single painted white line. These spaces are designated for cycling use only.
- **Physically Separated Bicycle Lanes** have a vertical and/or horizontal barrier between motor vehicle and cyclist traffic providing an added level of comfort for cyclists.
  - Currently, a combined 15 km of **Segregated and/or Buffered Bike Lanes** exist on Lexington Road, Seagram Drive, and University Avenue West. These facilities are within the roadway. The Region's ongoing *Separated Cycling Lanes Pilot Project* includes physically separated bicycle lanes along sections of Albert Street, Columbia Street West, and King Street. These 3 kms of new segregated bicycle lanes were installed in October 2019 and will be evaluated over an 18-month period to determine the feasibility of constructing more permanent separated cycling facilities on roads throughout the Region.

Segregated bike lane built as part of the Region's Separated Cycling Lane Pilot

Raised bike lane on King Street North

  - **Raised Bike Lanes** are adjacent to the roadway, and are vertically separated, commonly at sidewalk-level. There are currently 4 km of raised bike lanes in Waterloo located along Columbia Street West and on King Street in Uptown Waterloo.



Map 5.2
EXISTING CYCLING NETWORK

Map Version: 2/6/2020

Cycling Facilities
- Raised Bike Lane
- Segregated/Buffered Bike Lane
- Painted Bike Lane
- Paved Shoulder
- Signed Route

Trails
- Community Trail
- Multi Use

Points
- ION Station

0 1 2 KILOMETRES

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The City's **High Priority Network** (HPN) designates a collection of roadways and trails that connect major destinations, such as Uptown Waterloo, the University of Waterloo, Wilfrid Laurier University, local park spaces, and the neighbouring City of Kitchener. **Table 5.1** summarizes the various cycling facility classifications that comprise the HPN, which extends a total of 65 km. At the heart of the HPN and forming a loop around the main core of the City, the "WaterLoop" encompasses parts of the Laurel, Forwell, Iron Horse, Spur Line, and Great Trails, as well as on-road sections.

TABLE 5.1: HIGH PRIORITY NETWORK

High Priority Network Facilities	Length*
Community Trail	25 km
Multi-use Path	9 km
Signed Routes	4 km
Conventional Bicycle Lane	20 km
Separated Bicycle Lane (buffer)	3 km
Separated Bicycle Lane (vertically separated)	4 km
Total	**65 km**

* The length of existing facilities was calculated by counting each direction separately, so if there are bike lanes on both sides of a 1 km road, it would be considered 2 km of the facility.

Crossing Treatments

There are a variety of ways that active transportation facilities are currently treated when crossing roadways at intersections and at mid-block locations. Intersection and crossing improvements aim to better manage conflicts between people walking, cycling, and driving through a variety of strategies. Below are examples of crossing treatments currently used in Waterloo to improve safety and connectivity for people walking and cycling.

- **Crosswalks** are marked locations where people walking may cross the roadway. At stop-controlled intersections, people in crosswalks have the right-of-way. At signalized intersections, people walking have the right-of-way in the crosswalk when given a walk signal. Cyclists must dismount to use a crosswalk.
- **Pedestrian Crossovers (PXOs)** are locations where people walking have the right-of-way to cross the roadway. PXOs can be marked with pavement markings and signage, or at larger, busier roadways can have actuated flashing beacon lights. Cyclists must dismount to use a PXO.
- **Medians at Uncontrolled Crossings** are implemented at locations to help people cross the roadway. People walking or cycling do not have the right-of-way when crossing at these

locations and must wait for a gap in traffic. The medians provide a refuge to help people cross the roadway in two stages instead of all at once.

- **Crossrides** are pavement markings that provide clarity on where people cycling should cross the roadway.
- **Bicycle Boxes** are pavement markings which provide an advanced stop location for people cycling at intersections to assist making a left turn or starting ahead of motor vehicle traffic.
- **Left-turn Queue Boxes** are pavement markings which provide a place for people cycling to stop and wait to make a two-stage left-turn across a roadway.
- **Bicycle Signals** can be used at intersections to provide a separate signal phase for people cycling to cross the roadway.

5.1.2 Roadway

Road Network

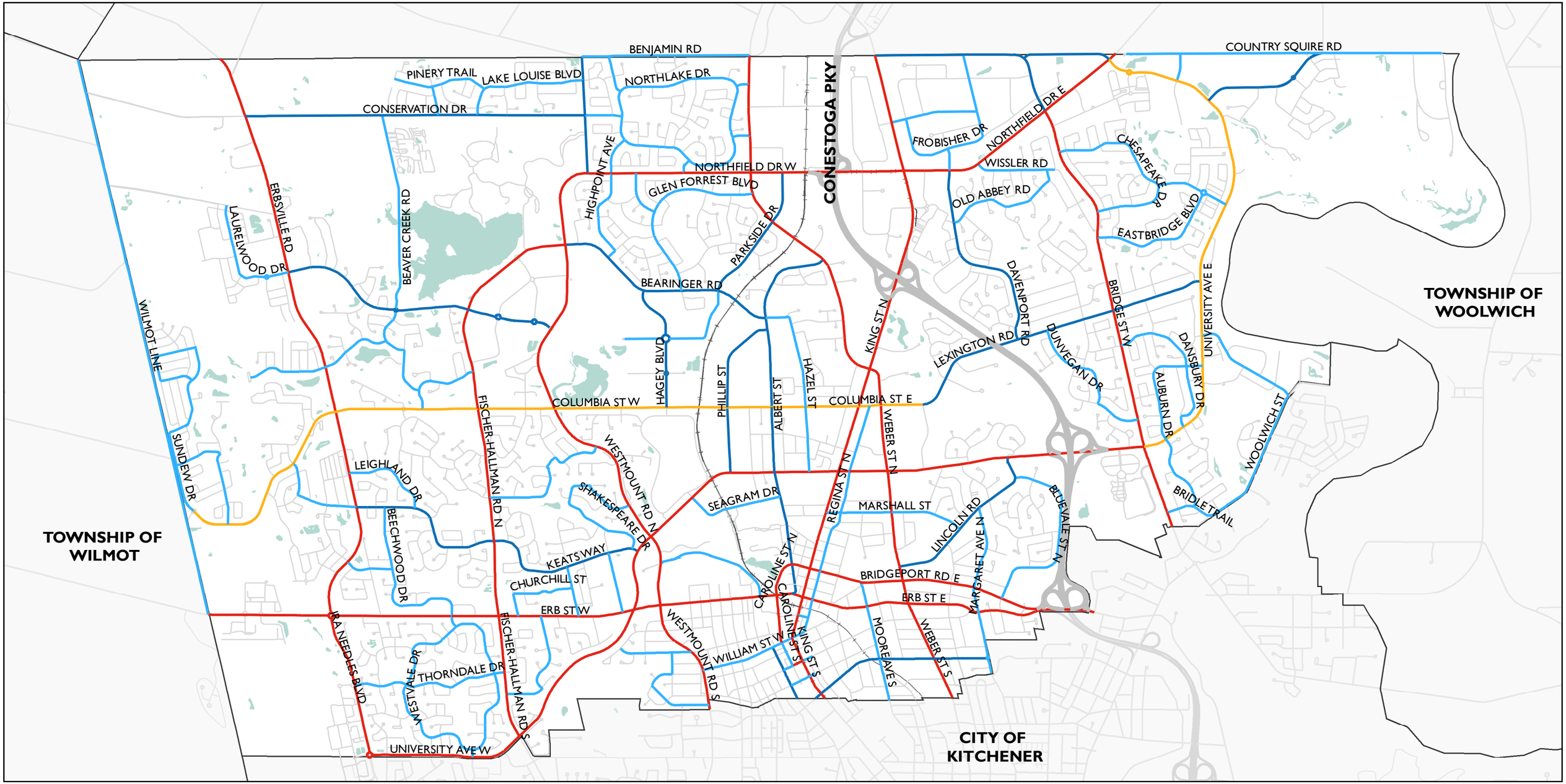
Waterloo is served by a grid network of roads consisting of provincial highways, Region of Waterloo arterial roads and City arterial, collector, and local roads. The City operates and maintains its own municipal road network, which connects to the Regional and Provincial road network.

The City arterial and collector road system forms smaller block grids between the provincial and regional arterials. These roads are generally continuous, carry moderate traffic volumes and provide connections to and within neighbourhoods, city centres, commercial sites, and industrial lands. Local roads connect to the collector roads and provide access to individual properties in residential and commercial areas.

Map 5.3 illustrates the existing road network, including the Regional and Provincial networks detailed in the subsequent sections.

Emergency Response Routes

Emergencies, by their nature or magnitude, require a coordinated response by several organizations, as compared to routine operations carried out as normal day-to-day procedures. In an emergency, critical seconds can save lives. Emergency response routes enable emergency services and supplies to move quickly to where the need is greatest. Emergency response transportation strategies are important for the safe and coordinated movement of emergency personnel, resources and impacted persons following an emergency event in Waterloo.



Map 5.3

EXISTING ROAD CLASSIFICATION

Map Version: 9/11/2020

Road Classifications

- Provincial Highway
- Regional Arterial
- City Arterial
- Major Collector
- Minor Collector
- Local Street

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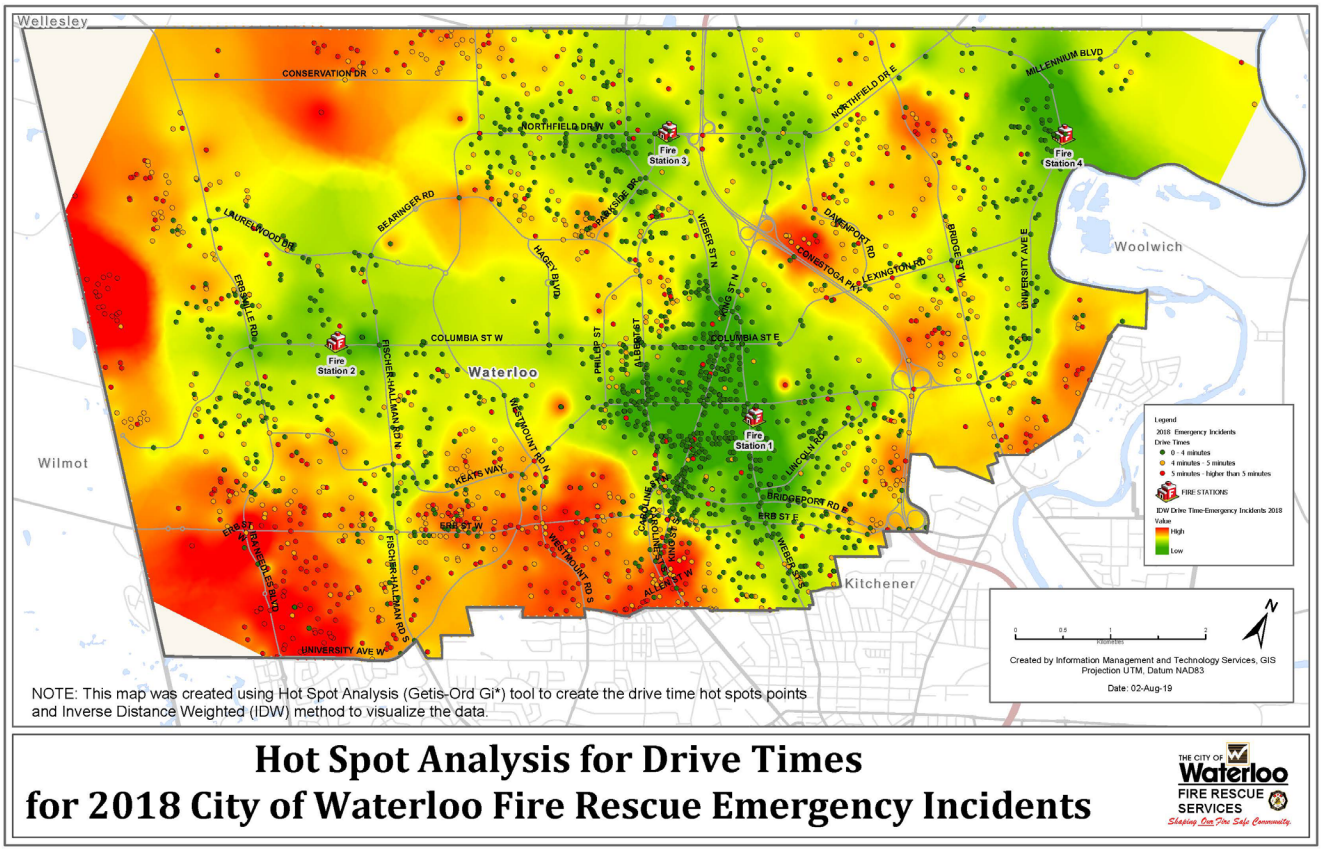
TRANSPORTATION MASTER PLAN

In the City of Waterloo, the City is only responsible for fire services, with the Region maintaining responsibility for police and ambulance services. The City has developed maps to illustrate actual response drive times by Waterloo Fire Rescue teams responding to emergency calls. Response data was provided by Fire Dispatch from the Crisys system used to collect information about each incident.

