The Corporation of the
City of Kitchener

GROWING TOGETHER EAST

Phase 2: Transportation Analysis Study Report

March 2025

25175

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RE: Growing Together East
Phase 2: Transportation Analysis Study Report
City of Kitchener

LEA Consulting Ltd. is pleased to present the findings of our Transportation Analysis Study Report for the final phase of the City of Kitchener's Growing Together East's (GTE) project. This Transportation Analysis Study Report has been prepared to support the implementation of an updated planning framework for three (3) PMTSA's – Block Line, Fairway, and Sportsworld. This report concludes that the traffic associated with the proposed land uses can be accommodated by the planned road network. Recommendations are provided from a multi-modal perspective to ensure that travel by transit, walking, cycling, and driving can be supported by the future transportation network.

Should you have any comments with our assumptions or have any concerns, please contact the undersigned at rkeel@lea.ca or csidlar@lea.ca.

Yours truly,

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Encl. Growing Together East – Phase 2: Transportation Analysis Study Report, City of Kitchener (March 2025)

Disclaimer

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APPENDIX B	**AADT LINK VOLUME OUTPUTS AND TURNING MOVEMENTS**
APPENDIX C	**VISUM V/C RATIOS**
APPENDIX D	**FUTURE INTERSECTION CAPACITY ANALYSIS RESULTS**

1 INTRODUCTION

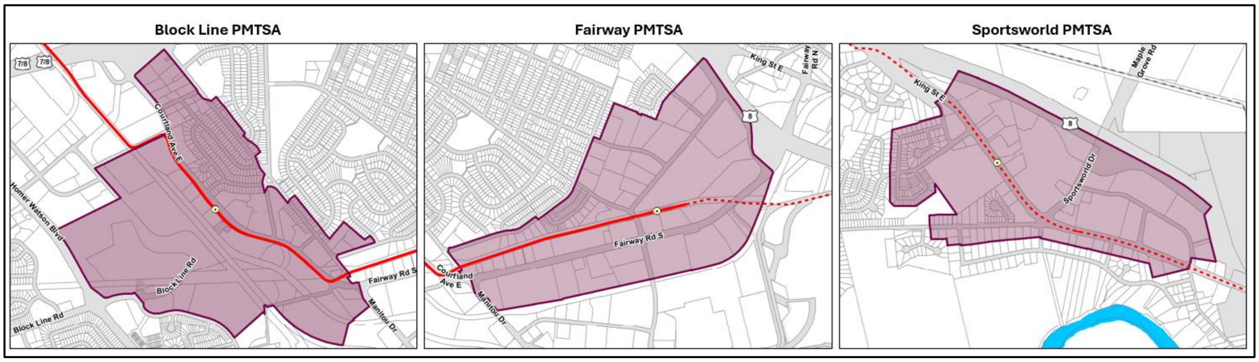
The City of Kitchener initiated the Growing Together project to introduce new Strategic Growth Area (SGA) land uses and apply them to Kitchener's ten (10) Protected Major Transit Station Areas (PMTSAs). Kitchener City Council approved Official Plan Amendments and Zoning By-law Amendments related to the first phase, Growing Together West, on March 18, 2024. The initial phase covered seven (7) PMTSAs.

LEA Consulting Ltd. (LEA) has been retained by the City of Kitchener to undertake a Transportation and Noise Analysis Study as part of the final phase, Growing Together East, to support the implementation of an updated planning framework for the three (3) remaining PMTSAs – Block Line, Fairway, and Sportsworld, which have been defined by the Regional Official Plan and centered around existing and planned ION LRT stations. This report reviews the future conditions from a multi-modal perspective in order to assess the compatibility of the proposed land use plans with future transportation conditions.

The PMTSA boundaries contain lands within a 500-800m radius of each existing or planned ION LRT station. A description and illustration of the study areas are provided below and in **Figure 1-1**.

- **Block Line PMTSA:** Centered around the existing Block Line ION station along Courtland Avenue E, bounded by Highway 8 to the north, an existing freight rail corridor to the south, Homer Watson Boulevard to the west, and Vanier Drive to the east.
- **Fairway PMTSA:** Centered around the existing Fairway ION station along Fairway Road S, bounded by Traynor Avenue to the north, the freight rail corridor to the south, Courtland Avenue E/Manitou Drive to the west, and Highway 8 to the east.
- **Sportsworld PMTSA:** Centered around the planned Sportsworld ION station along King Street E, bounded by Folleys Lane to the north, Pioneer Tower Road to the south, Wagon Street to the west, and Highway 8 to the east.

Figure 1-1: Growing Together East Study Area



1.1 SUMMARY OF PHASE 1

The Transportation and Noise Analysis Study has been conducted in two (2) phases. Phase 1 reviewed the existing conditions within each PMTSA to develop a baseline analysis for the study recommendations. A summary of the Phase 1 report along with its findings are provided below. Please refer to the memorandum titled "*Growing Together East, Transportation Analysis Study – Phase 1: Background & Methodology Memo*" for a comprehensive review of existing conditions.

1.1.1 Background Policy Review

Key provincial, regional, and local policy documents influencing the study area were reviewed. The following policy documents were reviewed to understand Kitchener's intensification goals and to identify planned cycling, road, and pedestrian network improvements within and surrounding the PMTSA study area.

- Planning Act, R.S.O. 1990, C.P.13
- Provincial Planning Statement (2024)
- Region of Waterloo Official Plan Amendment 6 (2022)
- The Region of Waterloo Transportation Master Plan – Moving Forward (2018)
- Region of Waterloo Community Building Strategy (2019) & Place-Making Strategy (2019)
- City of Kitchener Official Plan (2014)
- City of Kitchener Transportation Master Plan (2013)
- City of Kitchener Cycling and Trails Master Plan (2020)
- River Road Extension (Regional Road #56) EA
- GRT Business Plan – Conventional Bus and Train Business Plan (2024)
- Schneider's Creek Multi-Use Trail

1.1.2 Existing Transportation and Land Use Context

The existing transportation and land use context for each PMTSA was reviewed to understand the existing challenges, deficiencies, and existing development patterns within the study area. This included both a desktop review of the current road network and an analysis of the existing traffic using Synchro software to identify existing travel patterns and roadway constraints. The analysis results indicated that some localized capacity and delay issues are present within the study area road network; however, in general there is residual roadway capacity and acceptable operations for most major intersections and movements. In particular, major regional corridors and intersections are operating well and have the capacity to support additional through traffic.

The existing transit and active transportation networks were also analyzed to identify existing gaps. Based on a desktop review, all three (3) PMTSAs have a variety of existing transit routes and frequencies. However, there are opportunities to address the existing gaps and missing links in each PMTSA to improve walking and cycling.

1.1.3 Collision Analysis

Collision data from the Kitchener Open Data Portal was used to evaluate the vehicle collision history within the study area between 2015 to 2022. GIS software was applied to assess areas with a high density of collisions. The collisions analysis results identified several locations in each PMTSA with a high number of collisions. In particular, the roundabouts on Block Line Road within the study area, Vanier Drive, and sections of Fairway Road, Wilson Avenue, and Gateway Park Drive have a high number of unsignalized all-moves driveways which can benefit from traffic and safety improvements.

