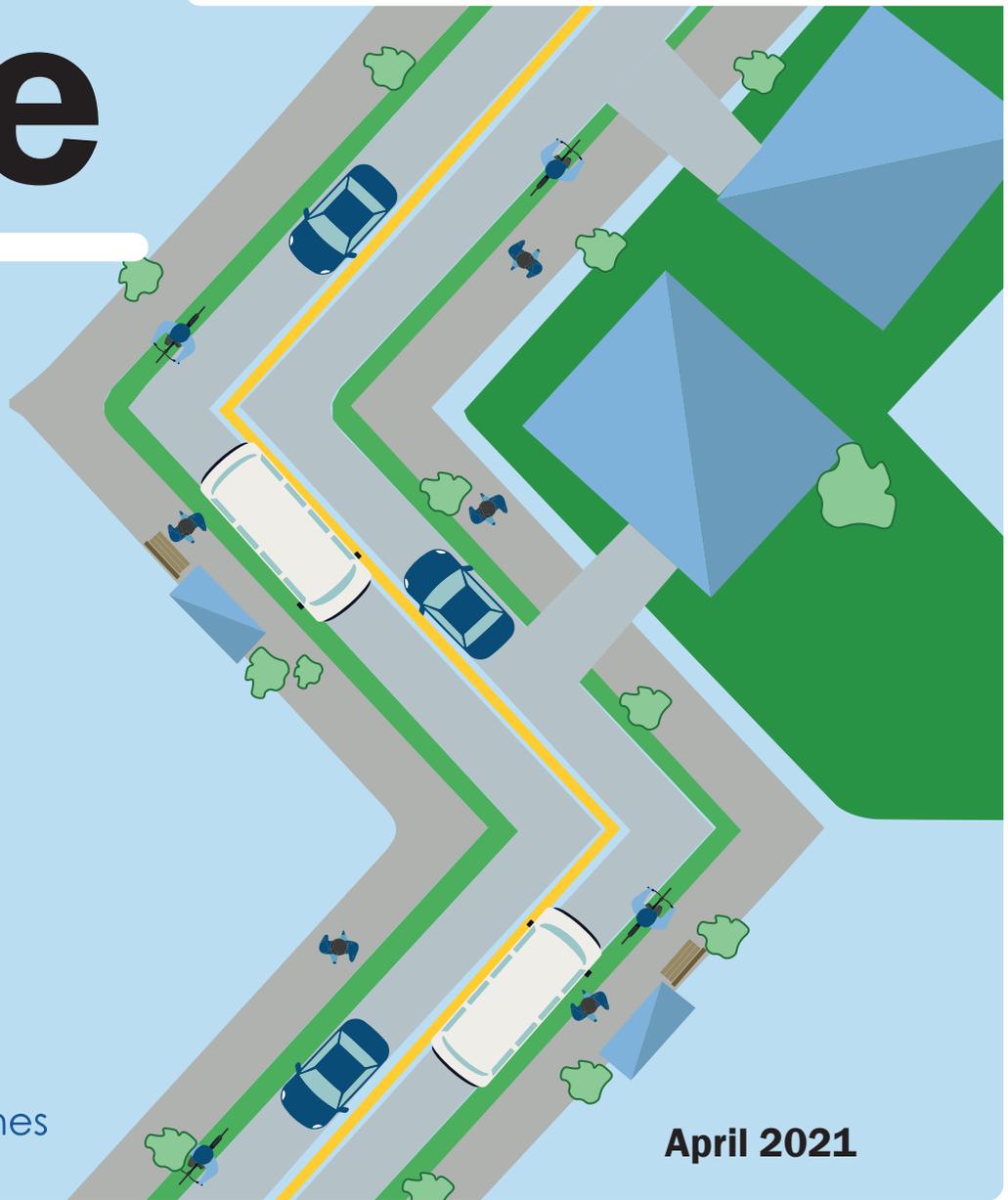


**City of St. Catharines
Transportation Master Plan**

2041

Designed to Move



Executive Summary

1 Developing the TMP

1.1 TMP Context

The City of St. Catharines Transportation Master Plan (TMP) provides clear direction on future transportation investments through a renewed focus on complete streets that enable people to travel by any mode they wish and a renewed emphasis on linking land use and transportation planning to create context-sensitive solutions. The TMP assesses transportation issues and objectives from a more holistic perspective, resulting in shifting the focus away from single occupancy vehicles and towards enhancing multiple ways to travel around town, be it on foot, bike, transit vehicle, or automobile. This TMP provides a multi-modal complete streets approach to planning, design and implementation of transportation infrastructure, supporting the City's strategic directions and policies, resulting in realistic and implementable processes, policies, programs and infrastructure solutions. The TMP provides a foundation upon which decision-making will be made in the short (0 to 5 years), medium (6 to 10 years) and long-term (11+ years).

The TMP was completed to fulfill the master plan requirements of Approach 1 of the Municipal Class Environmental Assessment (MCEA) process, which means that an opportunity statement was prepared, alternatives were assessed, and a preferred alternative was identified in consultation with internal and external stakeholders through various means of engagement throughout the life of the project. By fulfilling these Phases, several proposed infrastructure projects will be considered "pre-approved" under MCEA requirements or would not be required to complete these steps again prior to Phases 3 through 5 of the process (as needed).