The map in **Figure 5.1** displays points for 2018 incidents used for the analysis, and coloured areas for typical drive times as determined from a Hot Spot Analysis. Drive time hot spots were identified by looking at the drive time for each incident in context with the drive time for the neighbouring incidents. An incident with a high value for the drive time is a statistically significant hot spot if it is surrounded by other features with high values. Clusters of high and low drive times indicate a trend. The map breaks down actual drive times in 3 categories 0-4 minutes; 4-5 minutes; 5-higher than 5 minutes.

FIGURE 5.1: HOT SPOT ANALYSIS FOR DRIVE TIMES FOR 2018 CITY OF WATERLOO FIRE RESCUE EMERGENCY INCIDENTS

(Source: City of Waterloo Fire Rescue Services)



The hot spot map helps identify the areas where the Fire Rescue services have difficulties in meeting the benchmark response drive times. There could be a variety of reasons for this, including traffic volumes, road connectivity, construction, and planned events. Additionally, it provides important information to City staff and Council when considering matters such as future road layouts, developments, and traffic calming as the knock-on effect to emergency response times could have significant implications.

Map 5.4 illustrates the City's network of primary and secondary emergency response routes.

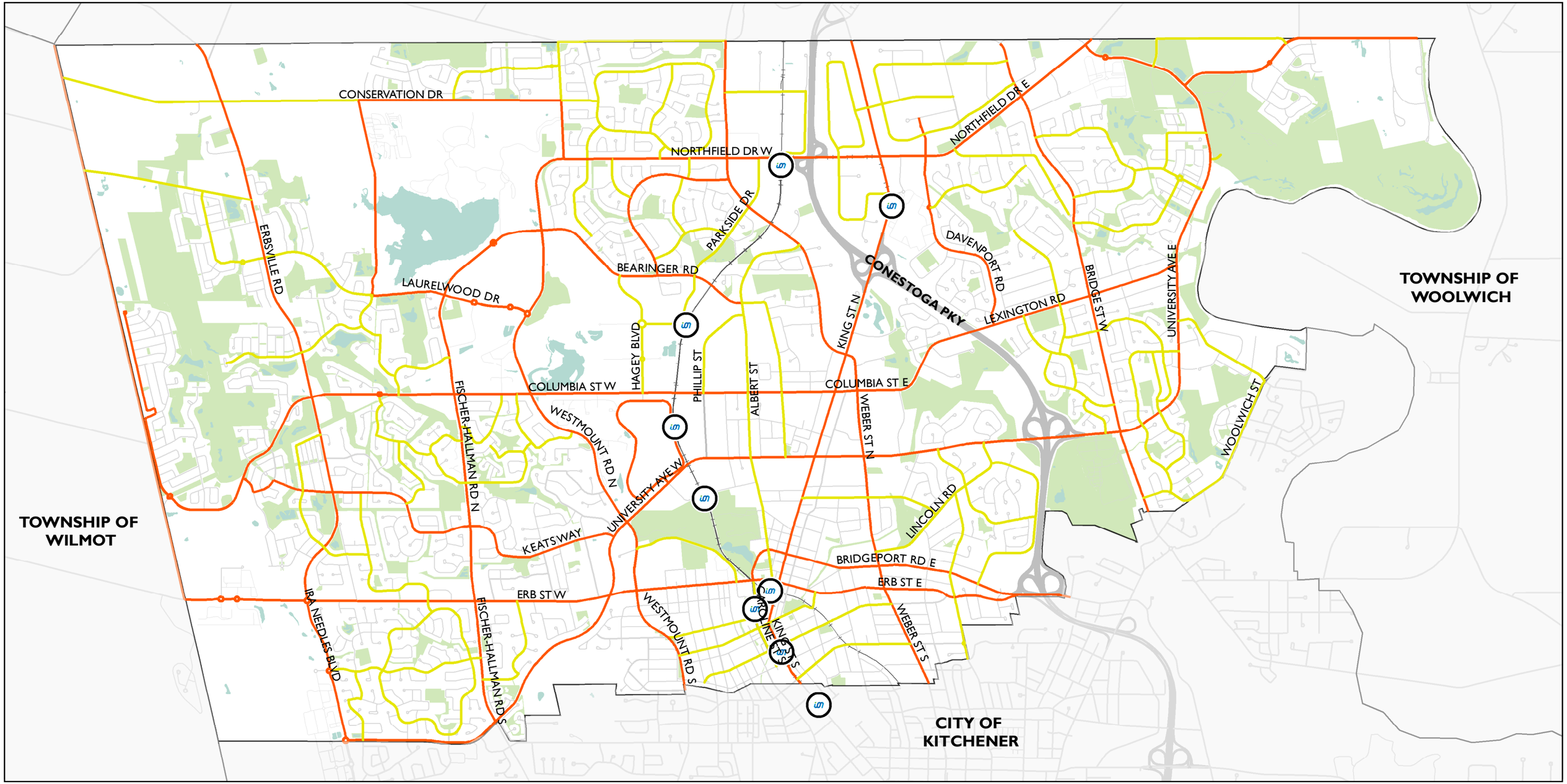
Truck Routes

Heavy truck restrictions are used to protect road infrastructure that cannot bear heavy loads or roads where truck traffic would be unsuitable (e.g., narrow lanes, on or near local residential roads). A "Heavy Truck" is defined as commercial motor vehicle with a gross weight of more than 4,500 kilograms, but does not include an ambulance, hearse, casket wagon, fire apparatus, bus, mobile crane, motor home or road service vehicle.

The City of Waterloo Traffic By-law No. 08-077[9] details heavy truck restrictions within the City. Under Part XVII, heavy trucks are restricted to the Waterloo Regional Road network and City road network described in Schedule 20. Local deliveries and collections are exempt from heavy truck restrictions if the location cannot be reached by any other road and provided that the route taken is the shortest possible to and from the location on the truck restricted route.

Map 5.5 illustrates the heavy vehicle truck routes in Waterloo, including roads with time of day heavy vehicle restrictions.

[9] For the current version, visit: https://www.waterloo.ca/en/living/bylaws-and-enforcement.aspx



Map 5.4
EMERGENCY RESPONSE ROUTES

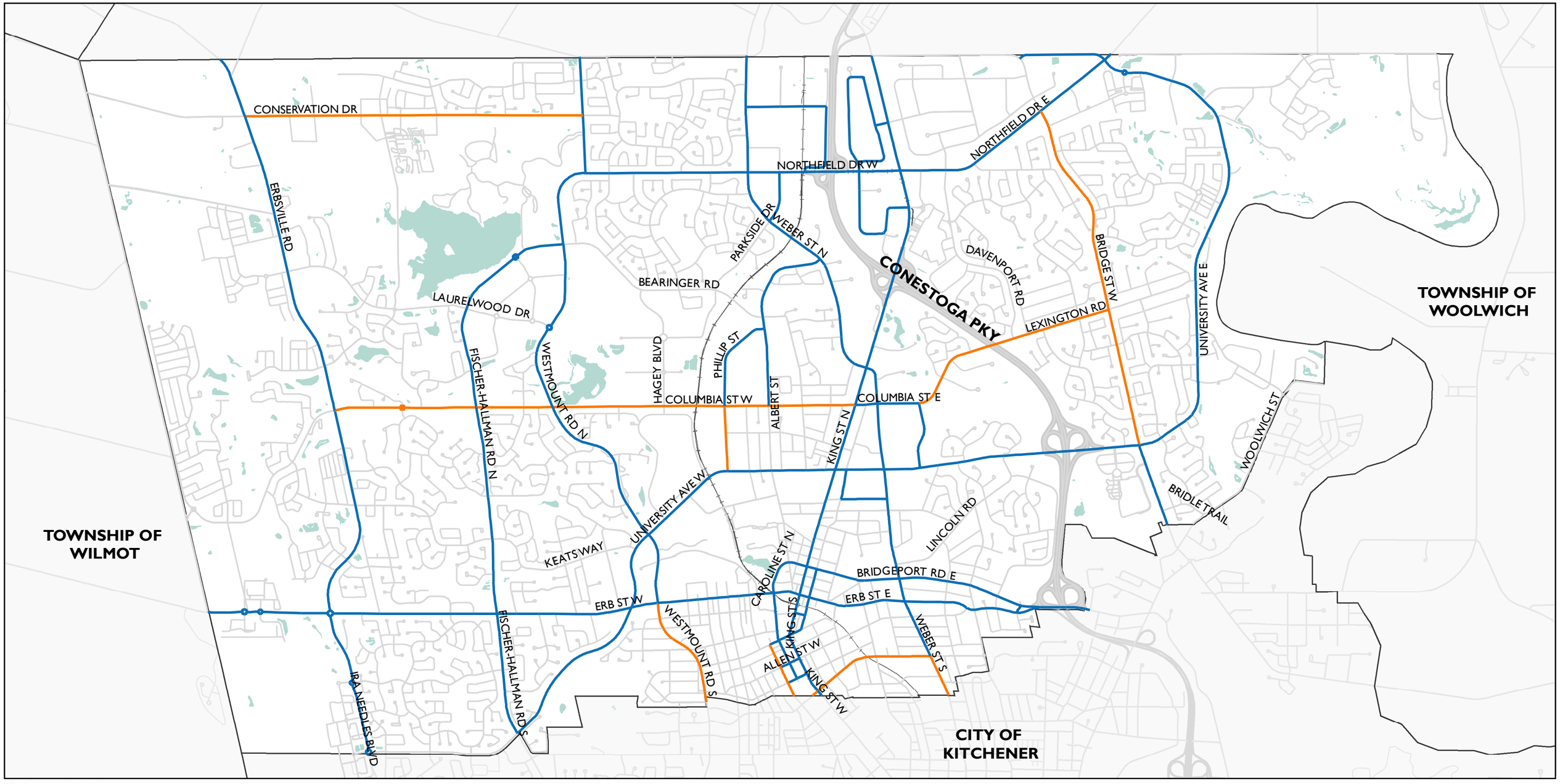
Map Version: 5/11/2020

Fire Route Classification
- Primary
- Secondary

Points of Interest
- ION Station
- Railway
- Park

0 1 2 KILOMETRES

THE CITY OF Waterloo
TRANSPORTATION MASTER PLAN UPDATE



Map 5.5
TRUCK ROUTES

Map Version: 9/20/2019

Truck Routes

- Anytime
- Time Regulated

0 1 2 KILOMETRES

THE CITY OF Waterloo

TRANSPORTATION MASTER PLAN UPDATE

5.2 Other Transportation Services

5.2.1 Regional

Road Network

The Region manages an extensive network of regional roads that serve a variety of purposes including local access, regional travel, and access to provincial highways. The Regional Official Plan states that the purpose of regional roads is to provide safe, direct, accessible, and multi-modal transportation links for moving people and goods throughout the Region, and to adjacent municipalities. There are 11 regional roads within the City of Waterloo, including sections of Regional Roads 8, 9, 15, 16, 22, 37, 50, 52, 57, 58 and 59. All these roads carry significant volumes of through traffic and heavy vehicles at higher speeds.

Transit

The Region also operates Grand River Transit (GRT), providing mobility alternatives throughout the Cities of Kitchener, Waterloo, and Cambridge, and the Townships of Woolwich (St. Jacobs and Elmira) and Wilmot (Baden and New Hamburg). Key destinations in the City of Waterloo include the Universities of Waterloo and Wilfrid Laurier, Conestoga College, malls, and the Uptown core area. All buses are "low floor" for wheelchair accessibility and are equipped with bike racks. In addition to numerous conventional routes, GRT operates five express routes under the "iXpress" banner.