1.1.4 Gaps and Findings

All PMTSAs have been identified to be well served by the existing transit network, and anticipated to have increased connectivity and convenience through the proposed ION extension past Fairway Station. However, gaps in the existing cycling and pedestrian networks have been identified and described below:

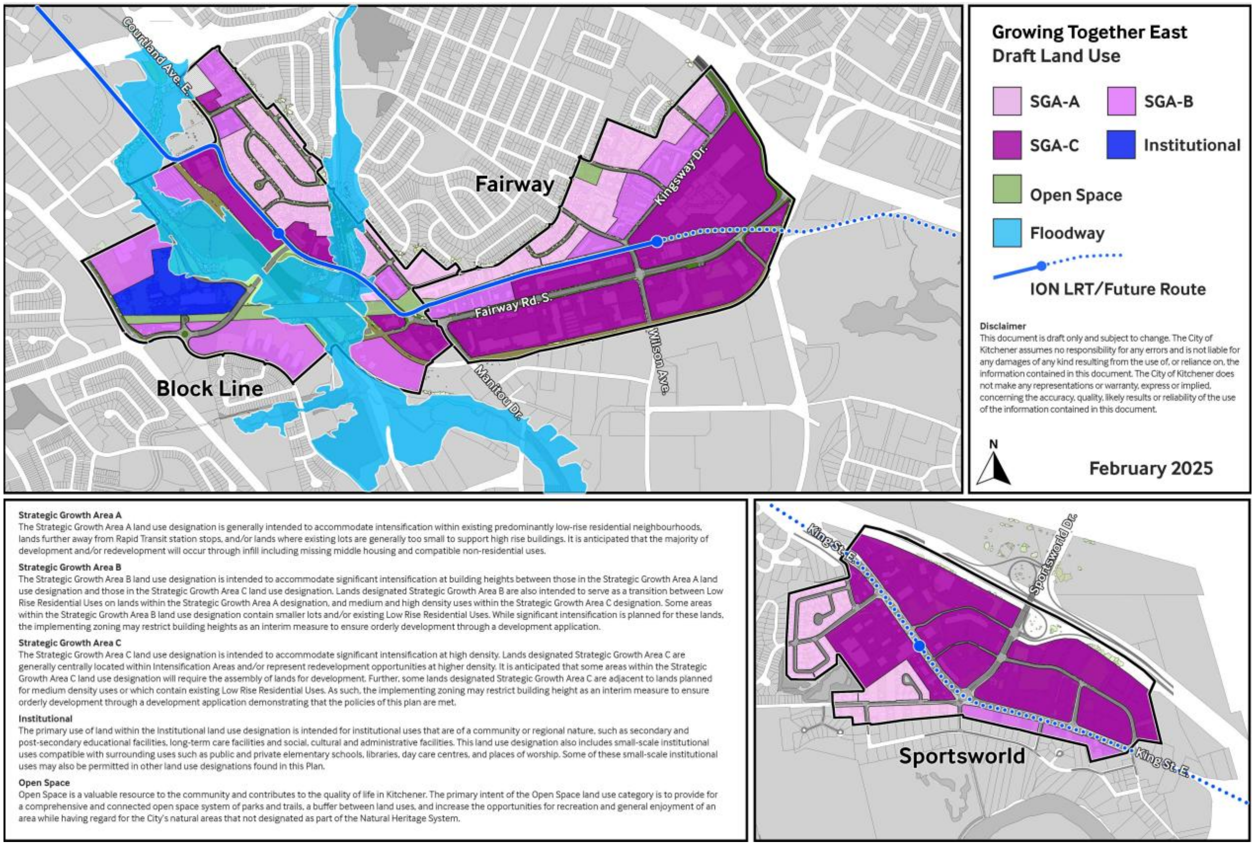
- **Block Line PMTSA:** The interruption in the BMUP along Courtland Avenue E due to the ION alignment presents a challenge for continuous connectivity. It is recommended that an active transportation facility be continued along the south side of Courtland Avenue E. New sidewalks along Balzer Road along with filling existing gaps in the pedestrian network can improve connectivity and user experience for future residents.
- **Fairway PMTSA:** Gaps in the existing cycling network include the lack of continuous bike lanes along Wilson Avenue and the abrupt terminus of the paved multi-use pathway along the ION corridor, south of Traynor Avenue. With this, there are limited cycling facilities throughout the PMTSA with few connections to surrounding neighbourhoods. From a pedestrian perspective, the ION rail corridor limits the ability to implement mid-block crossings to neighbourhoods in the north, creating a gap in the pedestrian network. Furthermore, to improve pedestrian safety and connectivity, it is recommended to fill existing gaps in the sidewalk network, and add pedestrian rail crossing lights and arms at the rail crossing along Wabanaki Drive.
- **Sportsworld PMTSA:** Significant gaps for the Sportsworld PMTSA have been identified, particularly the need for continuous bike lanes along Sportsworld Drive and improved safety at the Highway 8 on/off ramps. It is recommended that the cycling network be expanded to include King Street E, Gateway Park Drive, and Sportworld Crossing Road to support active transportation. Gaps in the pedestrian network include several roadways such as portions of Sportsworld Crossing Road, and King Street E, having sidewalks on only one side. Furthermore, the lack of mid-block connections through commercial areas have also been identified to hinder overall walkability. Adding additional sidewalks and enhancing mid-block connections are recommended to boost walkability.

1.2 FINAL DRAFT PREFERRED LAND USE CONCEPT (FEBRUARY 2025)

- The Kitchener Growing Together East project aims to update the planning framework within the study area by refining existing land use policies and zoning regulations. To support managed growth and controlled intensification, the City has categorized the study area into distinct land use designations.

Figure 1-2 illustrates these designations. A description of these designations is provided below.

Figure 1-2: Final Draft Preferred Land Use Concept (February 2025)



- **Strategic Growth Area A (SGA-A)**: This land use designation is intended to accommodate intensification within predominantly low-rise residential neighborhoods, areas located farther from rapid transit station stops, and sites where existing lot sizes are generally insufficient to support high-rise development. The majority of development and redevelopment within this area is expected to occur through infill, including the missing middle housing and compatible non-residential uses.
- **Strategic Growth Area B (SGA-B)**: This land use designation is planned to support significant intensification at building heights that serve as a transition between Strategic Growth Areas A and C. It is intended to provide a transition between low-rise residential uses within Strategic Growth Area A and the medium to high-density developments within Strategic Growth Area C. As an interim measure, implemented zoning regulations may restrict building heights to ensure orderly development.
- **Strategic Growth Area C (SGA-C)**: This land use designation is planned to accommodate significant intensification at high densities in areas that are centrally located. In some cases, land assembly may be required to facilitate development. Certain parcels within this designation are adjacent to areas planned for low- to medium-density uses, and implementing zoning regulations may impose height restrictions to ensure compatible and orderly development.

- **Institutional**: The primary use of land within the institutional land use designation is intended for community or regional nature, such as secondary and post-secondary educational facilities, long-term care facilities and social, cultural, and administrative facilities. This land use designation also includes small-scale institutional uses.
- **Open Space**: The primary intent of the Open Space land use designation is to provide for a comprehensive and connected open space system of parks and trails, a buffer between land uses, and increase the opportunities for recreation and general enjoyment of an area.