1.2 Inputs and Interests

Consultation and engagement has been a key component of the development of the TMP. It has enabled the City's staff and consulting team to draw upon a wide range of local expertise, experience and knowledge in charting a path forward. The integration of staff, decision maker, resident and stakeholder group interests and values help to ensure that the master plan reflects the needs and desires of those the plan is designed to serve. During the TMP's development, multiple audiences were engaged, and feedback was incorporated into technical milestones, elements of the process and ultimately the TMP report.

Five key themes were identified from stakeholders including residents, students and technical agencies to shape the vision statement and identify preliminary improvements. These improvements were to extend the transit network, extend transit access times, promote cyclist safety, improve pedestrian connectivity and reduce vehicular congestion. These themes have been addressed through recommendations in the TMP.

2 Transportation Today

Although St. Catharines has planned for and accommodates all modes within their existing transportation network, the City is a highly auto dependent municipality. Automobile travel represents over 90% of the modal split. The existing auto dominance influences behavioral patterns and travel mode choices, as it is perceived that the automobile is the most convenient, accessible and attractive choice. Building a resilient city that has viable age-friendly transportation options and that helps address physical, mental, community, economic and environmental health will require renewed focus on sustainability in the transportation decision making processes.

2.1 Vision Statement

The vision statement for the TMP, which fulfills Phase 1 of the MCEA process, states:

St. Catharines is looking to implement a Complete Streets approach that shifts towards a user focused system, placing emphasis on the sustainable and strategic movement of people and goods, inclusively and efficiently.

The City intends to achieve this vision through planning, design, implementation and maintenance of a connected transportation network, which integrates all modes of transportation equally, with a complete streets lens. The City will focus first on the pedestrian, then the cyclist, transit user, goods movement, and finally the automobile in order to shift the focus to more sustainable modes of travel.

3 Transportation Tomorrow: A Complete Streets Approach

3.1 The Complete Streets Framework

As a mature City with a well-established transportation network, the challenge is balancing the transportation network to help ensure that multiple modes of travel are convenient with a reasonable travel time and cost. In order to change how people approach their daily transportation choices, the City needs to provide accessible and affordable solutions which can only be achieved by altering how the City plans, designs and implements transportation infrastructure.

A complete streets focused approach to transportation planning and design requires the conversation surrounding mode identification and choice shifting to consider people first. The foundation of the City's integrated complete streets approach is the development and adoption of redefined assumptions around the hierarchy of modes. The redefined hierarchy protects and prioritizes the most vulnerable road users, fundamentally placing pedestrians at the top.

The complete streets objectives for St. Catharines are to:

- Support the local economy and tourism initiatives;
- Create opportunities for more passive physical activity;
- Better integrate transportation and land use planning to develop vibrant communities with a sense of place;
- Increase the efficiency of existing rights-of-way;
- Provide opportunities for access and mobility for people of all ages and abilities;
- Capitalize and build upon road rehabilitation projects;
- Preserve the natural environment by reducing greenhouse gas emissions;
- Balance multiple modes of transportation in the rights-of-way; and
- Improve road safety through design recommendations and layout.

3.2 The Art of Completing the Street

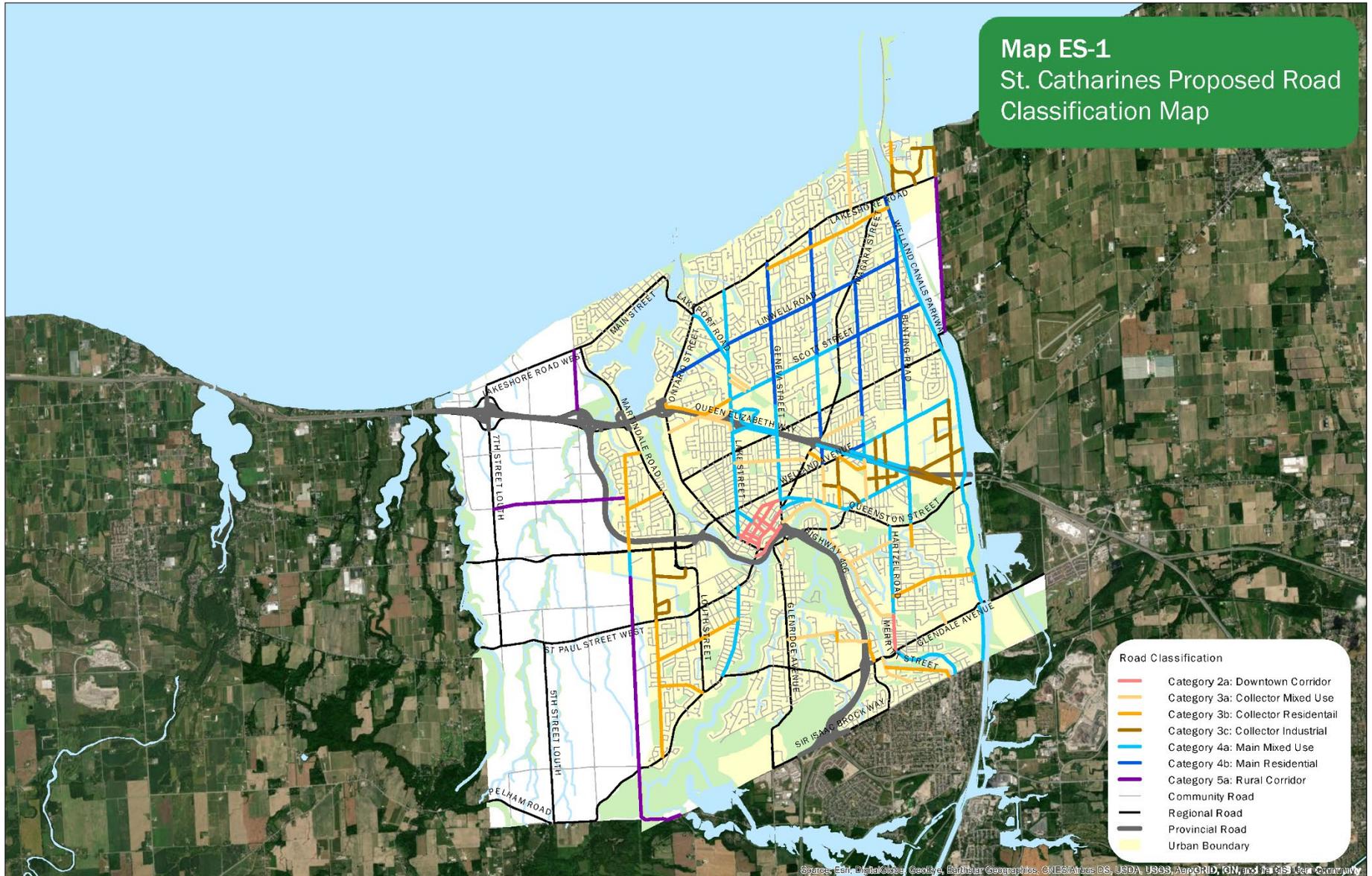
Ten new road classifications were identified which reflect the varying and unique conditions found throughout the City. The classifications were determined through extensive research and discussions with City staff. A number of inputs were considered in the reclassification of the roadway network including alignment with strategic municipal documents, optimization of the transportation network and the overall TMP objectives.