In 2019, the Region began operating ION, a 19-km Light Rail Transit (LRT) route between Conestoga Mall in Waterloo and Fairview Park Mall in Kitchener. At Fairway Station, ION LRT connects to ION bus and travels to the Ainslie Street Terminal in Cambridge. Stage 2 ION will see ION bus converted to light rail, creating a seamless light rail route that stretches from Cambridge to Waterloo. Stage 2 timing is currently unknown.

Figure 5.2 illustrates the GRT system map.

FIGURE 5.2: GRAND RIVER TRANSIT SYSTEM MAP

(Source: Grand River Transit [10])

[10] For the current version, visit: https://www.grt.ca/en/schedules-maps/system-map.aspx

5.2.2 Provincial

Road Network

There is one provincial highway within the City, Highway 85, locally known as the Conestoga Parkway. Highway 85 starts at Highway 7 and travels north-south through the east side of Waterloo, terminating in Woolwich Township. South of the City, Highway 7 provides connections to provincial Highway 8, Highway 401, and Highway 24. The provincial highways are regulated by Ministry of Transportation Ontario (MTO), and development and access near these highways are subject to provincial permitting and approval.

Transit

GO Transit, a division of Metrolinx, provides inter-regional transit service to the Greater Toronto and Hamilton Area (GTHA). GO operates three weekday peak hour trains leaving Kitchener during the morning peak period and leaving Union Station during the afternoon peak period. GO Transit operates passenger bus service that connects Kitchener GO Station to Bramalea GO Station (Brampton) when train service is not operating. GO Transit bus service is also provided from the University of Waterloo to the Square One GO Bus Terminal (Mississauga), which provides access to various locations in the Greater Toronto Area. GO Transit buses stop at multiple locations in Waterloo, Kitchener, and Cambridge.

VIA Rail offers passenger rail service from the City of Kitchener to the GTHA and west to other locations in southern Ontario. The VIA Rail station is in downtown Kitchener, near the intersection of Victoria Street and Weber Street. The Region of Waterloo recently purchased land nearby at the north-east corner of King and Victoria streets in Kitchener for a transit hub. The future transit hub will offer seamless access to multiple modes of transportation including ION LRT, GRT, GO train and bus services, VIA Rail, Greyhound, Coach Canada, CarShare and pedestrian and cyclist routes.

5.2.3 Private

Additional inter-city transit options are offered by private bus carriers, including Coach Canada, Greyhound Bus Lines, and Megabus. These operators provide direct connections to Guelph, London, Hamilton, and Toronto, and many more destinations in Southern Ontario, Quebec, and the United States via transfers. Residents within the City can access these bus services from multiple locations, such as the University of Waterloo, and Wilfrid Laurier University (Waterloo), Charles Street Terminal (Kitchener) and Ainslie Transit Terminal (Cambridge).

In Waterloo, Communauto (VRTUCAR) and Enterprise CarShare operate locally, providing car sharing service. Car sharing is a membership-based program where, once you join, you can rent a vehicle 24/7. Cars are parked in designated spots on the street or in a lot and members can rent a vehicle for an hour, a day, or overnight.

5.3 Travel Behaviour

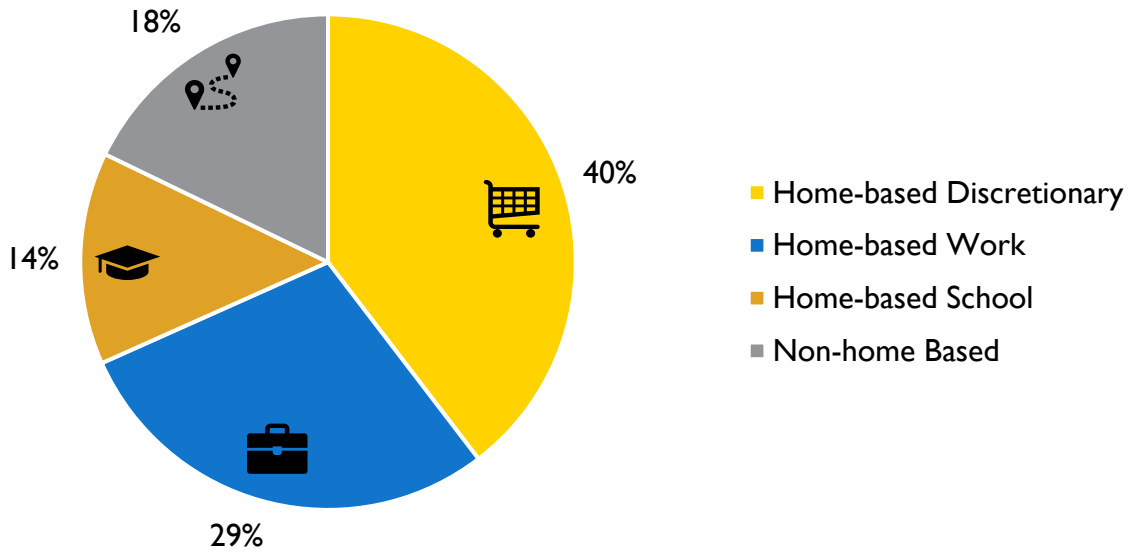
5.3.1 Current Trends

City-wide travel characteristics were studied based on data collected through the 2011 and 2016 Transportation Tomorrow Survey (TTS). The TTS is a confidential and voluntary survey on how Ontarians in the Greater Golden Horseshoe (GGH) travel. The research helps local and regional governments, as well as the province and its agencies, make better informed transportation planning and investment decisions.

Several trip making characteristics were extracted from the 2016 TTS to help explain current travel trends in the City of Waterloo. The following observations were noted from the data:

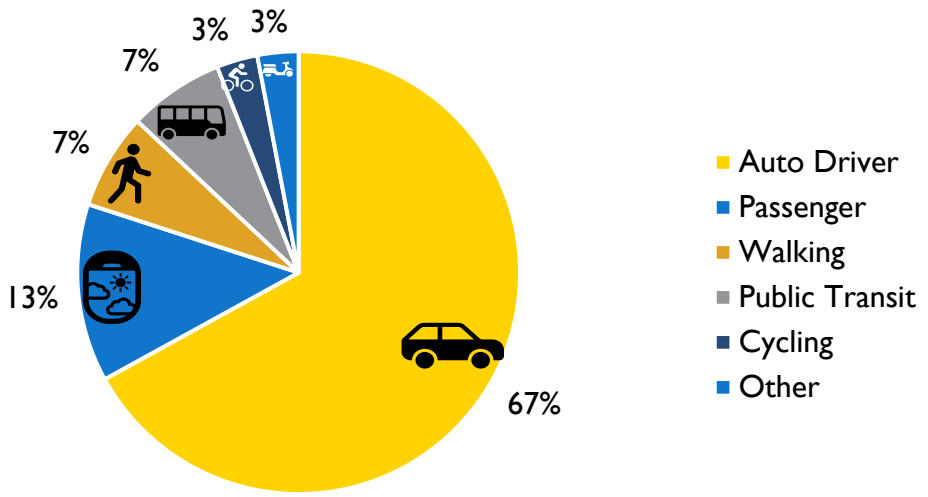
- **Trip Destination** – Residents of Waterloo travel mostly to points within the City. The City of Kitchener is the next most common destination.
- **Trip Purpose** – **Figure 5.3** shows approximately 40% of daily trips originating in the City are made for home-based discretionary purposes. Home-based work (29%), non home-based (18%) and home-based school (14%) are the next most common trip purposes.

FIGURE 5.3: TRIP PURPOSE, 2016



- **Travel Mode** – **Figure 5.4** illustrates private auto driver (67%) and passenger (13%) are the most common travel modes for trips originating in the City, followed by walking (7%), public transit (7%) and cycling (3%). Travel by other modes such as school bus, taxi and rideshare comprise the remainder.

FIGURE 5.4: TRAVEL MODE SHARE, 2016



- **Trip Length** – The length of trips originating in the City of Waterloo were examined to assess the potential for increased walking and cycling use. In most cases, trips less than 2 km can be made effectively by walking, while cycling is a viable travel mode for trips up to 8 km. According to the 2016 TTS data, approximately 75% of all trips on a typical weekday in the City of Waterloo are within cycling distance, but only 13% are made using active modes.

Approximately 75% of all trips in Waterloo are less than 8 kilometres, but only 13% use active modes.

5.3.2 Change Over Time

Monitoring travel behaviour changes over time enables the City to assess the effectiveness of the WTMP in achieving objectives and identify needed policy adjustments. The following discusses changes observed between 2011 and 2016 with a focus on the most significant shifts noted in active transportation use.

- **Daily Trips** – **Figure 5.5** compares the total daily trips made in the City in 2011 and 2016 by ward. During this period, the number of trips made by Waterloo residents increased at a greater rate (9.6%) than population growth (6.3%).
- **Trip Purpose and Length** – **Figure 5.6** shows the change in the number of daily trips by purpose between 2011 and 2016. Only non home-based trips decreased over the five-year period. Additionally, the average trip length has increased for all trip purposes. As a result, the average length of trips originating in the City of Waterloo was 8.7 km in 2016 compared to 8.2 km in 2011.