1.2.1 Population Projection Assumptions

With plans for intensification, population and employment growth is expected within each PMTSA. By 2041, the Kitchener GTE PMTSAs are expected to see an increase in population and employment density to 4,624 ppl/km^2 and 146 jobs/km^2 respectively. The existing and future population density for each PMTSA are summarized in **Table 1-1**.

Table 1-1: Existing and Future Population and Job Density

	Kitchener GTE PMTSA			All PMTSAs
	Block Line	Fairway	Sportsworld	
PMTSA Boundary Area	1.27 km^2	1.11 km^2	1.0 km^2	3.38 km^2
Existing Population (# of people)	4,569	6,523	1,298	12,390
Existing Employment (# of jobs)	993	3,822	2,413	7,228
Population in Approved Developments (# of people)	3,439	N/A	1,585	5,079
Anticipated Population Growth (# of people)	3,343	5,204	2,002	10,549
Anticipated Employment Growth (# of jobs)	164	157	174	495
Future Population (2041)	11,406	11,727	4,885	28,018
Future Employment (2041)	1,157	3,979	2,587	7,723
Existing Population Density	3,598 ppl/km^2	5,877 ppl/km^2	1,298 ppl/km^2	3,666 ppl/km^2
Future Population Density	8,981 ppl/km^2	10,565 ppl/km^2	4,885 ppl/km^2	8,289 ppl/km^2
Difference	**+5,383 ppl/km^2**	**+4,688 ppl/km^2**	**+3,587 ppl/km^2**	**+4,624 ppl/km^2**
Existing Job Density	782 jobs/km^2	3,443 jobs/km^2	2,413 jobs/km^2	2,138 jobs/km^2
Future Job Density	911 jobs/km^2	3,585 jobs/km^2	2,587 jobs/km^2	2,285 jobs/km^2
Difference	**+129 jobs/km^2**	**+141 jobs/km^2**	**+174 jobs/km^2**	**+146 jobs/km^2**

2 DEVELOPMENT OF ALTERNATIVE SOLUTIONS

Three (3) alternative solutions per PMTSA were developed based on transportation network gaps identified in Phase 1, network requirements identified from the traffic analysis in **Section 5**, and the evaluation criteria detailed in **Section 3**. These alternative solutions were proposed for evaluation to identify the set of roads, pedestrian, cycling, and transit solutions that best respond to enhancing the existing transportation network and supporting development within each PMTSA.

2.1 ALTERNATIVE SOLUTION 1 (DO NOTHING)

Block Line, Fairway, and Sportsworld PMTSAs

The Do Nothing solution represents the base-case scenario and includes the existing street, active transportation, and transit networks within each PMTSA, with the addition of the forecasted 2041 population and employment.

2.2 ALTERNATIVE SOLUTION 2 (PLANNED IMPROVEMENTS)

Alternative Solution 2 includes the existing transportation network as well as planned new streets, active transportation, and transit initiatives being undertaken by the Region of Waterloo and City of Kitchener as per the respective policy planning documents. The 2041 population and employment forecasts were also included under Alternative Solution 2. The following summarizes the planned transportation improvements considered in each PMTSA.

Block Line PMTSA

The transportation network improvements included under Alternative Solution 2 for the Block Line PMTSA are summarized in **Table 2-1**.

Table 2-1: Alternative Solution 2 – Block Line Transportation Network Improvements

Transportation Network	Network Improvements Included in Solution 2
Street Network	No planned regional or municipal road network improvements were identified within the Block Line PMTSA
Pedestrian Network	The following pedestrian network improvements were identified in the Block Line PMTSA and included in Alternative Solution 2: ▶ In boulevard multi-use trail along Courtland Avenue E between Hayward Avenue and Block Line Road ▶ In boulevard multi-use trail along Hayward Avenue between the existing rail corridor and Hanson Avenue / Lennox Lewis Way ▶ In boulevard multi-use trail along Block Line Road between Courtland Avenue E and Homer Watson Boulevard ▶ Off-street Schneider Creek multi-use trail extension (TransCanada Trail)
Cycling Network	The following cycling network improvements were identified in the Block Line PMTSA and included in Alternative Solution 2: ▶ Bike lanes along Hilmount Street between Courtland Avenue E and Shelley Drive ▶ Bike lanes along Vanier Drive between Shelley Drive and Traynor Avenue

Transportation Network	Network Improvements Included in Solution 2
Transit Network	No new major regional transit improvements were identified within the Block Line PMTSA. However, as per the Region of Waterloo Transportation Master Plan and the GRT Business Plan, increases to transit frequencies and expansion to new growth areas are proposed to improve transit coverage throughout the Region

Fairway PMTSA

The transportation network improvements included under Alternative Solution 2 for the Fairway PMTSA are summarized in **Table 2-2**.

Table 2-2: Alternative Solution 2 – Fairway Transportation Network Improvements

Transportation Network	Network Improvements Included in Solution 2
Street Network	The following road network improvements were identified in the Fairway PMTSA and included in Alternative Solution 2: ▶ Widening of Fairway Road S from four lanes to six lanes between King Street E and Wilson Avenue ▶ River Road extension from King Street E to Bleams Road / Manitou Drive ▶ Realignment of Wabanaki Drive as part of the River Road extension
Pedestrian Network	The following pedestrian network improvements were identified in the Fairway PMTSA and included in Alternative Solution 2: ▶ In boulevard multi-use trail along Fairway Road S between Wilson Avenue and King Street E ▶ In boulevard multi-use trail along Wilson Avenue between Fairway Road S and Grand Crest Place
Cycling Network	The following cycling network improvements were identified in the Fairway PMTSA and included in Alternative Solution 2: ▶ Bike lanes along Wilson Avenue between Fairway Road S and the existing cycling facilities at Traynor Avenue ▶ Bike lanes along Kingsway Drive between Wilson Avenue and east of Cedarwoods Crescent
Transit Network	The following transit network improvements were identified in the Fairway PMTSA and included in Alternative Solution 2: ▶ Extension of the ION LRT system from Fairway Station in Kitchener to Downtown Cambridge with a new station within the Sportsworld PMTSA ▶ Increases to transit frequencies and expansion to new growth areas to improve transit coverage throughout the Region

Sportsworld PMTSA

The transportation network improvements included under Alternative Solution 2 for the Sportsworld PMTSA are summarized in **Table 2-3**.

Table 2-3: Alternative Solution 2 – Sportsworld Transportation Network Improvements

Transportation Network	Network Improvements Included in Solution 2
Street Network	No planned regional or municipal road network improvements were identified within the Sportsworld PMTSA
Pedestrian Network	The following pedestrian network improvements were identified in the Sportsworld PMTSA and included in Alternative Solution 2:

Transportation Network	Network Improvements Included in Solution 2
	▶ In boulevard multi-use trail along King Street E between River Road and Fountain Street S ▶ In boulevard multi-use trail along Pioneer Tower Road between King Street E and Pioneer Ridge Road
Cycling Network	The following cycling network improvements were identified in the Sportsworld PMTSA and included in Alternative Solution 2: ▶ Bike facilities along Sportsworld Drive between King Street E and the existing facilities at Gateway Park Drive / Heldmann Road
Transit Network	The following transit network improvements were identified in the Sportsworld PMTSA and included in Alternative Solution 2: ▶ Extension of the ION LRT system from Fairway Station in Kitchener to Downtown Cambridge with a new station within the Sportsworld PMTSA ▶ Increases to transit frequencies and expansion to new growth areas to improve transit coverage throughout the Region

2.3 ALTERNATIVE SOLUTION 3 (OPTIMIZED NETWORK)

Alternative Solution 3 includes planned regional and municipal network improvements outlined in **Section 2.2**, in addition to proposed network solutions to improve local circulation and access to and from existing and future nodes and development areas. Alternative Solution 3 also aims to address gaps identified in the existing active transportation network such as twinning along sections of streets where sidewalks are only present on one side of the roadway or the extension of planned trail facilities to improve multi-modal connectivity. The 2041 population and employment forecasts were also included under Alternative Solution 3. The following summarizes the proposed transportation improvements considered in each PMTSA.