The ten classifications are:

- 1a. Community Street;
- 2a. Downtown Corridor;
- 2b. Downtown Community Street;
- 3a. Collector Mixed-use Corridor;
- 3b. Collector Residential Corridor;
- 3c. Collector Industrial Corridor;
- 4a. Main Mixed-Use Corridor;
- 4b. Main Residential Corridor;
- 5a. Rural Corridor; and
- 5b. Rural Community Street.

A map of the classified roads is provided as **Map ES-1**.

Map ES-1. St. Catharines Proposed Road Classification Map



3.3 Mode Specific Integration

The complete streets road classification is the foundation upon which modal change and behavior shifts will be made. The TMP also considers some unique, mode specific aspects and elements. The recommendations in this section intend to improve the functionality of the transportation system.

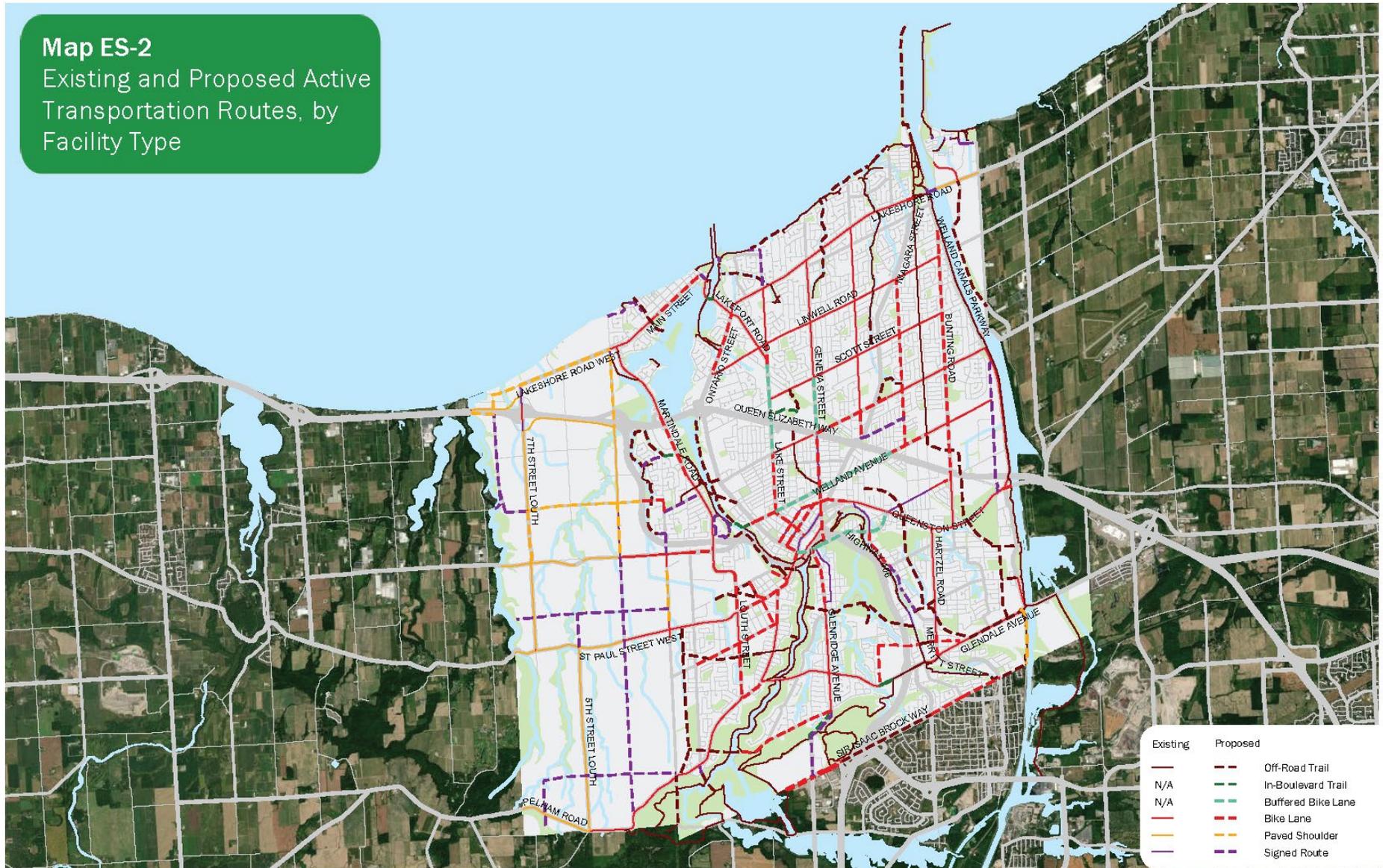
3.3.1 Active Transportation

Utilizing input received from staff, the Active Transportation Advisory Committee (now the Transportation Advisory Committee), residents, interest groups and new strategic objectives identified through Niagara Region's TMP and other municipal planning documents, the consultant team worked through a six step network improvement process to strategically identify critical infrastructure connections supporting the active transportation objectives identified by the community. The intent of the active transportation component of the TMP is to identify strategic improvements to guide future build-out of the on and off-road system. It also provides consistent design guidelines for on and off-road facilities and other amenities. The TMP proposes a total of 134.5 kilometres of active transportation routes made up of:

- 26 kilometres of signed routes;
- 11 kilometres of paved shoulders;
- 41 kilometres of bike lanes;
- 7 kilometres of buffered bikes lanes;
- 3 kilometres of in-boulevard trails; and
- 46.5 kilometres of off-road trails.

Proposed and existing routes are shown in **Map ES-2**. These routes include priority routes categorized as missing links, minimum grid network routes and loop routes.

Map ES-2. Existing and Proposed Active Transportation Routes, by Facility Type



3.3.2 Transit

The goal of the transit network recommendations is to improve routing and timing, as well as the transit connectivity throughout the City. The opportunities for improvements were analyzed through a ridership analysis where data was obtained through the passenger counter equipment, which counts boardings and alightings separately. From this, recommendations from the TMP were categorized into routes, service and “future ready” improvements.

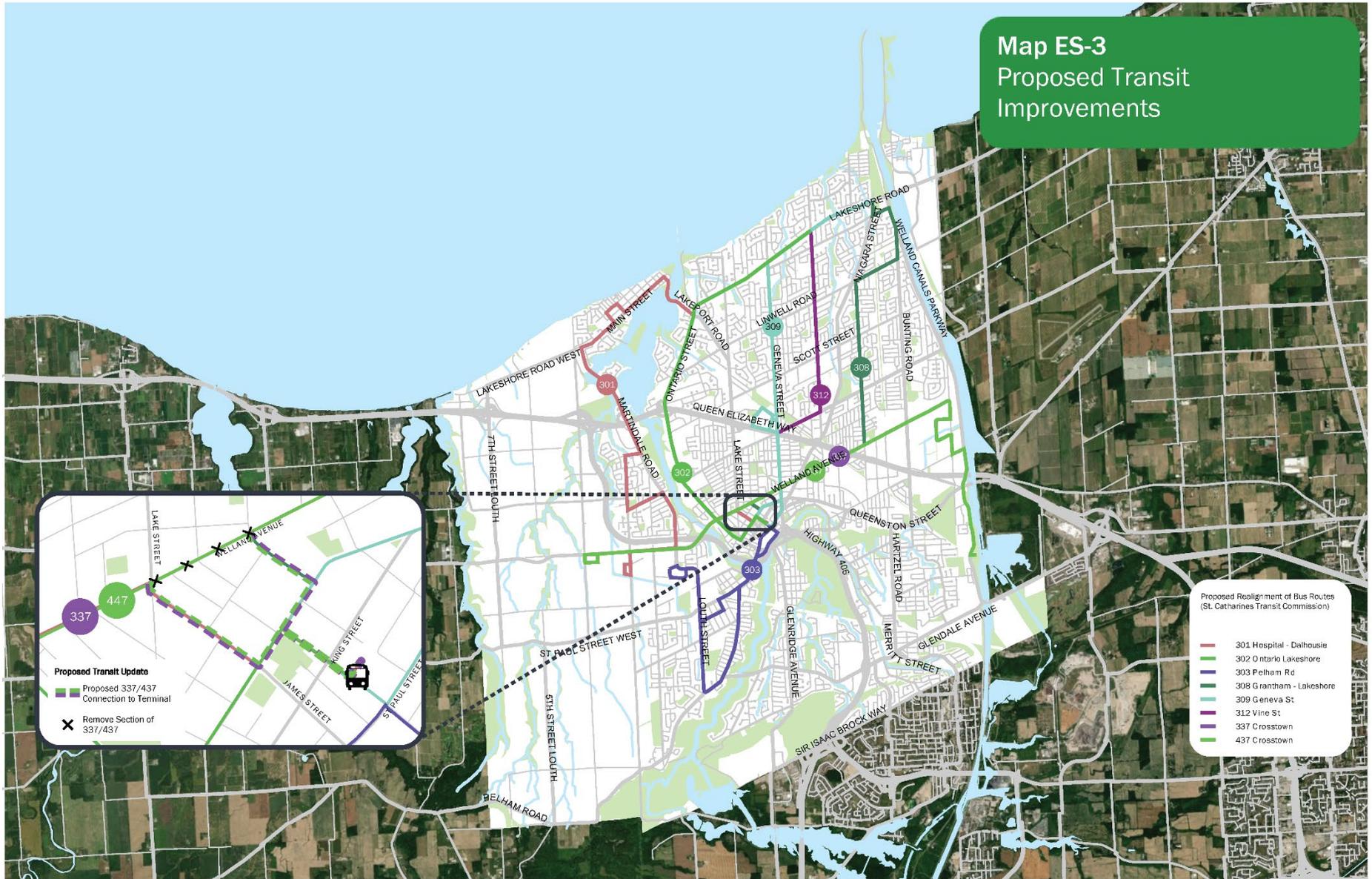
For routing improvements, route 337 / 437 Crosstown routing changes and a new Downtown connection to route 314 / 414 Scott were recommended to increase ridership and to link to other services, as shown in **Map ES-3**. It is also anticipated that in the future, GO train service along the Niagara (extended Lakeshore West) line will be increased. A downtown circulator or shuttle option connecting the downtown terminal with the station should be further explored and officially recognized as part of the system map, rather than an unofficial train-meet bus. In addition to the Downtown terminal, alternative locations or sites should be explored as a new transit hub.