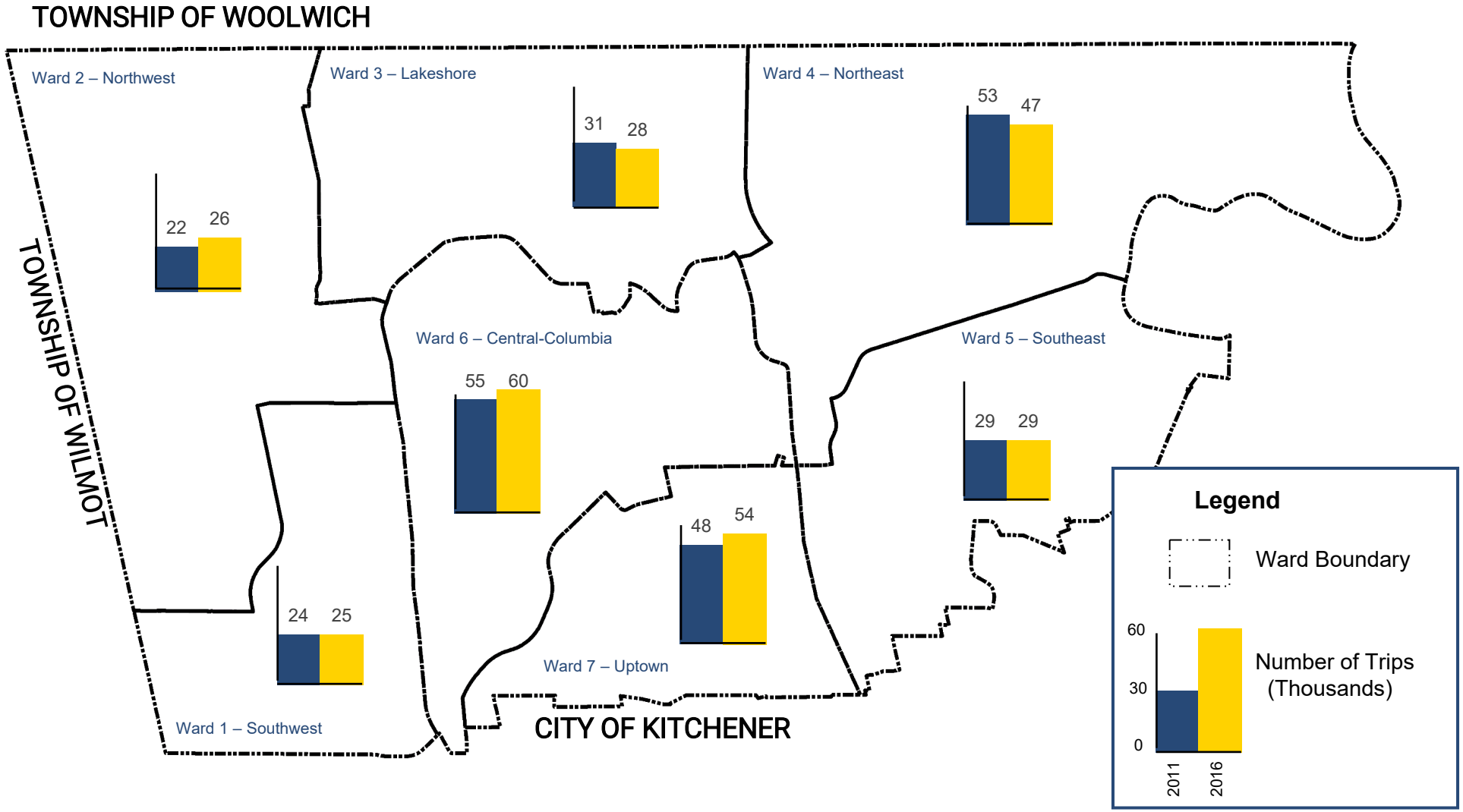
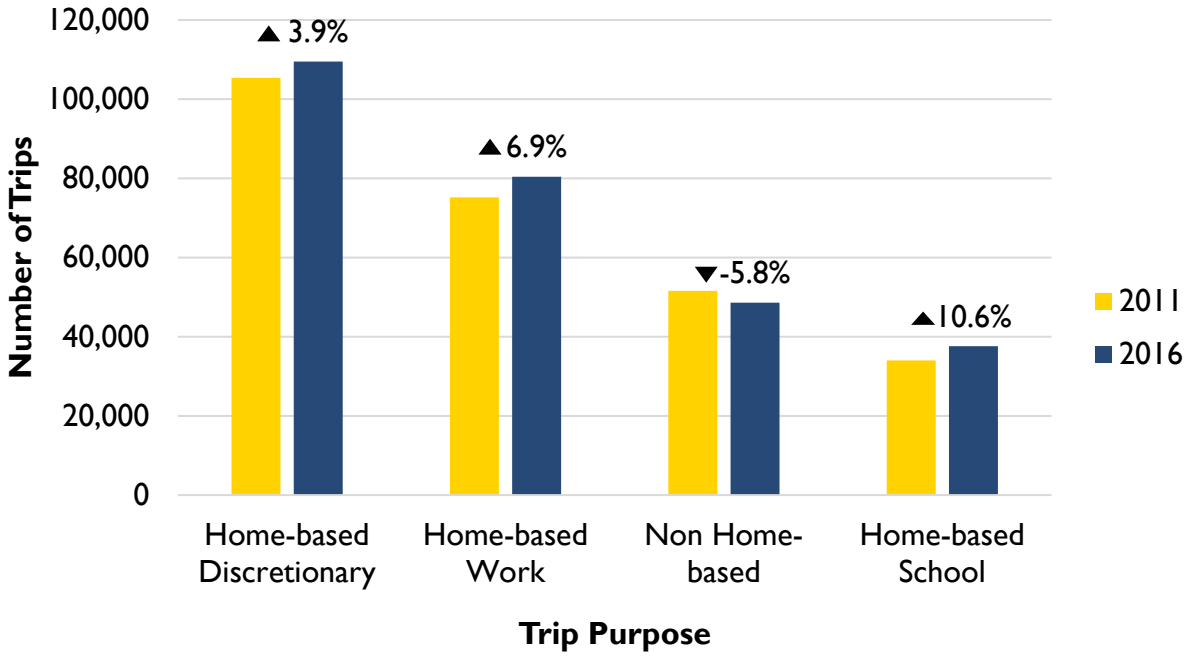


FIGURE 5.5: TOTAL DAILY TRIPS BY WARD, 2011-2016

FIGURE 5.6: TOTAL DAILY TRIPS BY PURPOSE, 2011-2016



- **Mode Share** – **Table 5.2** summarizes the change in mode share between 2011 and 2016. Of note, the auto passenger and driver mode shares decreased by 3% each. This is attributed to the growth in active transportation use, with walking and cycling mode shares increasing by 3% and 2%, respectively. **Figure 5.7** shows the percentage of total daily trips within cycling distance for each ward, plus the active transportation (walking and cycling) mode shares. The active transportation mode share of trips less than or equal to 8 km increased in each of the seven wards in the City, except Ward 1. The more densely populated central wards still exhibited the highest active transportation mode share in 2016.

TABLE 5.2: CHANGE IN MODE SHARE, 2011-2016

Mode	Year		Change
	2011	2016	
Walk	4%	7%	3%
Cycle	1%	3%	2%
Transit	7%	7%	0%
Auto Passenger	16%	13%	-3%
Auto Driver	70%	67%	-3%
Other	2%	3%	1%

Source: 2011 and 2016 Transportation Tomorrow Survey

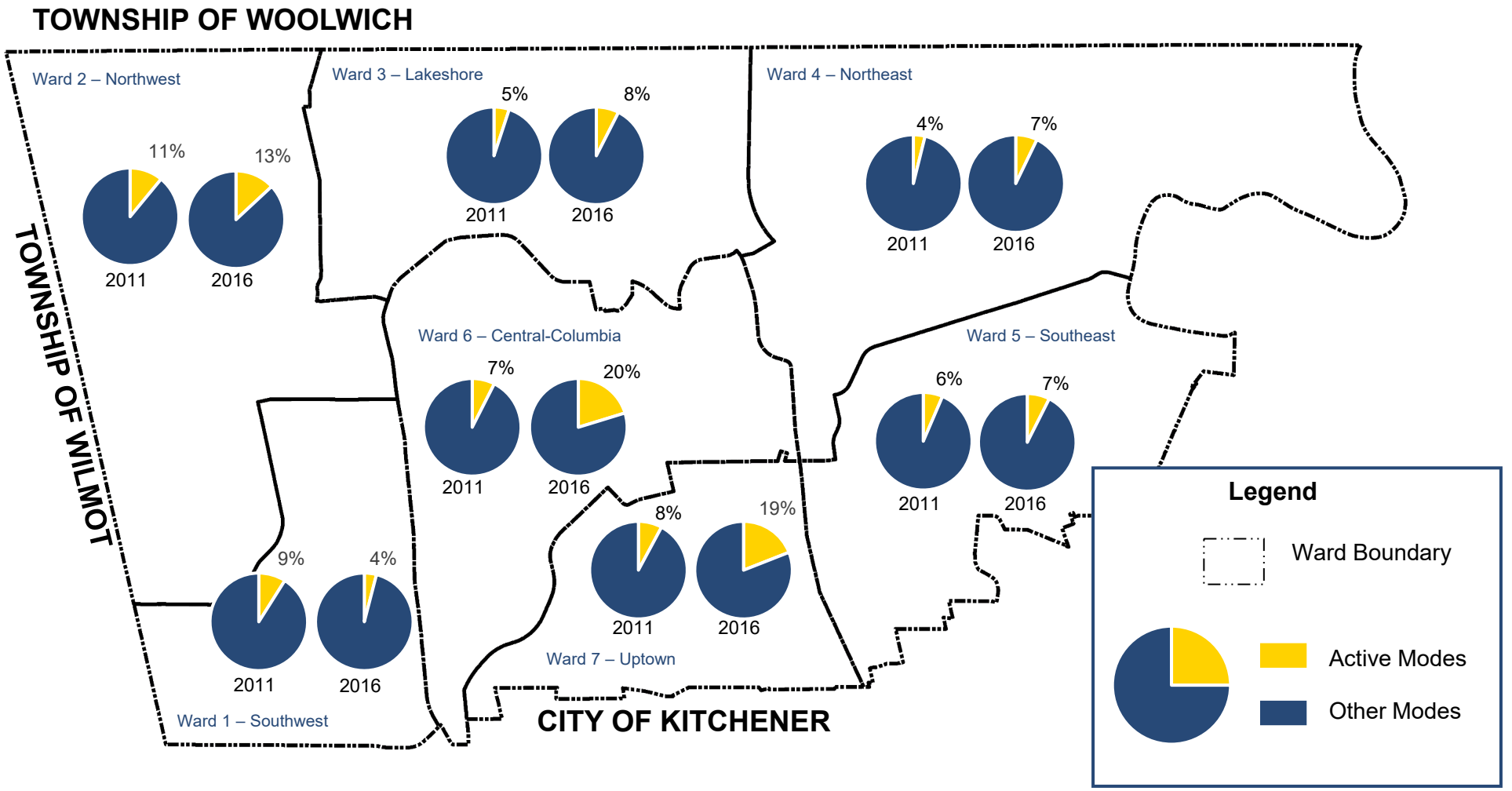


FIGURE 5.7: ACTIVE TRANSPORTATION MODE SHARE OF TRIPS 8 KM OR LESS BY WARD, 2011-2016

5.3.3 Potential Impact of Transportation Innovation

Travel behaviour in Waterloo is expected to change over time as a result of key infrastructure investments, transformative technologies and emerging government regulation and policies. Within the horizon of the WTMP (and beyond), the following initiatives have arguably the greatest potential to influence travel trends in the City:

- **ION Light Rail Transit** – Last year's opening of the ION LRT service is expected to increase transit mode share in the City of Waterloo, as well as active transportation use as more riders are likely to walk or cycle to the stations than drive given their locations and configuration. Initiatives by the City and Region to improve cycling facilities and provide pedestrian links to the ION LRT stations have helped to remove physical barriers to active transportation access, further spurring travel by these modes. Additionally, Grand River Transit has redesigned its bus network in the City to effectively extend the catchment area of the ION LRT service into Wards 1, 2 and 5. This is expected to increase transit and active transportation use in these wards as well, as riders can easily walk and cycle to nearby bus stops.
- **Ridesharing and Shared Mobility** – Combining ride-hailing services with the public transit system has the potential to offer a user friendly and cost-effective option for travel to lower density and other underserved locations. This could ultimately reduce Single Occupancy Vehicles Trips (SOV) trips.
- **Bike-Sharing and E-Bikes** – A bike-sharing service in the City of Waterloo with both conventional bicycles and electric bikes would provide residents with another viable alternative to the SOV. Given the number of trips in the City under 8 km in length, and the high percentage of those trips currently being made by automobile, the potential exists to grow the share of travel by active modes. The greatest opportunity for a bike-sharing service exists in the Uptown area and near the universities.

5.3.4 Implications of 2020 Coronavirus Pandemic

The 2020 Coronavirus Pandemic was ongoing at the time of preparing the WTMP report. During the pandemic, the City experienced considerable change in travel behaviour as governments implemented strict physical distancing measures to control the spread of the virus. Reduced travel demand, especially in "shared" modes like transit and ridesharing, and increased active travel (i.e., walking and cycling) were observed during this unprecedented time in our history. During the pandemic, nations around the world also experienced an increased awareness of social equity issues in response to this event.

While many previous travel trends are expected to resume as life returns to "normal", this event has the potential to change behaviour and transportation services moving forward, like:

- More employees working from home or on modified work schedules;

- Less in-person meetings in favour of online video conferencing;
- Greater trip planning and trip chaining to reduce the number of outings;
- Increased use of active transportation modes;
- Heightened expectations for more equitable distribution of funding for transportation services, especially those serving disadvantaged communities; and
- Fewer discretionary trips due ecommerce or reduced income.

Although impossible to predict the impact at this point, the WTMP takes into consideration the potential implications to the extent possible in its strategies and action plans.