Block Line PMTSA

The transportation network improvements included under Alternative Solution 3 for the Block Line PMTSA are summarized in **Table 2-4**.

Table 2-4: Alternative Solution 3 – Block Line Transportation Network Improvements

Transportation Network	Network Improvements Included in Solution 3 (1)
Street Network	The following street network improvements are proposed for the Block Line PMTSA and included in Alternative Solution 3: ▶ Local Road A between Hayward Avenue (mid-block) to the intersection of Courtland Avenue E & Hillmount Street
Pedestrian Network	The following pedestrian network improvements are proposed for the Block Line PMTSA and included in Alternative Solution 3: ▶ New sidewalks along Local Road A ▶ Sidewalk twinning along portions of Lennox Lewis Way / Hanson Avenue, Shelley Drive, and Courtland Avenue E ▶ New active transportation facility along Courtland Avenue E and Balzer Road
Cycling Network	The following cycling network improvements are proposed for the Block Line PMTSA and included in Alternative Solution 3: ▶ New cycling facility along Courtland Avenue E and Balzer Road
Transit Network	No major transit improvements are proposed for the Block Line PMTSA

Note: (1) – Network improvements included in Solution 3 are in addition to those identified in Solution 2.

Fairway PMTSA

The transportation network improvements included under Alternative Solution 3 for the Fairway PMTSA are summarized in **Table 2-5**.

Table 2-5: Alternative Solution 3 – Fairway Transportation Network Improvements

Transportation Network	Network Improvements Included in Solution 3 (1)
Street Network	The following street network improvements are proposed for the Fairway PMTSA and included in Alternative Solution 3: ▶ Minor Collector A (E-W) between Manitou Drive (approx. 100m south of Fairway Road S and Wilson Avenue (approx. 100m south of Fairway Road S) ▶ Minor Collector B (E-W) between Wilson Avenue and Wabanaki Drive (approx. 100m south of Fairway Road S ▶ Minor Collector C (N-S) between Wabanaki Drive and the intersection of Kingsway Drive and Greenfield Avenue ▶ Minor Collector D (N-S) between Fairway Road S (approx. 140m east of Wabanaki Drive) and the intersection of Kingsway Drive and Cedarwoods Cresent ▶ Local Road A (N-S) between the intersection of Fairway Road S & 655 Fairway Road S and Laneway A ▶ Local Road B (N-S) between the intersection of Fairway Road S & 655 Fairway Road S and Minor Collector A ▶ Local Road C (N-S) between the intersection of Fairway Road S & 589 Fairway Road S and Laneway B ▶ Local Road D (N-S) between the intersection of Fairway Road S & 589 Fairway Road S and Minor Collector A ▶ Local Road E (N-S) between Fairway Road S (approx. 200m west of Wilson Avenue) and Laneway B ▶ Local Road F (N-S) between Fairway Road S (approx. 200m west of Wilson Avenue) and Minor Collector A ▶ Laneway A (E-W) between the intersection of Courtland Avenue E & Manitou Drive and 642 Fairway Road S (east property line) ▶ Laneway B (E-W) between 600 Fairway Road S and Wilson Avenue
Pedestrian Network	The following pedestrian network improvements are proposed for the Fairway PMTSA and included in Alternative Solution 3: ▶ New sidewalks along all new minor collector, local road, and laneways ▶ Sidewalk twinning along Wabanaki Drive and Kingsway Drive ▶ New active transportation facility along Fairway Road S
Cycling Network	The following cycling network improvements are proposed for the Fairway PMTSA and included in Alternative Solution 3: ▶ New cycling facility along Minor Collector A, B, C, and D ▶ New cycling facility along Fairway Road S
Transit Network	No major transit improvements are proposed for the Fairway PMTSA

Note: (1) – Network improvements included in Solution 3 are in addition to those identified in Solution 2.

Sportsworld PMTSA

The transportation network improvements included under Alternative Solution 3 for the Sportsworld PMTSA are summarized in **Table 2-6**.

Table 2-6: Alternative Solution 3 – Sportsworld Transportation Network Improvements

Transportation Network	Network Improvements Included in Solution 3 (1)
Street Network	The following street network improvements are proposed for the Sportsworld PMTSA and included in Alternative Solution 3: ▶ Deer Ridge Drive extension from its eastern terminus to Local Road B ▶ Tu-Lane Street extension between Gateway Park Drive and Laneway A ▶ Local Road A (E-W/N-S) between the intersection of Deer Ridge Drive & 4295 King Street E Access and the intersection of King Street E & Sportsworld Crossing Road ▶ Local Road B (N-S) between Sportsworld Crossing Road & 50 Sportsworld Crossing Road Access and Heldmann Road ▶ Local Road C (Loop) between Heldmann Road & 4336 King Street E Access and Heldmann Road & 40 Sportsworld Drive Access ▶ Local Road D (E-W) between Heldmann Road and Sportsworld Crossing Road & 70 Sportsworld Drive ▶ Local Road E (E-W) between 100 Gateway Park Drive (west property line) and King Street E (approx. 250m east of Sportsworld Drive) ▶ Local Road F (N-S) between Local Road E and Tu-Lane Street (approx. 70m north of King Street E) ▶ Local Road G (N-S) between Tu-Lane Street (approx. 70m north of King Street E) and Gateway Park Drive & 170 Gateway Park Drive Access ▶ Laneway A (N-S) between Local Road A and Local Road G
Pedestrian Network	The following pedestrian network improvements are proposed for the Sportsworld PMTSA and included in Alternative Solution 3: ▶ New sidewalks along all new local roads and laneways ▶ Sidewalk twinning along portions of Sportsworld Crossing Drive, Heldmann Road, and future Local Roads A, B, C, and D
Cycling Network	The following cycling network improvements are proposed for the Sportsworld PMTSA and included in Alternative Solution 3: ▶ New cycling facility along Heldmann Road and Gateway Park Drive
Transit Network	No major transit improvements are proposed for the Sportsworld PMTSA

Note: (1) – Network improvements included in Solution 3 are in addition to those identified in Solution 2.

3 EVALUATION OF ALTERNATIVE SOLUTIONS

An evaluation framework was developed to assess the future road, transit, and active transportation networks, utilizing standard measures of capacity and multi-modal travel metrics. The purpose of this evaluation is to determine whether the alternative network solutions have the ability to accommodate projected trip volumes while maintaining efficient traffic flow, transit operations, safe active transportation travel.