Service improvements include frequency increases during the p.m. peak hour for a number of routes as well as a 15-minute frequency improvement for most 300-series routes in the afternoon to reduce overcrowding. As the fleet expands, additional maintenance and storage room will be needed depending on the number of additional buses required to accommodate the increased ridership. In addition, transit signal priority, signal coordination on transit corridors and queue jump lanes are potential improvements for transit operations. These should be placed strategically at locations with high delays to transit.

To ensure that the St. Catharines Transit Commission is operating environmentally sustainably, current trends and best practices in long term electric buses should be carefully monitored to determine the feasibility, endurance, longevity and appropriateness of new electric buses in St. Catharines.

Other transit opportunities, through GO Transit, Niagara Region Transit, and even potentially a ferry linking St. Catharines and Toronto should be kept in mind as part of the overall transit solution for the City.

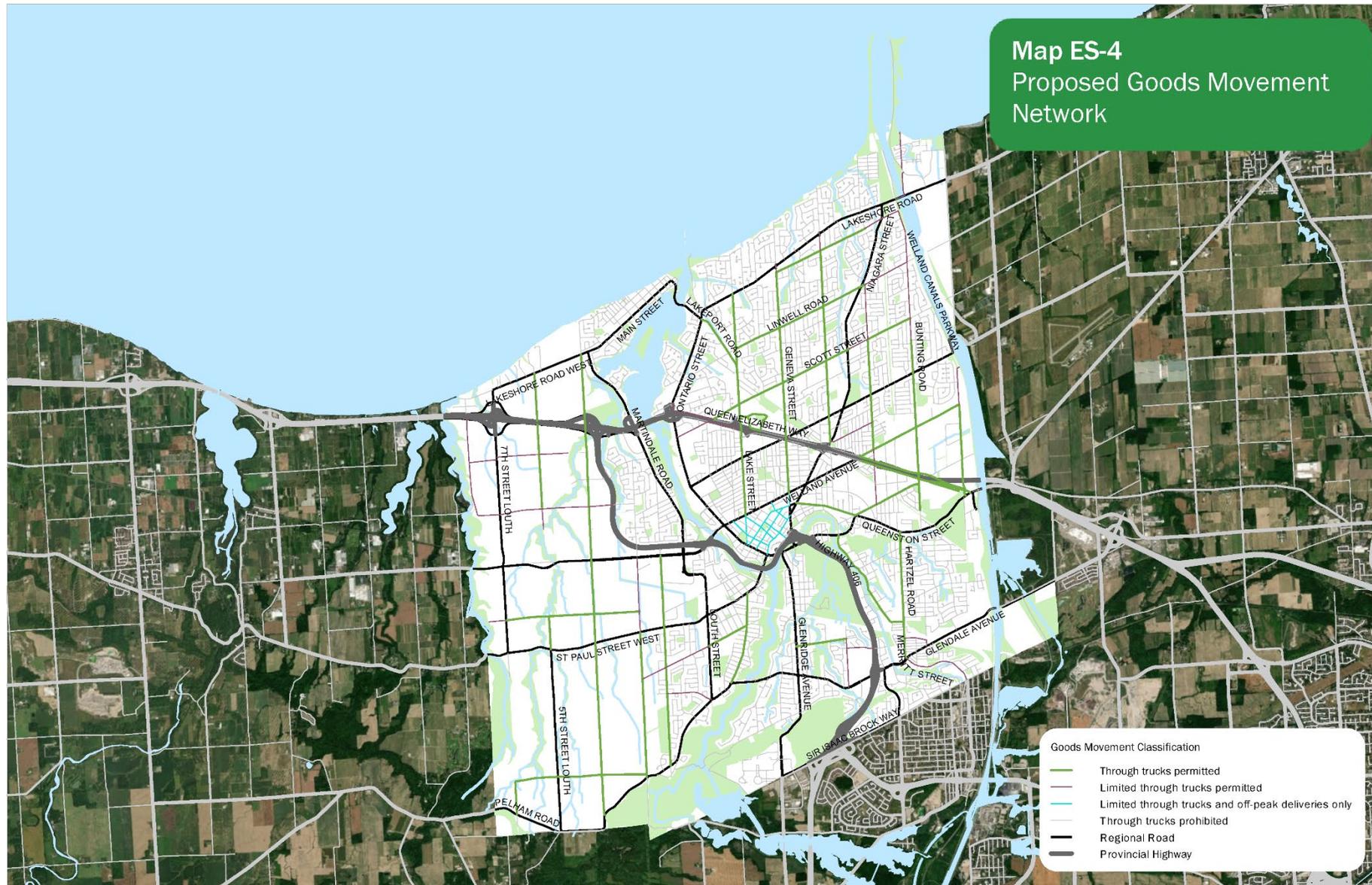
Map ES-3. Proposed Transit Improvements



3.3.3 Goods Movement

The fundamental goal of goods movement planning in St. Catharines is to make it more efficient. Goods movement should be considered as an element of the overall roadway system and be integrated into the considerations for complete streets. In addition, industrial areas that are key destinations for trucking and freight movement should be prioritized for key truck routes. When confirming the appropriateness of different road classifications, careful