5.4 Demand and Level of Service

5.4.1 Active Transportation

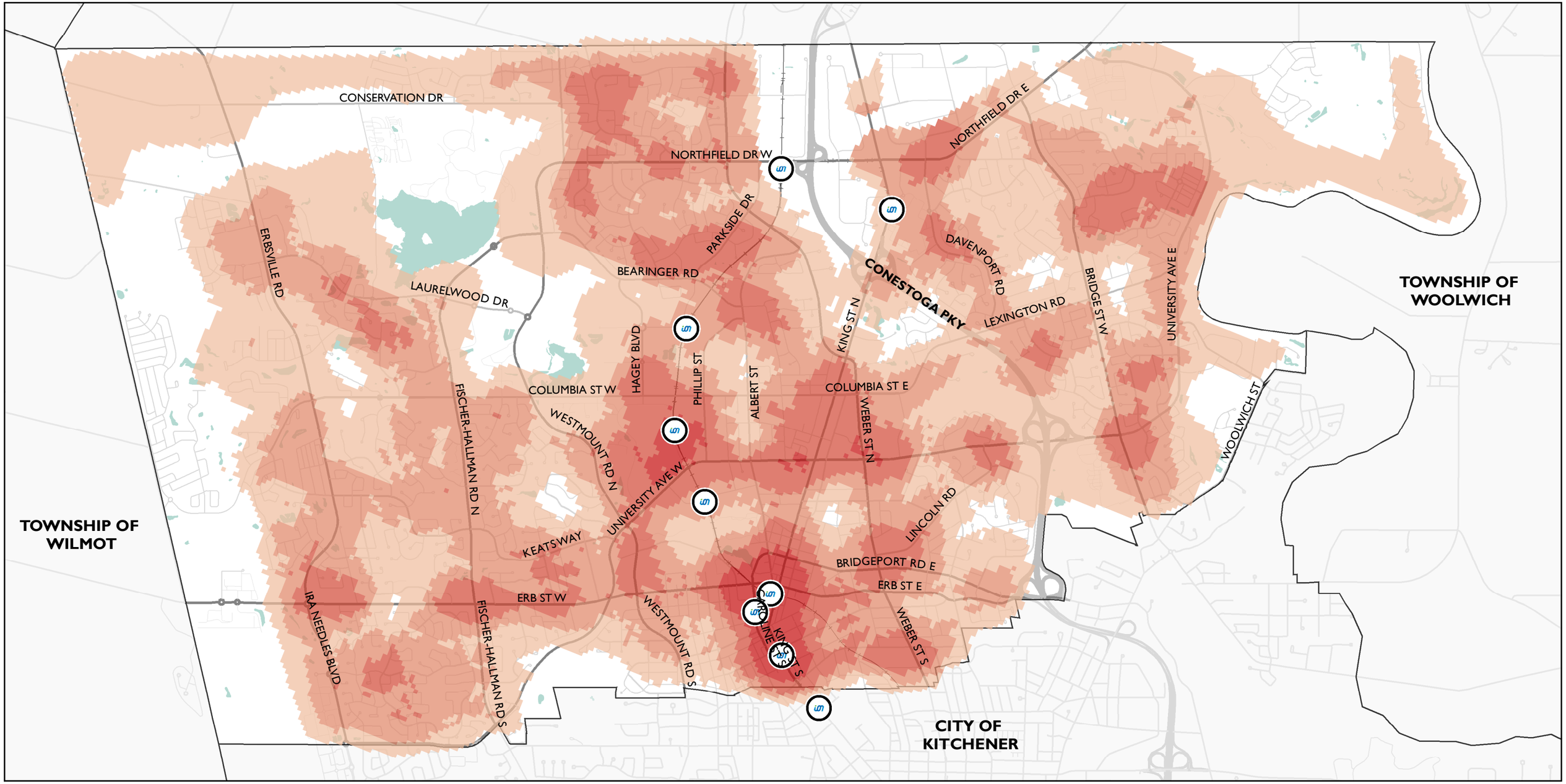
Relative Demand Estimates

To better understand which locations in Waterloo may have the greatest potential for cycling and walking trips, a composite of trip generators (where people live, work, learn, shop, play, and access transit)[11] were mapped to identify 'relative demand'. The analysis shows the demand classified into five levels based on natural breaks in the data.

Map 5.6 shows the composite demand layer in Waterloo with a relatively high concentration of trip generators, including:

- Uptown Waterloo;
- University of Waterloo;
- Wilfrid Laurier University;
- Conestoga College;
- Clusters of primary and secondary schools;
- Business and research parks; and
- Shopping centres.

[11] Trip generator information collected from 2016 Census Dissemination Area population density, employee workplace density, public and private elementary, secondary, and post-secondary school enrollment, retail business directory, parks, trails, libraries and cultural institutions, bus and LRT stop locations.



Map 5.6

LIVE WORK PLAY DEMAND ANALYSIS

Map Version: 5/5/2020

COMPOSITE - Overall Demand

Lower

Higher

ION Station

0 1 2 KILOMETRES

THE CITY OF Waterloo

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Active Transportation Counts

The City collected cyclist and pedestrian counts at 132 intersections between 2010 and 2013. The estimated average annual daily cyclists at the count locations ranged between 0 and 406 per day, averaging 54 cyclists at a given count location. The estimated average annual daily pedestrians at the count locations ranged between 6 and 7,365 per day, averaging 546 pedestrians at a given count location. Columbia Street, King Street, and University Avenue experienced the greatest level of cyclist and pedestrian activity among the corridors in which counters were installed. The highest counts were observed in areas of Uptown Waterloo, the University of Waterloo, and Wilfrid Laurier University.

In addition to the short-term on-road counts, the City has 12 permanent counters installed along the High Priority Network. The City of Waterloo started counting user numbers in 2014. Up to August 31, 2020 there has been more than 7 million trips recorded across the counter locations. **Table 5.3** shows the estimated peak period average cycling and pedestrian counts across the 12 locations from 2018 to 2020. The 24-hour cyclist and pedestrian counts indicate peak activity occurs during the morning (7:00 to 9:00 AM) and afternoon/evening (4:00 to 7:00 PM) periods, with smaller mid-day peaks. The peak times for active transportation activities are consistent with peak times for auto trips; therefore, confirming the active transportation trips are commuter trips.

TABLE 5.3: HIGH PRIORITY NETWORK COUNTS

Year	7:00 to 9:00 AM		4:00 to 7:00 PM	
	Average Cyclists	Average Pedestrians	Average Cyclists	Average Pedestrians
2018	112	193	128	209
2019	118	218	140	259
2020*	53	94	108	132

* Data only includes January 1 to August 31 and counts vary from previous years due to actions taken in response to the Coronavirus Pandemic.

5.4.2 Roads

Intersection Level of Service

Traffic operations at 47 major intersections in Waterloo were analyzed to provide a snapshot of current traffic flow on the road network serving the City. The locations analyzed were the same as in 2011. The City and Region provided turning movement counts for the intersections, recorded between 2015 and 2019. If the counts were collected prior to 2019, they were adjusted to this base year using a 1.4% per annum historical growth rate.

Level of service (LOS) is a qualitative measure used to describe traffic flow at an intersection. The LOS denotes how well a vehicle movement (or the entire intersection) operates by assigning quality levels based on the delay experienced by drivers. **Table 5.4** describes the different LOS in general terms and provides data concerning delays.

TABLE 5.4: LEVEL OF SERVICE DESCRIPTIONS

Level of Service	General Description	Average Control Delay (seconds/vehicle)
A	Free flow	0 to 10
B	Stable flow (slight delays)	> 10 to 20
C	Stable flow (acceptable delays)	> 20 to 35
D	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)	> 35 to 55
E	Unstable flow (intolerable delay)	> 55 to 80
F	Forced flow (congested and queues fail to clear)	> 80

Volume to capacity (v/c) ratios provide another indicator of operational efficiency. The v/c ratio represents the sufficiency of an intersection to accommodate the vehicular demand (v) based on the capacity (c), which is defined as the maximum rate at which vehicles can pass through a given point in an hour under prevailing conditions. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow is unstable and excessive delay and queuing is expected.

Using these indicators and criteria, weekday AM and PM peak hour traffic conditions at the 40 signalized, five unsignalized and two roundabout intersections were analyzed to identify any existing operational deficiencies. For the analyses, intersections and/or their individual movements experiencing a LOS E or F and/or a v/c ratio of 0.9 or greater were considered critical.

Figure 5.8 illustrates the critical movements for the AM peak hour under 2019 base year conditions. A total of 12 intersections operate or have movements (23 movements) that operate at critical levels of service. By comparison, only seven movements at five intersections were considered critical based on the 2008 counts reported in 2011 TMP.

Figure 5.9 illustrates the critical movements for the PM peak hour under 2019 base year conditions. A total of 23 intersections operate or have individual movements (56 movements) that operate at critical levels of service. By comparison, only nine movements at eight intersection were considered critical based on the 2008 counts reported in 2011 TMP.

Overall, the afternoon peak hour experiences worse levels of service than the morning due to higher traffic volumes, owing to more discretionary trips being made (i.e., work to home with shopping, recreation, social, etc.).