3.1 EVALUATION CRITERIA

The evaluation criteria developed as part of Phase 1 of the Study include key roadway metrics such as volume-to-capacity ratios, intersection LOS, and queuing analysis to identify potential bottlenecks and operational challenges. Additionally, the assessment incorporates considerations for future road and active travel needs, with a focus on creating pedestrian-friendly block sizes, supporting convenient routing to major destinations, and optimizing intersection pacing to enhance walkability and accessibility. By integrating these criteria, the following evaluation aims to balance the needs of all road users and support the City's key mobility objectives for each PMTSA.

Since Phase 1 of the Study, slight modifications were made to the evaluation criteria to better assess the alternatives. The updated evaluation criteria are summarized in **Table 3-1**.

Table 3-1: Evaluation Criteria

Principle	Criteria	Measure		Source
Connectivity *Will it increase travel options and improve network connectivity?*	Increases street network connectivity and continuity	Quantitative	Meets desired Road Network and Active Connectivity Index • Street connectivity: 1.4 to 1.7 • Pedestrian connectivity: 1.5 to 1.8	Victoria Transportation Policy Institute (2017)
	Provides more route options for transit, walking, and cycling	Quantitative	Total length of sidewalks and dedicated cycling infrastructure	-
		Quantitative	Total transit routes	-
Accessibility & Integration with Other Modes *Will it increase accessibility to travel options and provide a seamless transition between different modes of transport?*	Increase accessibility to public transit	Quantitative	95% of the residences, jobs and other activities / uses are within 250m walking distance of a transit stop	Kitchener Urban Design Manual (modified (1))
		Quantitative	Meets desired transit stop spacing of 250m or less	Kitchener Urban Design Manual
	Increases accessibility to active transportation infrastructure	Quantitative	90% of residents/jobs are within 400m of existing or proposed multi-use trail or cycling infrastructure	Best Practice Review
	Integrates connections between different modes of travel & supports first- mile last mile connections	Quantitative	Number of dedicated active transportation facilities that connect to rapid transit	-

Principle	Criteria	Measure		Source
Experience & Safety *Will it make travel safer, more comfortable, and convenient?*	Provides adequate capacity for all modes of travel	Quantitative	Vehicle travel times and intersection delays	Region of Waterloo Transportation Impact Study Guidelines (2013)
		Qualitative	Meets desired transit level of service	City of Ottawa MMLOS Guidelines (2015)
	Increases comfort and safety for pedestrians and cyclists	Qualitative	Meets desired pedestrian & cycling level of service	City of Ottawa MMLOS Guidelines (2015)
	Supports efficient surface transit	Qualitative	Protects space for future transit-only lanes, queue jump lanes, and transit signal priority	Kitchener Complete Streets Guideline (2019)
	Improves safety for all users	Qualitative	Design to reduce potential fatalities and severity of collisions (traffic calming or reducing speed limits)	Kitchener Complete Streets Guideline (2019)
		Qualitative	Intersection and mid-block crossing location that prioritize pedestrian safety and convenience	Kitchener Complete Streets Guideline (2019)
	Minimizes number of driveway access	Quantitative	Minimize the number of driveway access points and other points of conflict between vehicular traffic and pedestrians	Kitchener Urban Design Manual
Healthy Community *Will neighbourhoods be enhanced and support active travel?*	Improves connectivity through walkable blocks	Quantitative	Meets desired MTSA block lengths of 150m or less	Kitchener Urban Design Manual
	Increases connectivity between neighbourhoods	Qualitative	Connections to trails, parks, open spaces, and community facilities	-
Technological Innovation *Does it support new transportation technology and shared mobility?*	Supports emerging trends including micromobility and curbside management	Qualitative	Opportunity to implement bike-sharing and carsharing programs	-
		Qualitative	Curbside management considering delivery and rideshare needs	-

Principle	Criteria	Measure		Source
Resilience & Sustainability *Can the network withstand and adapt to future challenges?*	Supports shift in travel behaviours	Quantitative	Implementing maximums on parking rates to support mode split targets	-
		Quantitative	Implementing minimum bike parking rates to support mode split targets	-

Note: (1) – Modified criteria to better align with key features of Major Transit Station areas

3.2 EVALUATION OF ALTERNATIVES

Table 3-2, **Table 3-3**, and **Table 3-4** provides a summary of the evaluation for the Block Line, Fairway, and Sportsworld PMTSAs, respectively, against the developed criteria. Supporting figures and analyses are provided in **Appendix A**.

Table 3-2: Summary of Evaluation (Block Line PMTSA)

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
Connectivity *Will it increase travel options and improve network connectivity?*	Increases street network connectivity and continuity	Meets desired Road Network and Active Connectivity Index • Street connectivity: 1.4 to 1.7 • Pedestrian connectivity: 1.5 to 1.8	• Street connectivity index of 1.4 indicates desirable vehicular connectivity (see **Figure 10a** in **Appendix A**) • Pedestrian connectivity index of 1.5 indicates desirable pedestrian connectivity (see **Figure 7a** in **Appendix A**)	• Street connectivity index of 1.4 indicates desirable vehicular connectivity (see **Figure 10a** in **Appendix A**) • Pedestrian connectivity index of 1.5 indicates desirable pedestrian connectivity (see **Figure 7b** in **Appendix A**)	• Street connectivity index increases to 1.5, indicating desirable connectivity options for vehicular travel (see **Figure 10b** in **Appendix A**) • Pedestrian connectivity index increases to 1.7, indicating desirable connectivity options for active transportation (see **Figure 7c** in **Appendix A**)
	Provides more route options for transit, walking, and cycling	Total length of sidewalks and dedicated cycling infrastructure	• 12,645m of total sidewalk length • 3,548m of total cycling infrastructure (including BMUT)	• 12,645m of total sidewalk length; no change from existing conditions • 5,404m of total cycling infrastructure (including BMUT), representing a 52% increase from existing conditions	• 15,050m of total sidewalk length, representing a 19% increase from existing conditions • 6,573m of total cycling infrastructure (including BMUT), representing an 85% increase from existing conditions
		Total transit routes	• 7 existing transit routes consisting of the ION LRT and local bus routes	• 7 existing transit routes consisting of the ION LRT and local bus routes; no change from existing conditions	• 7 existing transit routes consisting of the ION LRT and local bus routes; no change from existing conditions
Accessibility & Integration with Other Modes *Will it increase accessibility to travel options and provide a seamless transition between different modes of transport?*	Increase accessibility to public transit	95% of the residences, jobs and other activities / uses are within 250m walking distance of a transit stop	• 83% of residents, jobs and other activities are within 250m walking distance of a transit stop (see **Figure 4a** in **Appendix A**)	• 83% of residents, jobs and other activities are within 250m walking distance of a transit stop; no change from existing conditions (see **Figure 4a** in **Appendix A**)	• 83% of residents, jobs and other activities are within 250m walking distance of a transit stop; no change from existing conditions (see **Figure 4a** in **Appendix A**)
		Meets desired transit stop spacing of 250m or less	• Approx. 75% of all transit stops are located within 250m of each other	• Approx 75% of all transit stops are located within 250m of each other; no change from existing conditions	• Approx 75% of all transit stops are located within 250m of each other; no change from existing conditions. Additional potential transit stops include: • 1 along Lennox Lewis Way (midway) between Block Line Road and Hayward Avenue • 1 along Courtland Road E (midway) between Shelley Drive and Manitou Drive
	Increases accessibility to active transportation infrastructure	90% of residents/jobs are within 400m of existing or proposed multi-use trail or cycling infrastructure	• 97% of residences/jobs are within 400m of a dedicated active transportation facility (see **Figure 1a** in **Appendix A**)	• 100% of residences/jobs are within 400m of a dedicated active transportation facility, representing an increase of 3% from existing conditions (see **Figure 1b** in **Appendix A**)	• 100% of residences/jobs are within 400m of a dedicated active transportation facility, representing an increase of 3% from existing conditions (see **Figure 1c** in **Appendix A**)
	Integrates connections between different modes of travel & supports first- mile last mile connections	Number of dedicated active transportation facilities that connect to rapid transit	• No dedicated active transportation facilities that connect to Block Line Station	• A regional BMUT is planned along Courtland Avenue E between Hayward Avenue and Block Line Road which will provide active transportation connections to and from Block Line Station	• In addition to the planned regional BMUT, an extension of the facility is proposed in Alternative Solution 3, east of Block Line Road, to improve active transportation throughout the PMTSA
Experience & Safety *Will it make travel safer, more comfortable, and convenient?*	Provides adequate capacity for all modes of travel	Vehicle travel times and intersection delays	• Most intersections are expected to perform at a LOS of C or better during the weekday peak hours • A few individual movements operate close to capacity during the PM peak hour	• Same as Scenario 1	• Most intersections are expected to perform at a LOS of C or better during the weekday peak hours • A few individual movements at unsignalized intersections operate close to capacity during the PM peak hour
		Meets desired transit level of service	• Good TLOS	• Same as existing conditions	• Good TLOS; however, some transit priority measures can be considered to improve TLOS at Courtland Avenue E & Block Line Road