attention should be given to the land-use characteristics and whether the street will need a higher order of goods movement. It is recommended that St. Catharines supports Niagara Region in advocating the provincial and federal governments to advance the Niagara-Hamilton Trade Corridor and NGTA East Corridor, providing an efficient trade route connecting Niagara Region to the GTHA and USA. In the shorter term, it is recommended that the City encourage the Region to actively work with MTO for continuing improvements to the QEW and undertake a role and function study for Highway 20 / Regional Road 20 as an alternate provincial route that can accommodate longer-distance and interregional goods movement. The St. Catharines Downtown Creative Cluster Master Plan identifies policies for goods movement that should be upheld for downtown goods movement planning. In addition to preparing policies that can support the integration of existing goods movement, the City is also looking towards the future of goods movement through identifying future trends. Recommended goods movement routes are shown in **Map ES-4**.

Map ES-4. Existing and Proposed Active Transportation Routes, by Facility Type



3.4 Improving Transportation Focus Areas

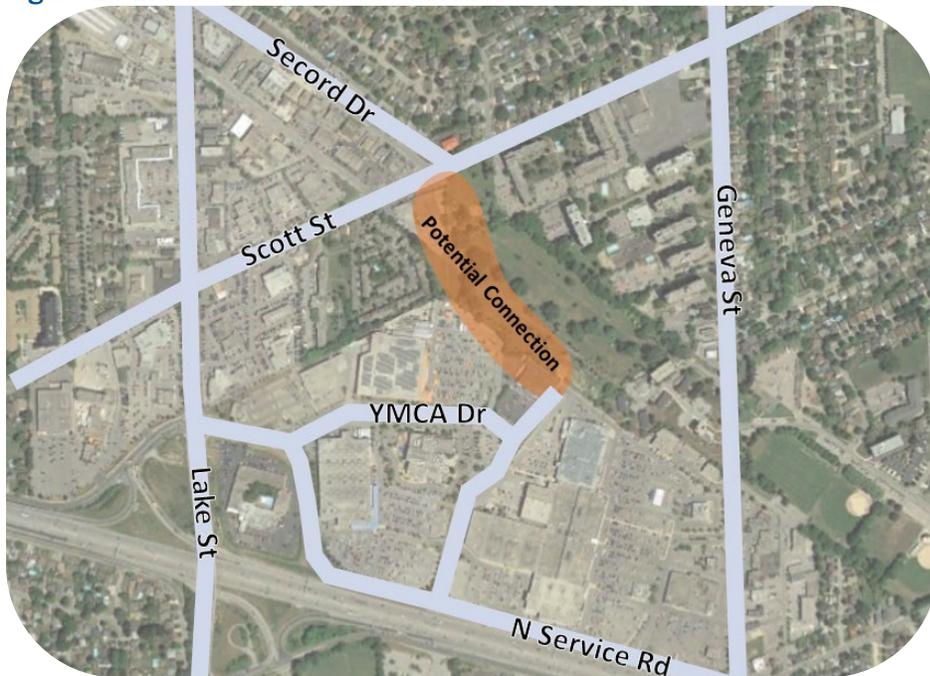
Seven transportation focus areas in the city were identified at the project outset for more detailed study. Through an initial screening process, five of these focus areas were determined to be the purview of Niagara Region or the Ministry of Transportation. The two focus areas for the City that moved forward in the analysis are the Fairview Mall Area and the Chestnut Street Extension.