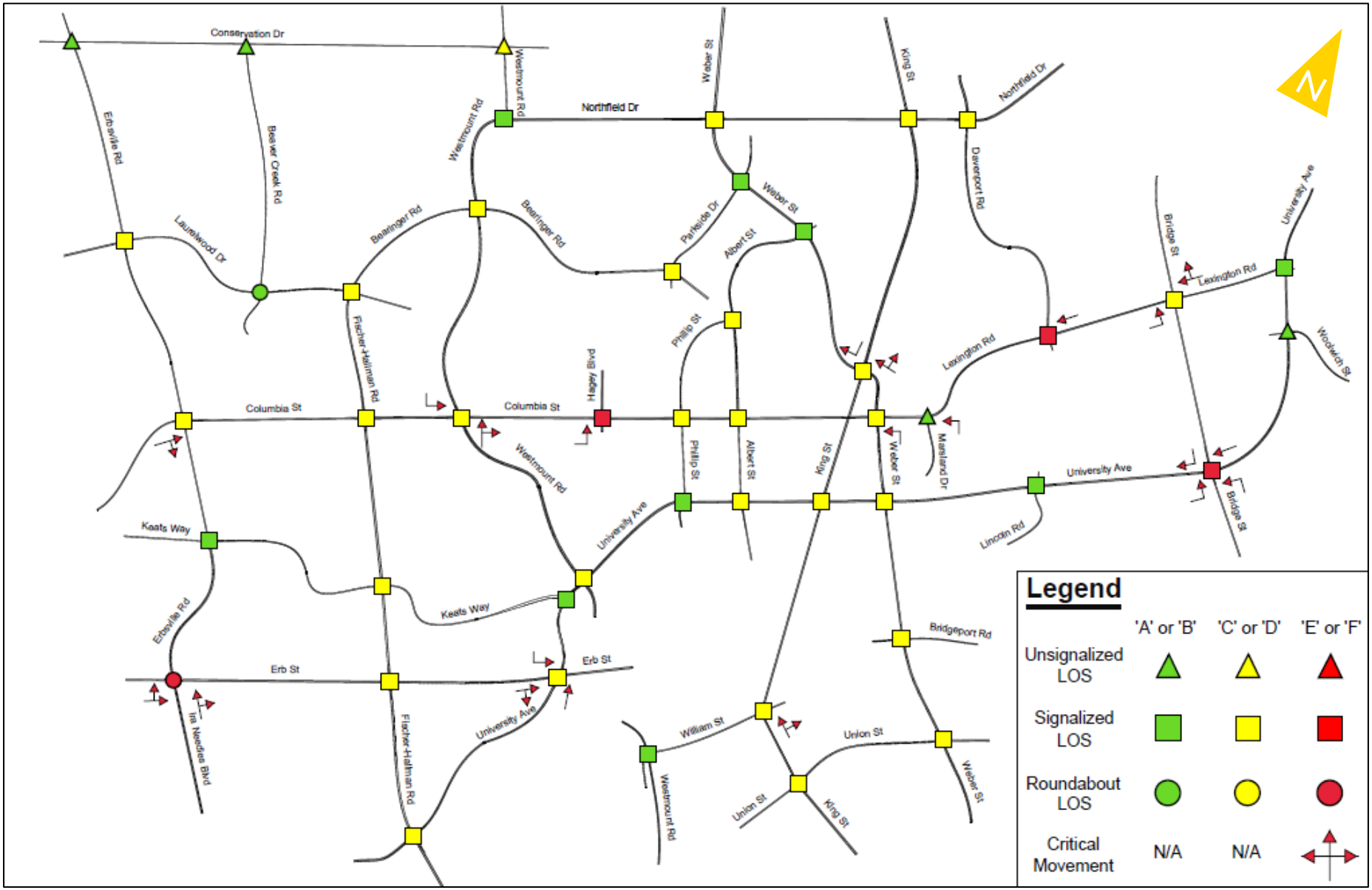


FIGURE 5.8: EXISTING WEEKDAY AM PEAK HOUR INTERSECTION LEVEL OF SERVICE

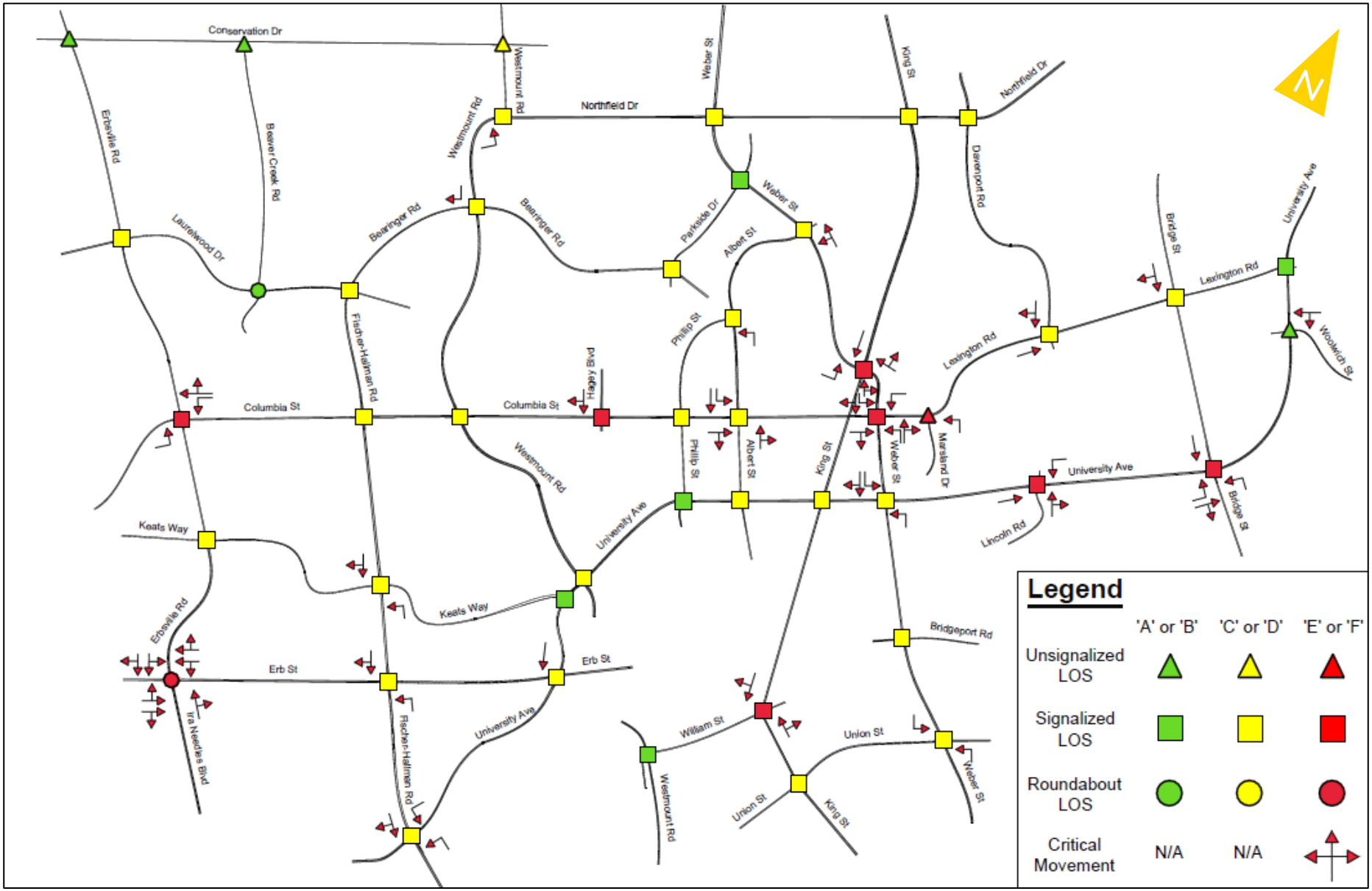


FIGURE 5.9: EXISTING WEEKDAY PM PEAK HOUR INTERSECTION LEVEL OF SERVICE

6 FUTURE OUTLOOK

6.1 Growth and Development

The City of Waterloo is expected to continue to grow to the 2041 horizon year of the WTMP. The available data indicate that both residential and non-residential development in the City will increase at a rate greater than the historical average over the immediate future. Waterloo will continue to transform from a low-rise suburban community to a more compact urban form, particularly within the Uptown Waterloo Urban Growth Centre, other designated nodes, corridors, and major transit station areas.

By 2041, Waterloo's population is forecast to grow by about 26,000 residents.

Table 6.1 summarizes the residential and non-residential development forecasts for the 2019 to 2031 planning period developed for the City's 2019 Development Charges Background Study[12]. These represent the most current source of population and employment projections for the municipality. The forecasts were derived from a range of information including Statistics Canada Census and National Household Survey data and Canada Mortgage Housing Corporation housing market statistics.

TABLE 6.1: DEVELOPMENT FORECASTS

Type	2019 Existing Estimate	2019-2041 Forecast Change	2019-2041 At 2041
Residential			
Total Occupied Dwellings	42,490	15,778	58,268
Census Population *Forecast Population in New Units*	133,482	26,701 *44,311*	160,183
Non-Residential			
Employment Place of Work *Non-Residential Building Space (sq. m)*	70,625	18,375 *716,980*	89,000

Based on these projections, the total number of new residential units in the City is anticipated to increase by 15,778 between 2019 and 2041, which translates to a population in new units of approximately 44,311 persons. The forecast persons in newly constructed units are based on the historical time series of population growth in housing over the last ten-year census period (2006-2016) as reflected in 2016 Statistics Canada Census Data and historical trends. After

[12] For the current version, visit: https://www.waterloo.ca/en/government/development-charges.aspx

taking into consideration other factors, such as changes in household size and structure over time, the City is forecast to grow by about 26,701 persons over 2019 Census population figures to the year 2041.

Employment in the City is also expected to increase over this period. The employment base is forecast to grow by 18,235 jobs, with these employees accommodated in 716,980 square metres of new non-residential gross floor area (GFA). Typical employment densities (square metres per employee) by type (i.e., commercial/ retail, employment land and institutional) were used to convert the employment forecast into building space estimates noted above.

There is a limited supply of vacant land in Waterloo for future urban growth. To ensure that population and economic growth can be accommodated, land within the City must be used more efficiently. A significant proportion of the City's population and employment growth is expected to be accommodated through intensification within the existing built-up area, resulting in changes to height and density in areas. Focal points for intensification include the Uptown Waterloo Urban Growth Centre, major transit station areas and other designated nodes and corridors. Further, the City will rely on designated greenfield areas to accommodate a significant portion of population and employment growth. Using land more intensively within designated greenfield areas may result in new communities that have higher densities than other suburban areas of the City.

The Uptown Waterloo Urban Growth Centre is a focal point within the City, and Waterloo's primary node. The Uptown Waterloo Urban Growth Centre will be planned to permit cultural facilities, recreational uses, institutional uses, public open spaces, residential, employment and commercial uses that collectively create a vibrant, human-scaled Uptown Waterloo Urban Growth Centre. This form of growth will support transit and active transportation modes, reduce the need for automobile travel and commuting times to and from the Uptown Waterloo Urban Growth Centre, and support a pedestrian-oriented streetscape.

6.2 Opportunities and Challenges

The assessment summarized in the preceding sections highlight existing conditions and prevailing trends that will shape and influence the City's transportation system in the coming years. An underlying theme of the WTMP is the integral relationship between land use and transportation. Growth and urbanization will change how people move around Waterloo. Intensification and compact development can enhance the attractiveness, convenience and safety of walking, cycling and transit use, while not compromising the efficiency of travel by other modes. The City aims to serve forecast growth in a safe, sustainable, and cost-effective manner that facilitates travel by different modes and does not create more congestion.

It is important to recognize and plan for opportunities and challenges to develop a transportation network that serves all users. The following summarizes the key transportation opportunities and challenges the City will face in the coming years:

- **Commuter trips are still highly car dependent.** Reducing the reliance on motorized vehicles can help reduce roadway congestion, combat climate change, and improve public health. Additionally, increasing the number of transit users, cyclists and pedestrians may help support greater infrastructure investments for those modes.
- **Short trips are becoming less auto dependent** as more people choose active modes for trips under 8 kms. Additional connections and accessible active transportation infrastructure would allow more people to travel around Waterloo in a healthy, sustainable way.
- **Road safety** is a paramount concern, especially for active transportation users. Road safety education, policies and pilot projects are needed to create safer streets for all users. Ongoing collaboration is required between the City and Region of Waterloo to rectify gaps in the transportation network and enhance safety.
- **Internal travel follows a typical urban demand profile** as commuters and students travel from home to work or school in the morning and return in the evening. Transportation demand management (TDM) policies and programs can help create a more sustainable transportation system by influencing personal travel decisions, including encouraging drivers to avoid travel during congested times.
- **Multi-modal travel is replacing single mode travel,** heightening the need for seamless connections between modes as well as first and last mile options. Creating a network of linked transportation options along a direction of travel would allow users to truly think about alternative solutions and even consider abandoning vehicle ownership.
- **Change in travel behaviour** due to the Coronavirus Pandemic and growing awareness of social equity issues. Over the long-term, underlying travel trends will transition to a new normal due to behavioural changes people retain and/or expect after these unprecedented times.
- **Transportation planning decisions can have significant and diverse equity impacts.** Conventional transportation planning tends to favour mobility over accessibility and automobile travel over other modes. This reduces system diversity, and therefore the options available to non-drivers, and exacerbates various external costs that are particularly harmful to disadvantaged people. More comprehensive transportation assessments can help identify more integrated, win-win solutions, which achieve a variety of social, economic, and environmental objectives.
- **New mobility options** are emerging as significant changes arise in the technologies used and attitudes towards moving people and goods. To benefit from emerging mobility options, the City needs to develop appropriate responses to these emerging trends, adapting and evolving current transportation and land use planning policies and practices.

Much has changed since City Council adopted the 2011 TMP. The recently released 2018 Region of Waterloo Transportation Master Plan and City of Waterloo 2019-2022 Strategic Plan focus not only on mode choice but also **equity, inclusion, sustainability,**

community health, safety, growth, and prosperity. Travel modes other than the automobile will not just be considered "alternatives" but will represent viable transportation options for daily use. Residents and visitors to the City will have the option to travel safely and efficiently within and through Waterloo using their mode of choice regardless of age or abilities. Communities and transportation systems will be developed and maintained with sustainability and healthy living in mind. Existing resources will be used more efficiently or repurposed. A holistic approach to managing the transportation system will allow the City to continue to grow and prosper to 2041 and beyond.

Development of this opportunities and challenges statement meets the requirements for Phase 1 of the MCEA process for master plans.

6.3 Transportation Vision, Principles and Objectives

The City's transportation vision statement reads as follows:

Waterloo has an equitable transportation system built on the principles of sustainability, choice, and safety.

The vision is supported by the following four goals:

- **Promote Travel Choice** – All individuals who live, work, visit or undertake recreational activities within the City can make trips in an integrated and seamless manner without having to drive (or own) a car. By achieving transportation equity, different travel modes, including walking, cycling, and public transit, are competitive in terms of travel time, cost, and accessibility.

- **Create a Sense of Belonging** – Transportation services provide access to equal opportunity and benefits for all citizens. Treating everyone equitably requires an acknowledgement of the unique circumstances different individuals face and provides the basis to eliminate systemic barriers. This helps to support overall neighbourhood livability, enhance quality of life, and build a strong sense of community through primarily active transportation services.

- **Support Sustainable Development** – The transportation system supports sustainable growth initiatives within the City, benefiting both the economy and environment. Enabling sustainable development patterns helps to reduce transportation contributions to climate change.

- **Optimize the Transportation System** – Make the most of infrastructure and services that already exist. Managing transportation supply and demand will help to maximize the use of existing facilities and defer the need for new infrastructure that does not support the other goals.

6.4 Alternative Planning Strategies

Phase 2 of the MCEA process requires documentation and examination of all reasonable alternatives to address the problems and opportunities and achieve the transportation vision. The alternative planning strategies are defined as follows:

Alternative 1: Capacity Focus Strategy

- A long term transportation strategy that continues to provide roadway network capacity in response to growing traffic demands could be considered a "business as usual" approach. This is because the capacity focus would continue to add vehicle travel lanes and extend roads to primarily accommodate motorized traffic, often at the expense of the expansion and improvement to the active transportation infrastructure and services. It would also perpetuate auto use and compete successfully against transit ridership growth.