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
	Increases comfort and safety for pedestrians and cyclists	Meets desired pedestrian & cycling level of service	• Intersections could benefit from pedestrian improvements given the high traffic volumes and high posted speed limits	• Largely same as existing conditions	• Improvements are anticipated as a result of planned AT interventions. Additional streets that would benefit from improved AT facilities have been identified.
	Supports efficient surface transit	Protects space for future transit-only lanes, queue jump lanes, and transit signal priority	• Does not consider transit-only lanes, queue jump lanes, or transit signal priority	• No planned transit priority improvements identified as part of Alternative Solution 2	• Transit signal priority and/or queue jump lanes are recommended for further consideration at the intersection of Courtland Ave E & Block Line Road

	Improves safety for all users	Design to reduce potential fatalities and severity of collisions (traffic calming or reducing speed limits)	• Does not consider potential traffic calming measures to improve safety	• No planned traffic calming measures identified to improve safety	• Traffic calming and safety improvements are recommended at the following collision hotspots (see **Figure 13a and 13b** in **Appendix A**)
					  • Block Line Road & Fallowfield Drive
					  • Block Line Road & Lennox Lewis Way
					  • Vanier Drive & Siebert Avenue

		Intersection and mid-block crossing location that prioritize pedestrian safety and convenience	• Limited mid-block pedestrian crossing locations • ION rail tracks act as a barrier between the east and west side of Courtland Avenue E	• No planned mid-block crossings identified as part of Alternative Solution 2	• Additional private road connections will be provided with the development of the PMTSA to create a walkable neighbourhood
	Minimizes number of driveway access	Minimize the number of driveway access points and other points of conflict between vehicular traffic and pedestrians	• Does not consider minimizing the existing number of driveway access points	• No planned improvement to minimize the existing number of driveway access points	• Proposed road network and block structure promotes consolidating driveway accesses to reduce points of conflict between vehicular traffic and pedestrians
Healthy Community *Will neighbourhoods be enhanced and support active travel?*	Improves connectivity through walkable blocks	Meets desired MTSA block lengths of 150m or less	• Majority of block lengths exceed the desired length of 150m	• Majority of block lengths exceed the desired length of 150m; no change from existing conditions	• Proposed public roads shorten block lengths • Additional private road connections will be provided with the development of the PMTSA to create a walkable neighbourhood
	Increases connectivity between neighbourhoods	Connections to trails, parks, open spaces, and community facilities	• Some connections to existing off-street trails (i.e., Scheider Creek via Lennox Lewis Way and Block Line Road as well as Traynor Park Trail via Courtland Avenue E)	• Planned BMUT increases cycling connectivity to the Traynor Park Trail	• Proposed sidewalks and pedestrian facilities increase active transportation connectivity compared to existing conditions • A pedestrian facility proposed along Balzer Road to provide a direct active transportation connection to the planned Schneider Creek extension
Technological Innovation *Does it support new transportation technology and shared mobility?*	Supports emerging trends including micromobility and curbside management	Opportunity to implement bike-sharing and carsharing programs	• Neuron Mobility offers e-bikes and e-scooters for rent in Kitchener. Approx. 8 parking stations are available within the Block Line PMTSA • The Region of Waterloo has an existing contract with Communauto (previously VRTUCAR and Community Carshare); however, carshare coverage does not include the Block Line PMTSA	• No planned improvements were identified to expand the existing bikeshare and carsharing programs	• Alternative Solution 3 recommends expanding the number of bike parking stations to support Neuron Mobility or other shared mobility services with the development of the Block Line PMTSA • Alternative Solution 3 recommends expanding Communauto carshare service to the Block Line PMTSA and consider dedicated carshare locations in proximity to the Block Line LRT Station
		Curbside management considering delivery and rideshare needs	• Does not consider curbside management needs	• No planned consideration for curbside management needs	• Curbside management strategy detailed in **Section 7.8** is proposed to support shared mobility services
Resilience & Sustainability *Can the network withstand and*	Supports shift in travel behaviours	Implementing maximums on parking rates to support mode split targets	• Lands within the Block Line PMTSA are currently subject to parking requirements within Zoning By-law 85-1 which includes minimum parking rates that are unsupportive of transit-oriented development and sustainable intensification for MTSAs	• No planned changes to the vehicular parking requirements have been identified for Alternative Solution 2	• The proposed parking strategy in **Section 7.7** includes reducing minimum parking requirements in line with other Strategic Growth Areas in the City and implementing parking maximums to support a future auto mode split of 58%

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
adapt to future challenges?		Implementing minimum bike parking rates near transit stations to support mode split targets	• Lands within the Block Line PMTSA are subject to Zoning By-law 85-1 which does not include bicycle parking requirements	• No planned changes to the bicycle parking requirements have been identified for Alternative Solution 2	• The proposed parking strategy in Section 7.7 includes introducing minimum bicycle parking requirements in line with other Strategic Growth Areas in the City

Table 3-3: Summary of Evaluation (Fairway PMTSA)