For the Fairview Mall Area, the analysis focused on improving multi-modal connectivity and reducing vehicle traffic congestion. Consultation and data analysis identified that there is persistent vehicle congestion on YMCA Drive and Geneva Street as a result of high vehicle volumes, traffic signals and roadway designs. This not only affects personal automobiles but also impacts the ability of transit vehicles to maintain schedules. Site visits showed an informal path worn through the grass from people walking and cycling from Scott Street south into the precinct.

The TMP considered three alternatives and the implementation of a formal active transportation connection is recommended. A formal active transportation link will provide a direct connection for pedestrians and cyclists to/from the north while minimizing the impact on John Page Park.

Consultation regarding a transportation connection through John Page Park brought many comments supportive of an active transportation connection with strong opposition to a full vehicular connection. The primary concern being the elimination of greenspace in John Page Park that would result with a full road construction.

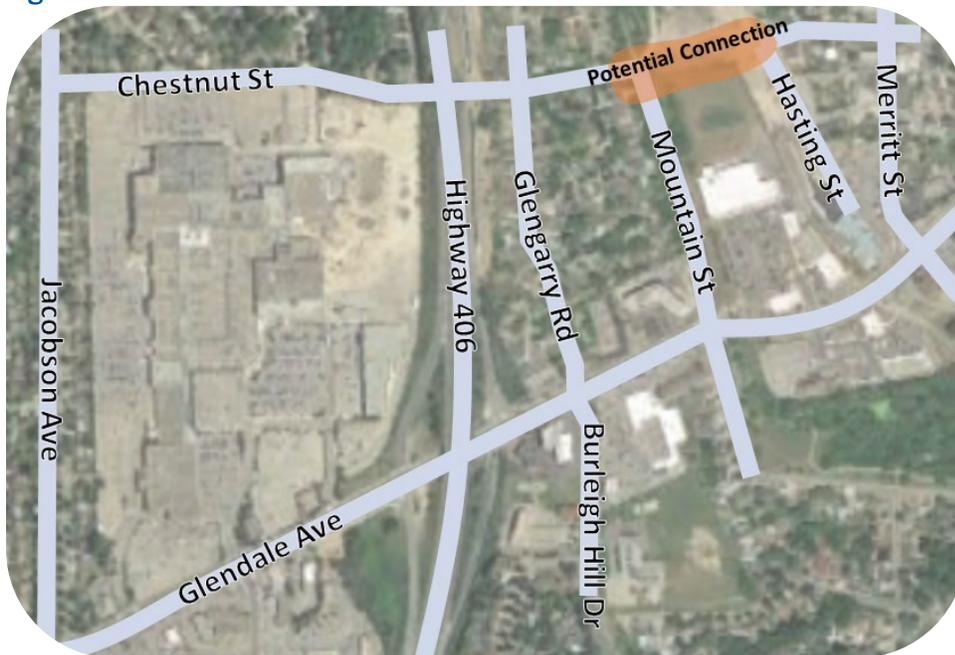
Figure ES 1. Potential Fairview Mall Area Connection



Another challenge heard was a concern about connectivity in the Glendale Avenue area near Highway 406 and the Pen Centre. Limited east-west routes and the heavy traffic volumes on Glendale Avenue impede movement in this part of the city. Three alternatives were studied and an extension on Chestnut Street West to Chestnut Street East is recommended as a Collector – Mixed Use Corridor (3a) in the complete streets road classification. This full-access link will include active transportation facilities, could be used by transit vehicles, and also would improve east-west connectivity for private vehicles throughout the neighbourhood.

Consultation regarding this recommendation generally was in favour as this recommendation is seen as a way to enhance connectivity. Concerns were raised about the possibility of traffic infiltration through the neighbourhood. Similar to the Fairview Mall area recommendation, further detailed analysis of impacts and additional consultation will take place before a final solution is identified and implemented.

Figure ES 2. Potential Chestnut Street Extension Connection



4 Implementing the TMP

Long-lasting change is shaped by the policies that are adopted and utilized by a municipality. Policies guide and inform infrastructure investment as well as the planning and design of the built environment including transportation. To facilitate a stronger complete streets foundation within the existing policy structure, there should be a standardized process of designing, constructing and maintaining the street network to ensure that it accommodates all modes of travel and all types of users. If effectively integrated, they can help to channel decisions and public investment to make streets more equitable by balancing infrastructure for the needs of different modes of travel. Complete streets policies are found throughout this TMP.

4.1 Summary of Recommendations

4.1.1 Short Term Recommendations

Complete Streets

- Implement Complete Street Design Guidelines
- Update Official Plan to reflect changes to road classifications
- Chestnut Street Extension Class Environmental Assessment Study
- Chestnut Street Extension
- On-going Complete Streets road construction and rehabilitation projects
- On-going pilots of Community-based Traffic Demand Management (TDM)
- On-going Official Plan updates
- Fairview Mall area active transportation improvements

Active Transportation

- Prepare and adopt an active transportation specific master plan
- Update promotional mapping to reflect most up-to-date route information
- Allocate annual budget to implement select missing AT links
- Continue to monitor the Region's wayfinding and signage program
- Refine, adopt trail standards and update infrastructure where needed
- Pursue discussions with the community about the design of a minimum grid pilot system to the north and south of downtown
- Work with the health unit to identify opportunities for community education around safe active transportation use
- Work with the health unit and school transportation services to identify pilot active and safe routes to school programs