Alternative 2: Demand Focused Strategy

- A long term transportation strategy that is demand-focused would concentrate on changing travel characteristics in the movement of people and goods within and through the City. At its extreme, a demand-focused strategy could strategically withhold roadway capacity enhancements to create the functional incentives needed to shift travel demands towards transit and active transportation.

Alternative 3: Complete Transportation Strategy

- A long term transportation strategy that is complete aims to decrease the growth in private auto use and increase the use of alternative modes. Private auto use would still be the predominant mode of transportation, but a complete strategy would reduce the amount of road construction needed to serve future travel demands, provide added incentives to optimize the carrying capacity of the roadway network and provide new opportunities to strategically convert or adjust the auto carrying capacity of selected City streets towards alternative transportation and/or streetscape uses.

6.5 Assessment of Alternative Strategies

A multiple account evaluation (MAE) framework was developed to compare the three alternatives and select the preferred strategy. A list of assessment criteria and associated metrics was developed to evaluate if the alternative scenarios would meet the goals of the WTMP. The evaluation criteria used in the assessment included factors related to transportation, natural, social and policy environments, and economic implications. **Table 6.2** presents the five criteria and their applicable metrics.

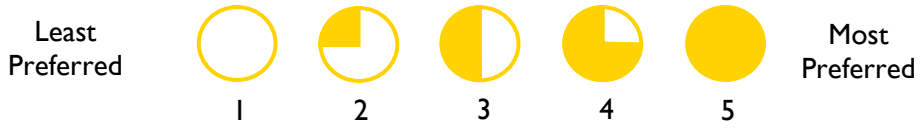
TABLE 6.2: EVALUATION CRITERIA AND MEASURES

Evaluation Criteria	Metrics
Transportation	▶ Efficiency of the road network ▶ Efficiency of transportation demand ▶ Quality of active transportation options ▶ Quality of public transit options ▶ Degree of network connectivity and continuity ▶ Facilitation of goods movement
Natural Environment	▶ Impacts on climate, air, land and water ▶ Protection significant natural environmental areas, local streams, aquatic resources, environmentally sensitive areas and air quality
Social Environment	▶ Impacts on public health and safety ▶ Support for healthier communities ▶ Mobility for all users
Policy Environment	▶ Compatibility with provincial and municipal objectives ▶ Alignment with City policies
Economic	▶ Economic competitiveness ▶ Capital and maintenance costs ▶ Impact on travel time ▶ Overall resilience

For each alternative, the evaluation criteria were assigned a score between 1 (least preferred) and 5 (most preferred) based on the scale provided below the MAE matrix. The alternatives were then ranked in terms of overall score. **Table 6.3** summarizes the MAE results.

TABLE 6.3: MULTIPLE ACCOUNT EVALUATION OF ALTERNATIVE PLANNING STRATEGIES

Alternative Planning Strategy	Transportation	Natural Environment	Social Environment	Policy Environment	Economic	OVERALL RANK
Alternative 1 Capacity Focused Strategy						3
Alternative 2 Demand Focused Strategy						2
Alternative 3 Complete Transportation Strategy						1



6.6 Preferred Alternative

Alternative 1 – Capacity Focused Strategy, while historically considered the "status quo" is not considered to be sustainable for the City for the following reasons and was therefore screened out from further consideration:

- Lack of support for quality transit, walking and cycling options;
- Impacts to natural environment and cultural heritage due to road widenings and increased traffic congestion;

- Discourages increased active transportation leading to long-term community health and wellness problems;
- Does not align with updated City, Regional and Provincial policies; and
- Expensive to construct and maintain an expanded City roadway network.

Alternative 2 – Demand Focused Strategy reduces emphasis on "conventional" transportation in favour of changing travel behaviour. This scenario would greatly reduce the City's investment in new road capacity, instead diverting funds to services such as active transportation and transportation demand management. This is reflected in the higher rankings for all categories of objectives compared to Alternative 1.

Alternative 3 – Complete Transportation Strategy builds on Alternative 2 by recognizing single occupant vehicles are the primary mode of travel. Optimizing the existing network while implementing strategic road widenings if required, achieves the City's policy and financial objectives. Additionally, the greater emphasis placed on active transportation and mobility benefits the environment while meeting social objectives.

A sensitivity analysis was performed to determine if changing the weighting of the criteria (from equal) would affect ranking. The tests indicated the preferred alternative remained the same regardless of the weight assigned.

The analysis of the alternatives based on the MAE framework led to the selection of Alternative 3 – "**Complete Transportation Strategy**" as the preferred planning strategy for the WTMP. Advancing a strategy focused on all modes of travel while optimizing the City's existing infrastructure reflects the transportation vision of an equitable transportation system built on the principles of sustainability, choice, and safety.

7 IMPLEMENTING THE PLAN

7.1 Use of the Plan

The WTMP is the overarching strategic document that provides a framework for how the City of Waterloo will address its future transportation needs to the year 2041. It describes, anticipates and plans for the strategic movement of people and goods in a transportation system that is "looking ahead". Successful implementation will ultimately require that concurrent efforts be undertaken to achieve the key strategies, such as, including supportive land uses, and managing transportation demand and constructing the road and active transportation infrastructure identified in the plan.

This study was developed in collaboration but relies on partners in implementation including the Region of Waterloo.

The City's Official Plan provides the foundation for preparing the WTMP. The primary purpose of the WTMP is to guide the City's transportation-related decision making. It also provides the need and justification for transportation infrastructure projects that require approval under the MCEA process, thereby satisfying Phases 1 and 2 of that process with problem or opportunity identification and evaluation of alternative solutions. Additionally, the WTMP provides the public with clear identification of the role and function of streets within the City, how these streets are intended to operate and how they relate to and impact on the land uses that they serve.

In addition, the WTMP is not just a plan of infrastructure actions. It also provides the policy frameworks on which to make concrete operational decisions for the City. The WTMP has been designed with the City's Strategic Plan 2019-2023 community vision statement *"Waterloo is an equitable community that leads the world in learning, discovery and caring"*, and will help to ensure that this vision is realized as part of further Strategic Plan updates.

7.2 Implementation Processes and Tools

7.2.1 Official Plan

The City of Waterloo Official Plan (OP) is a statutory planning document required by provincial legislation. Section 6.2 of the OP notes further direction regarding the transportation OP policies can be implemented through the WTMP.

Recommendation 1: Amend the City of Waterloo Official Plan to implement recommendations 6 and 40.

7.2.2 Development Approval Process

The Province of Ontario establishes the ground rules for land use planning through the *Planning Act.* The *Planning Act* authorizes municipalities to impose conditions when considering planning or development applications. The City's authority varies by type of development application, with greater latitude for conditions when considering an Official Plan Amendment, Zoning By-law Amendment and Draft Plan of Subdivision or Condominium Application. Representative transportation related conditions frequently imposed on development applications include, but not limited to:

- Dedication of property for abutting road, pathway and other transportation rights-of-way that are described in the Official Plan at no cost to the City;
- Design conditions for access to/from the subject development, such as intersection controls, lane arrangements, ramps, curbing, and traffic direction signs;
- Design conditions for off-street loading and parking facilities; and
- Design conditions for walkways, walkway ramps and all means for pedestrian access.

Transportation infrastructure improvements identified in the WTMP may be implemented through the development approval process if the improvements are directly related to the subject development.

7.2.3 Future Environmental Assessment Requirements

The WTMP will be relied upon in completing the Municipal Class EA studies for future projects identified herein. In some cases, the plan will satisfy Phases 1 (identify the problem) and 2 (identify alternative solutions to the problem) of the five-phase Municipal Class EA planning and design process. Functional plans will be completed for each project to assess costs and impacts in greater detail. It is assumed that these more detailed studies will not result in a complete rethink of the underlying basis for the project, but rather the implementation and adaptation of the initiative.

It may be desirable to alleviate adverse environmental consequences of a proposed project by relocating the facility, altering the design, or choosing not to proceed with its implementation. However, in many instances the infrastructure already exists or the options for new or improved alignments are limited. In these situations, mitigation measures are needed to minimize the negative impact of the transportation facility or service.

7.2.4 Capital Budget and Development Charges Background Study

The City develops a capital budget and forecast to facilitate long-term planning, prudent financial management, and to provide appropriate management of the City's assets. The capital budget is the City's plan to purchase, build, maintain, repair, and replace assets including

infrastructure. Capital assets also directly and indirectly impact the City's operating budget as funds are needed to cover day-to-day operating expenses associated with the asset. The percentage of funding allocated to growth versus rehabilitation is influenced by the City's Long Term Financial Plan, Asset Management Plan, and policy updates.

The Development Charges (DC) Background Study identifies and calculates the cost of infrastructure projects needed to service new development in the City. Through the DC By-law, the City can impose one-time fees on land developers, home builders and institutions when they develop or build upon an area of land. The fees are intended to offset the cost of servicing this new development. For municipalities experiencing growth, development charge revenue represents a significant portion of their capital program financing.

The WTMP should direct future capital budget submissions (which could also affect operating budget submissions) and DC background study infrastructure projects. The projects and associated costs identified in the WTMP are subject to Council approval through the budget process.

Recommendation 2: Incorporate the short and long-term projects recommended in the WTMP in the next update to the City's 10 Year Capital Plan and review on a yearly basis.

7.2.5 Asset Management Plan

An asset management strategy is a set of planned actions that enable the assets to provide the desired levels of service in a sustainable way, while managing risk, at the lowest lifecycle cost. The City of Waterloo has been actively practicing asset management for more than 40 years in its simplest form. This includes understanding what assets the City owns, their location, condition, and when and how to treat them. The City's Asset Management Plan[13] aims to maximize benefits, manage risk, and provide satisfactory levels of service to the public in a sustainable manner. The most efficient and effective way to manage the City's infrastructure is through skillful investments that include treating assets at the right time and for the right cost.

The City has almost $800 million in roads, sidewalks, walkways and trails, and bridges in its care. The average annual capital expenditures included in the Approved 2020-2022 Capital Budget and 2023-2029 Capital Forecast is $6.3M. Capital investment in this range will result in the transportation network performance declining over the next 25 years that is anticipated to be unacceptable to most stakeholders.

The WTMP's Complete Transportation Strategy focuses on all modes of travel, promoting transit, walking, and cycling, and optimizing existing infrastructure, while minimizing road expansion to strategic locations. The WTMP supports the long-term goals outlined in the City's

[13] For the current version, visit: https://www.waterloo.ca/en/government/plans.aspx

Asset Management Plan by promoting a balance between competing needs of growth and rehabilitation.

7.3 Funding Opportunities

7.3.1 General Tax Levy

Ultimately, the most reliable and consistent sources of funding for transportation system improvements will be with City's municipal tax levy and development charges.

7.3.2 Development Charges

A Development Charge (DC) by-law permits a municipality to collect development charges to provide a capital funding source to assist the municipality in providing the infrastructure required for future development. This includes roads and other capital cost items related to growth within the municipality.

Due to stipulations in the *Municipal Development Charges Act*, most growth-related projects receive less than 100 per cent of their funding from development changes and must rely on additional funding from tax supported sources. Each growth-related project is unique and carries a different DC funded to non-DC funded ratio.

In the City of Waterloo, the schedule of development charges is adjusted annually in accordance with changes in the regulated construction index during the previous year. For example, the City of Waterloo DC by-law was adjusted on January 1, 2020, decreasing the charge for a single or semi-detached dwelling by 0.7% to $15,777 compared to $15,881 in 2019.

7.3.3 Provincial and Federal Programs

The City should continue to monitor available Provincial and Federal funding programs to establish if any of the recommended improvements identified in this WTMP will be eligible. Potential funding sources to implement the recommended WTMP elements, in addition to the tax levy include:

- **Federal Gas Tax Fund,** which provides up front, twice-a-year funding to provinces and territories, who in turn flow this funding to their municipalities to support local infrastructure projects. The Federal Gas Tax Fund delivers over $2 billion every year to Canadian communities.
- **Infrastructure Ontario's Loan Program**, which provides long-term financing to eligible public-sector clients to help renew infrastructure; and
- **Special Purpose Funding** that may be available at the time of implementation, such as the Provincial Cycling Funding announced at the 2014 Ontario Bike Summit and other similar initiatives.