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
Connectivity *Will it increase travel options and improve network connectivity?*	Increases street network connectivity and continuity	Meets desired Road Network and Active Connectivity Index • Street connectivity: 1.4 to 1.7 • Pedestrian connectivity: 1.5 to 1.8	• Street connectivity index of 1.8 indicates more than desirable vehicular connectivity (see **Figure 11a** in **Appendix A**) • Pedestrian connectivity index of 1.7 indicates desirable pedestrian connectivity (see **Figure 8a** in **Appendix A**)	• Street connectivity index of 1.8 indicates more than desirable vehicular connectivity (see **Figure 11a** in **Appendix A**) • Pedestrian connectivity index of 1.7 indicates desirable pedestrian connectivity (see **Figure 8a** in **Appendix A**)	• Street connectivity index of 1.8 indicates more than desirable vehicular connectivity (see **Figure 11b** in **Appendix A**) • Pedestrian connectivity index of 1.7 indicates desirable pedestrian connectivity (see **Figure 8b** in **Appendix A**)
	Provides more route options for transit, walking, and cycling	Total length of sidewalks and dedicated cycling infrastructure	• 9,733m of total sidewalk length 393m of total cycling infrastructure (including BMUT)	• 9,733m of total sidewalk length; no change from existing conditions • 2,696m of total cycling infrastructure (including BMUT), representing a 586% increase from existing conditions	• 17,836m of total sidewalk length, representing an 83% increase from existing conditions • 5,985m of total cycling infrastructure (including BMUT), representing a 1,422% increase from existing conditions
		Total transit routes	• 13 existing transit routes consisting of the ION LRT and local bus routes	• 13 existing transit routes consisting of the ION LRT and local bus routes • Future ION LRT extension from its current terminus at Fairway Station to Cambridge	• No additional transit infrastructure proposed
Accessibility & Integration with Other Modes *Will it increase accessibility to travel options and provide a seamless transition between different modes of transport?*	Increase accessibility to public transit	95% of the residences, jobs and other activities / uses are within 250m walking distance of a transit stop	• 86% of residents, jobs and other activities are within 250m walking distance of a transit stop (see **Figure 5a** in **Appendix A**)	• 86% of residents, jobs and other activities are within 250m walking distance of a transit stop; (see **Figure 5b** in **Appendix A**)	• 86% of residents, jobs and other activities are within 250m walking distance of a transit stop; (see **Figure 5b** in **Appendix A**)
		Meets desired transit stop spacing of 250m or less	• Approx. 83% of all transit stops are located within 250m of each other	• Approx 83% of all transit stops are located within 250m of each other; no change from existing conditions	• Approx 83% of all transit stops are located within 250m of each other; no change from existing conditions • Additional potential transit stops include: • 1 along conceptual minor collector C or D
	Increases accessibility to active transportation infrastructure	90% of residents/jobs are within 400m of existing or proposed multi-use trail or cycling infrastructure	• 46% of residences/jobs are within 400m of a dedicated active transportation facility (see **Figure 2a** in **Appendix A**)	• 96% of residences/jobs are within 400m of a dedicated active transportation facility, representing an increase of 44% from existing conditions (see **Figure 2b** in **Appendix A**)	• 97% of residences/jobs are within 400m of a dedicated active transportation facility, representing an increase of 44% from existing conditions (see **Figure 2c** in **Appendix A**)
	Integrates connections between different modes of travel & supports first- mile last mile connections	Number of dedicated active transportation facilities that connect to rapid transit	• Off-street trail south of Traynor Avenue provides a direct connection to Fairway Station	• No additional dedicated active transportation facilities planned at Fairway station	• No additional dedicated active transportation facilities proposed at Fairway Station
Experience & Safety *Will it make travel safer, more comfortable, and convenient?*	Provides adequate capacity for all modes of travel	Vehicle travel times and intersection delays	• Most intersections are expected to perform at a LOS of C or better during the weekday peak hours • Constraints noted along Fairway Road S near Fairview Park Mall and the highway ramps	• Same as Scenario 1	• Most intersections are expected to perform at a LOS of D or better during the weekday peak hours • Some major intersections along Fairway Road S and the highway ramps are expected to approach capacity; however, remain with a V/C ratio under 1.00
		Meets desired transit level of service	• Good TLOS	• Same as existing conditions	• Good TLOS; however, some transit priority measures can be considered to improve TLOS at Fairway Road S & Manitou Drive, Wilson Avenue & Fairway Road S, Fairway Road S & Fairview Mall Driveway – West, and Fairway Road S & Highway 8 On/Off-Ramp

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
	Increases comfort and safety for pedestrians and cyclists	Meets desired pedestrian & cycling level of service	• Intersections could benefit from pedestrian improvements given the high traffic volumes and high posted speed limits	• Largely same as existing conditions	• Improvements are anticipated as a result of planned AT interventions. Additional streets that would benefit from improved AT facilities have been identified..
	Supports efficient surface transit	Protects space for future transit-only lanes, queue jump lanes, and transit signal priority	• Does not consider transit-only lanes, queue jump lanes, or transit signal priority	• No planned transit priority improvements identified as part of Alternative Solution 2	• Transit signal priority and queue jump lanes are recommended for further consideration under Alternative Solution 3 at Fairway Road S & Manitou Drive, Wilson Avenue & Fairway Road S, Fairway Road S & Fairview Mall Driveway – West, and Fairway Road S & Highway 8 On/Off-Ramp

	Improves safety for all users	Design to reduce potential fatalities and severity of collisions (traffic calming or reducing speed limits)	• Does not consider potential traffic calming measures to improve safety	• No planned traffic calming measures identified to improve safety	• Traffic calming and safety improvements are recommended at the following collision hotspots (see **Figure 14a and 14b** in **Appendix A**)
					  • Wilson Avenue & Traynor Avenue
					  • Wilson Avenue & Kingsway Drive
					  • Wilson Avenue, North of Fairway Road S
					  • Wilson Avenue & Fairway Road S
					  • Wilson Avenue, South of Fairway Road
					  • Kingsway Drive & Cedarwood Cresent

		Intersection and mid-block crossing location that prioritize pedestrian safety and convenience	• Limited mid-block pedestrian crossing locations due to existing land uses and block structure	• No planned mid-block crossings identified as part of Alternative Solution 2	• Proposed minor collector and local roads create new signalized intersections along Fairway Road and Kingsway Drive, facilitating new options for mid-block pedestrian crossing locations • Additional private road connections will be provided with the development of the PMTSA to create a walkable neighbourhood
	Minimizes number of driveway access	Minimize the number of driveway access points and other points of conflict between vehicular traffic and pedestrians	• Does not consider minimizing the existing number of driveway access points	• No planned improvement to minimize the existing number of driveway access points	• Proposed road network and block structure promotes consolidating driveway accesses to reduce points of conflict between vehicular traffic and pedestrians
Healthy Community *Will neighbourhoods be enhanced and support active travel?*	Improves connectivity through walkable blocks	Meets desired MTSA block lengths of 150m or less	• Majority of block lengths exceed the desired length of 150m	• Majority of block lengths exceed the desired length of 150m; no change from existing conditions	• New public roads shorten block lengths along Fairway Road S, Wilson Avenue, Wabanaki Drive, and Kingsway Drive • Additional private road connections will be provided with the development of the PMTSA to create a walkable neighbourhood
	Increases connectivity between neighbourhoods	Connections to trails, parks, open spaces, and community facilities	• Some connections to existing off-street trails (i.e., Traynor Park Trail via Courtland Avenue E)	• Planned BMUT increases active transportation connectivity compared to existing conditions; however, does not provide a direct connection to existing or future off-street trails	• New sidewalks and pedestrian facilities increase active transportation connectivity compared to existing conditions; however, does not provide a direct connection to existing or future off-street trails
Technological Innovation *Does it support new transportation technology and shared mobility?*	Supports emerging trends including micromobility and curbside management	Opportunity to implement bike-sharing and carsharing programs	• Neuron Mobility offers e-bikes and e-scooters for rent in Kitchener. Approx. 4 parking stations are available within the Fairway PMTSA • The Region of Waterloo has an existing contract with Communauto (previously VRTUCAR and Community Carshare); however, carshare coverage does not include the Fairway PMTSA	• No planned improvements were identified to expand the existing bikeshare and carsharing programs	• Alternative Solution 3 recommends expanding the number of bike parking stations to support Neuron Mobility services or other shared mobility services with the development of the Fairway PMTSA • Alternative Solution 3 recommends expanding Communauto carshare service to the Fairway PMTSA and consider dedicated carshare locations in proximity to the Fairway LRT Station