Transit

- Route 337/437 Crosstown extension
- Route 314/414 Scott Downtown connection
- Frequency improvements during the p.m. peak hour (2 to 6 p.m.) on weekdays for certain routes
- Introduce GO-VIA Station shuttle
- Transit hub evaluation
- Electric hybrid bus feasibility

Goods Movement

- Implement a comprehensive Goods Movement Strategy

- Update Official Plan to introduce freight-supportive land-uses

4.1.2 Medium Term Recommendations

Complete Streets

- On-going Complete Streets road construction and rehabilitation projects
- On-going pilots of Community-based TDM
- On-going Official Plan updates
- Transportation Master Plan review

Active Transportation

- Continue to prioritize the implementation of the parkway / pathway trail system for continuous loop of off-road facilities
- Prepare and implement a coordinated municipal and regional AT-specific wayfinding and signage program
- Explore external partnerships to prioritize the implementation of a bike share system
- Implement both minimum grid systems as permanent projects within the core of the City
- Pursue additional crossings of major barriers for active transportation users
- Continue to work with partners to identify opportunities for community based social marketing initiatives focusing on a shift towards sustainable modes of transportation

Transit

- Service hours extension for specific routes

Goods Movement

- Research emerging goods movement sectors

4.1.3 Long Term Recommendations

Complete Streets

- On-going Complete Streets road construction and rehabilitation projects
- On-going pilots of Community-based TDM
- On-going Official Plan updates
- Transportation Master Plan Update

Active Transportation

- Continue to prioritize the implementation of missing trails including the design of accessible trail connections linking major communities to the downtown core

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- Expand upon the separated cycling network (minimum grid to implement permanent solutions within the downtown core)
- Identify opportunities for enhance design and implementation of amenities including bicycle parking within major community areas as well as trailheads
- Work with surrounding municipalities to establish a continuous and connected system of AT facilities in the bordering areas

Transit

- Explore operational improvements (queue jump lanes, signal improvements)
- Long-Term Operations and Maintenance Facility Needs Assessment
- Long-Term Frequency Adjustments

4.2 Costing

Efficient prioritization and allocation of financial resources are required to implement the recommendations of this TMP successfully. The following high level costs have been estimated for the active transportation, transit and road capital projects. As a living document, these costs will need to be reviewed and updated as the projects approach implementation. As the timeline progresses, additional studies, detailed designs and technical assessments are required to identify the unique requirements of each project. The following tables summarize the estimated cost for active transportation, transit and road recommendations.

Table ES-1. Active transportation costing summary

Facility	Length (km)	Unit Cost (\$)	Subtotal Cost (\$)	Design (15%)	Contingency (10%)	Estimated Total (\$)
Signed Route	26	\$1,200	\$31,200	\$4,680	\$3,120	\$39,000
Paved Shoulder	11	\$150,000	\$1,650,000	\$247,500	\$165,000	\$2,062,500
Bike Lane	41	\$53,000	\$2,173,000	\$325,950	\$217,300	\$2,716,250
Buffered Bike Lane	7	\$65,000	\$455,000	\$68,250	\$45,500	\$568,750
In-Boulevard Multi-Use Trail	3	\$325,000	\$975,000	\$146,250	\$97,500	\$1,218,750
Off-Road Trail	46	\$200,000	\$9,200,000	\$1,380,000	\$920,000	\$11,500,000
Total	134	-	\$14,484,200	\$2,172,630	\$1,448,420	\$18,105,250

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Table ES-2. Transit costing summary

	Recommendation	Estimated Total (\$)
Short	Route 337/437 Crosstown Improvements	Capital: \$2,600,000 Annual Operating: \$900,000
	Route 314/414 Scott Improvements	
	Increased P.M. service frequency	
	GO-VIA Shuttle	
Medium	Service Hour Adjustments	Annual Operating: \$950,000
Long	Service Frequency Adjustments	Capital: \$21,450,000 Annual Operating: \$1,900,000
	Operations and Maintenance Facility Needs Assessment	-
Total	-	Capital: \$24,050,000 Annual Operating: \$3,750,000

Table ES-3. Road costing summary

	Segment Road	Length (km)	Cost per km (\$)	Subtotal Cost (\$) ¹	Design (15%)	Contingency (20%)	Estimated Total (\$)
Short	Chestnut Street Extension from Mountain Street to Hasting Street	0.19	\$2,600,000	\$494,000	\$74,100	\$98,800	\$666,900
Total		0.19	\$2,600,000	\$494,000	\$74,100	\$98,800	\$666,900

¹ Note: The Ontario Ministry of Transportation Parametric Estimating Guide, 2016 provides costing guidance based on lowest bid prices for tendered construction projects from 2010 to 2016. For widening, the cost estimates include grading, drainage, paving, granular material, markings, landscaping, traffic control and roadside safety improvements. They do not include electrical and structural works, and traffic detection equipment. For new construction/extending roads, the estimates include grading, drainage, granular base, paving, traffic control, illumination, noise barriers (if applicable), traffic control and realignment of intersecting roads. They do not include structural work or property acquisition. In some cases, too few data points were available in the estimating guide to provide a reliable average. Professional judgment and previous bid experience were used to provide an estimated cost per centre line kilometre in these cases.

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