7.3.4 Other Funding Mechanisms

In addition to the limited opportunities for provincial and federal funding programs for municipal infrastructure construction, and Development Charges as a standard funding source, other tools exist to finance core municipal infrastructure such as roads and bridges. This list is not ranked in any way as it is difficult to capture the advantages and disadvantages of any funding mechanism as used by different, individual municipalities.

User Pay

User fees are now commonly used for municipal services such as libraries, swimming pools, arenas, etc. This is done to help manage the demand for infrastructure and provide more sustainable alternatives. Most user fees are calculated based on a "utility model" that uses the principle that the price of a product (i.e., library services) should reflect the actual costs of producing the product.

The advantages of user pay programs is that it requires strong management of the infrastructure assets that are being charged and can provide opportunities for accessing private sector capital markets (i.e., toll highways, transit systems). The main disadvantages of user pay programs is that there can be social equity issues (some can afford to pay for the service while others cannot), and it is often difficult for political decision-makers to justify and support the user charges compared to the social needs.

User pay is already used in the City of Waterloo transportation system in the form of parking charges and transit rates. To expect that there would be political and public support to extend user pay to other forms of transportation such as toll roads, congestion pricing and even bicycle licensing, enough to generate sufficient funds to support infrastructure development, is not considered viable within the 20-year timeframe of the WTMP.

Transfer Payments

Transfer payments from one order of government to another can include unconditional block transfers, grants, and flexible transfer payments. They can also include permanent dedicated revenue flows such as the 2% of the gasoline tax in Ontario that is directed to public transit.

One advantage of transfer payments is that it is a widely used form of financing infrastructure in Canada, for example the Canada Strategic Infrastructure Fund. The disadvantages include potential social inequities for people who pay for the transfer but do not use the related service (i.e., gas tax when you do not use transit), and there may be no predictability in longer term funding. However, the City already benefits from transportation-related transfer payments to either the City or the Region and this is expected to continue.

Trust Funds

This is termed "earmarked taxation" where a percentage of municipal tax revenue is dedicated to a specific investment area, for example municipal roads. The trust fund must be used for its intended purpose (i.e., to fund road construction). In the United States of America trust funds provide for most of the federal funding for highways and transit projects.

One of the main challenges with using trust funds for infrastructure funding is to ensure that funded projects are equally distributed across the community so that no one area or areas benefit while the entire community pays taxes.

Tax Increment Financing

Through tax increment financing, municipalities can reinvest property tax revenues to meet community economic development objectives involving housing development, job creation and core revitalization.

As applied in Ontario, tax increment financing is based on municipal grants and loans that can be given under the Planning Act community improvement provisions. For example, Tax Increment Financing is used by the City of Cambridge to provide funding for community improvements in the Galt City Centre. By calculating a grant or loan on the higher property tax that is generated from development (the tax increment), municipalities can offer eligible developers financing incentives that will put lands and buildings that might not otherwise be developed back into productive use. Such redevelopment can often involve road improvements.

Advantages of Tax Increment Financing include its focus on infrastructure investment as part of community revitalization, and the higher tax generation potential that comes from such revitalization. However, it has only a very limited application in Canada, is not suitable for large scale infrastructure projects and can create risks and liabilities for the municipality in the future if anticipated revenue increases do not materialize.

Public-Private Partnerships (P3s)

Public-Private Partnerships (P3s) are financing arrangements that increase involvement of the private sector in public service delivery and transfer some risk and reward to the public sector.

Ontario examples include the Highway 407 ETR and the ION LRT service in Waterloo Region. Private sector involvement can range from minimal such as garbage collection services, to comprehensive through the designing, building, owning, operating, and financing infrastructure. Within these two extremes are various levels of public and private sector involvement that are typically suited to specific projects.

The advantages of P3s include the opportunities for more construction and/or operational efficiencies and risk is transferred to the private sector. One main disadvantage can include strong public and political opposition to P3s. In the context of the City of Waterloo, opportunities for P3s to implement required transportation system developments, except for the public transit system, appear very limited and unrealistic.

Focused Advertising

Some municipalities allow the private sector to advertise on public infrastructure. Two common examples include advertising on public transit buses and at transit stops and stations, and on public golf courses. The same approach can be applied to bikeway and trail systems where private advertising opportunities are offered at strategic system locations.

Cash-in-lieu of Parking

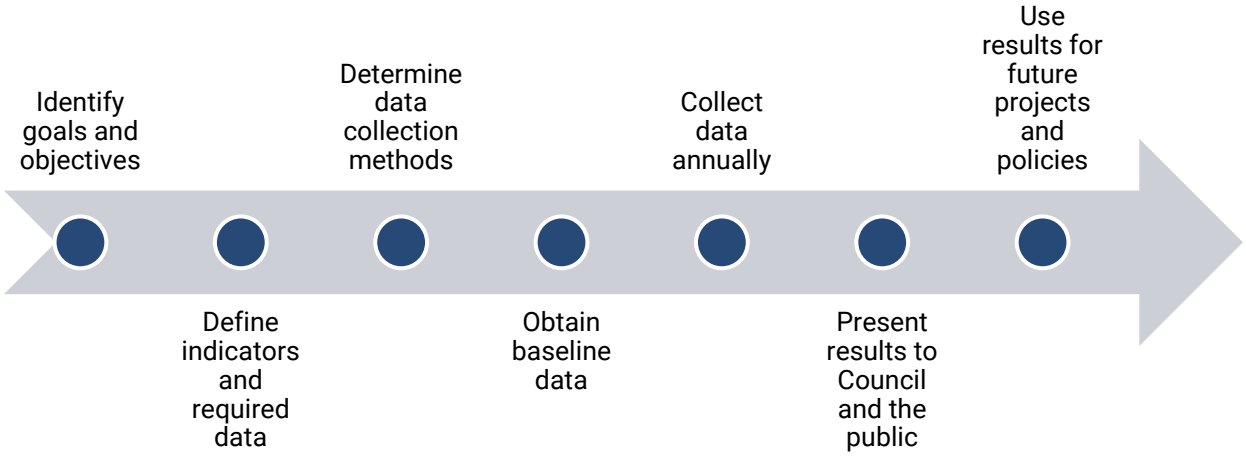
On a site-specific basis, municipal councils can, at their discretion, enter into an agreement with a landowner to provide for an exemption from providing the required parking or a reduction in the parking requirement specified in the Zoning By-law. This agreement provides for the owner to make one or more payments of money to the City as consideration for the granting of the exemption or reduction and sets the basis on which such payment is calculated. In Ontario, cash-in-lieu of parking funds must be saved in a parking reserve fund and reinvested into the supply and management of public parking. Cash-in-lieu of parking is permitted for implementation in the City through the Official Plan and Zoning Bylaw.

7.4 Monitoring

7.4.1 Strategy

Ongoing monitoring of the transportation system will enable the City to evaluate the effectiveness and overall contribution of the recommended system changes, expansions, and policies. **Figure 7.1** details the recommended process to monitor the effectiveness of the WTMP.

FIGURE 7.1: MONITORING PROCESS



7.4.2 Performance Measures

Performance measures, such as intersection volume to capacity ratio or bicycle volumes on a major street can be used to monitor the WTMP, gauging the effectiveness of the policies and recommendations in achieving the vision and goals of the plan. If performance measures indicate progress in the wrong direction, adjustments, or updates to the WTMP can be made. The goals of the WTMP can be used as a guide to determine the appropriate performance measures to use.

Specific performance measures and targets should be set to provide direction for implementation and to measure the success of achieving the WTMP vision. The City should set realistic targets based on existing trends, previously summarized in **Chapter 5.** Targets or benchmarks may also be used in marketing campaigns and events to help motivate the community.

Regular public and stakeholder consultation should be carried out to help collect information about community satisfaction. These events can help to identify barriers and motivators to increased use of alternative modes of transportation, ways to improve and grow the transportation network and specify network gaps.

7.4.3 Data Collection

The monitoring program should examine user preference for facilities, levels of use and other key factors over an extended timeframe to avoid immediate response bias (which occurs right after a new improvement is implemented). Data should be collected every two to three years (maximum every five years) and at the same time/season. Examples of specific data to collect are summarized below (Some of this data is already collected through the TTS):

Active Transportation Performance Indicators

- Active transportation mode share;
- Residents within 0.5 kilometres of cycling facilities;
- Active transportation trips less than 8 kilometres in length;
- Transit stops with direct links to the cycling network;
- Residents that feel safe and comfortable on cycling facilities;
- Funding for active transportation projects;
- Number of schools that provide adequate bike parking;
- Per-trip rate of serious and fatal injury crashes;
- Number of residents meeting the recommended level of physical activity through transportation;
- Percent of City roadways with active transportation facilities; and
- Kilometres of off-road active transportation facilities.

Road Network Performance Indicators

- Percent of congested roadways (high v/c ratio);
- Total cumulative vehicle delay;
- Vehicle ownership;
- Vehicle kilometres travelled or amount of greenhouse gas emissions;
- Multi-modal level of service
- Per-trip rate of serious and fatal injury crashes;
- Auto driver mode share;
- Percent of residents traveling to work by car;
- Yearly change in average commute time for those driving to/from work;
- Percent of households within 0.5 kilometres of transit routes;
- Transit mode share;
- Transit vehicle-hours per capita; and
- Percent of possible home-to-work trips taking less than 45 minutes by transit.

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

Recommendation 3: Implement a regular, ongoing monitoring program and set performance measures and targets to track progress.

7.4.4 Reporting

The City should prepare an annual staff report to City Council on the 'State of the Transportation System". The Report should document local transportation conditions, behaviours, needs and trends, which could include:

- Results of the traffic, cycling and pedestrian count updates;
- New trends and technologies in traffic operations and management;
- Uptown Waterloo parking supply and demand;
- Public and private sector TDM initiatives (i.e., car pooling, preferential parking, transit service delivery, flexible work hours, cycling facilities);
- Status of related regional initiatives involving transit service and regional roads;
- Status of provincial initiatives, policies, and funding programs; and
- Any need to review, amend, or update components of the WTMP.

The "State of the Transportation System" report should include joint input from Integrated Planning and Public Works Services, Community Services, Region of Waterloo, Grand River Transit, City of Kitchener, Waterloo Advisory Committee on Active Transportation, Grand River Accessibility Advisory Committee and Neighbourhood associations.

Recommendation 4: Prepare an annual staff report to City Council on the 'State of the Transportation System'.

7.5 Plan Review and Updates

The WTMP is not intended to be a static document. It must be regularly reviewed to ensure it meets the transportation needs of the City. Changing community expectations or growth and development patterns can necessitate a review of the Plan's primary recommendations, for example involving roadway capacity enhancements or adjustments.

Regular reviews and updates of the WTMP allow for the ongoing assessment of its effectiveness and relevance. Establishing this stable transportation planning cycle ensures that plan strategies remain flexible to respond to unforeseen developments and imprecise assumptions. The performance of the plan in achieving the transportation vision and goals can also be reviewed, and necessary adjustments in strategy made.

The *Planning Act* requires the City to revise its Official Plan every five years. That review process provides a timely opportunity to revisit the assumptions of the WTMP and consider the need for an update. The monitoring program discussed in **Section 7.4** will also provide an indication of the need for a review.

Over the period preceding the formal review, City and Regional Council decisions on transportation issues will have the inevitable effect of amending, deleting, replacing, or complementing some of the policies in the WTMP. For this reason, individuals must consider this plan in conjunction with the record of subsequent Council decisions to obtain a complete understanding of current policy and plans.

A regular review of the WTMP is proposed every five years. Conducting ongoing monitoring and regularly reviewing the WTMP ensures the document remains relevant and a useful source for transportation planning within the City. The City may amend the WTMP in the intervening period to reflect changes to the Official Plan and/or resulting from the development review process or other major initiatives.

Recommendation 5: Review the WTMP every five years, ideally in conjunction with a review of the City of Waterloo Official Plan and Development Charges Studies.