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
		Curbside management considering delivery and rideshare needs	• Does not consider curbside management needs	• No planned consideration for curbside management needs	• Curbside management strategy detailed in **Section 7.8** is proposed to support shared mobility services
Resilience & Sustainability *Can the network withstand and adapt to future challenges?*	Supports shift in travel behaviours	Implementing maximums on parking rates to support mode split targets	• Lands within the Fairway PMTSA are currently subject to parking requirements within Zoning By-law 85-1 which includes minimum parking rates that are unsupportive of transit-oriented development and sustainable intensification for MTSAs	• No planned changes to the vehicular parking requirements have been identified for Alternative Solution 2	• The proposed parking strategy in **Section 7.7** includes reducing minimum parking requirements in line with other Strategic Growth Areas in the City and implementing parking maximums to support a future auto mode split of 58%
		Implementing minimum bike parking rates near transit stations to support mode split targets	• Lands within the Fairway PMTSA are subject to Zoning By-law 85-1 which does not include bicycle parking requirements	• No planned changes to the bicycle parking requirements have been identified for Alternative Solution 2	• The proposed parking strategy in **Section 7.7** includes introducing minimum bicycle parking requirements in line with other Strategic Growth Areas in the City

Table 3-4: Summary of Evaluation Results (Sportsworld PMTSA)

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
Connectivity *Will it increase travel options and improve network connectivity?*	Increases street network connectivity and continuity	Meets desired Road Network and Active Connectivity Index • Street connectivity: 1.4 to 1.7 • Pedestrian connectivity: 1.5 to 1.8	• Street connectivity index of 1.9 indicates more than desirable vehicular connectivity (see **Figure 12a** in **Appendix A**) • Pedestrian connectivity index of 1.7 indicates desirable pedestrian connectivity (see **Figure 9a** in **Appendix A**)	• Street connectivity index of 1.9 indicates more than desirable vehicular connectivity (see **Figure 12a** in **Appendix A**) • Pedestrian connectivity index of 1.7 indicates desirable pedestrian connectivity (see **Figure 9b** in **Appendix A**)	• Street connectivity index of 1.9 indicates more than desirable connectivity options for vehicular travel (see **Figure 12b** in **Appendix A**) • Pedestrian connectivity index of 1.8 indicates desirable connectivity options for active transportation (see **Figure 9c** in **Appendix A**)
	Provides more route options for transit, walking, and cycling	Total length of sidewalks and dedicated cycling infrastructure	• 9,194m of total sidewalk length • 414m of total cycling infrastructure (including BMUT)	• 9,194m of total sidewalk length; no change from existing conditions • 2,863m of total cycling infrastructure (including BMUT), representing a 592% increase from existing conditions	• 18,476m of total sidewalk length, representing a 100% increase from existing conditions • 3,991m of total cycling infrastructure (including BMUT), representing a 864% increase from existing conditions
		Total transit routes	• 7 existing transit routes in addition to several intercity private bus operators	• 7 existing transit routes in addition to several intercity private bus operators • Future ION LRT extension from its current terminus at Fairway Station to Cambridge; new planned station within the Sportsworld PMTSA	• No additional transit infrastructure proposed
Accessibility & Integration with Other Modes *Will it increase accessibility to travel options and provide a seamless transition between different modes of transport?*	Increase accessibility to public transit	95% of the residences, jobs and other activities / uses are within 250m walking distance of a transit stop	• 66% of residents, jobs and other activities are within 250m walking distance of a transit stop (see **Figure 6a** in **Appendix A**)	• 73% of residents, jobs and other activities are within 250m walking distance of a transit stop, representing a 7% increase from existing conditions (see **Figure 6b** in **Appendix A**)	• No additional transit infrastructure proposed; no change from Alternative Solution 2 (see **Figure 6b** in **Appendix A**)
		Meets desired transit stop spacing of 250m or less	• Approx. 66% of all transit stops are located within 250m of each other	• Approx 71% of all transit stops are located within 250m of each other	• Approx 71% of all transit stops are located within 250m of each other; no change from Alternative Solution 2 • Additional potential transit stops include: • 1 at King Street & Sportsworld Drive • 1 at King Street & Gateway Park Drive • 1 along King Street (midway) between Sportsworld Drive and Gateway Park Drive
	Increases accessibility to active transportation infrastructure	90% of residents/jobs are within 400m of existing or proposed multi-use trail or cycling infrastructure	• 24% of residences/jobs are within 400m of a dedicated active transportation facility (see **Figure 3a** in **Appendix A**)	• 85% of residences/jobs are within 400m of a dedicated active transportation facility, representing an increase of 67% from existing conditions (see **Figure 3b** in **Appendix A**)	• 91% of residences/jobs are within 400m of a dedicated active transportation facility, representing an increase of 67% from existing conditions (see **Figure 3c** in **Appendix A**)
	Integrates connections between different modes of travel & supports first- mile last mile connections	Number of dedicated active transportation facilities that connect to rapid transit	• No dedicated active transportation facilities that connect to Sportsworld Station	• A regional BMUT is planned along Kings Street E which will provide active transportation connections to and from Sportsworld Station	• No additional dedicated active transportation facilities proposed at Sportsworld Station
Experience & Safety *Will it make travel safer, more comfortable,*	Provides adequate capacity for all modes of travel	Vehicle travel times and intersection delays	• Most intersections are expected to perform at a LOS of C or better during the weekday peak hours • Constraints noted along Sportsworld Drive at the intersection with King Street E and the highway ramps	• Same as Scenario 1	• Most intersections are expected to perform at a LOS of C or better during the weekday peak hours • Some capacity constraints noted at King Street E & Gateway Park Drive / Limerick Drive; however, all movements operation with V/C ratios less than 1.00
		Meets desired transit level of service	• Good TLOS	• Same as existing conditions	• Good TLOS; however, some transit priority measures can be considered to improve TLOS c

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
and convenient?	Increases comfort and safety for pedestrians and cyclists	Meets desired pedestrian & cycling level of service	• Intersections could benefit from pedestrian improvements given the high traffic volumes and high posted speed limits	• Largely same as existing conditions	• Improvements are anticipated as a result of planned AT interventions. Additional streets that would benefit from improved AT facilities have been identified.
	Supports efficient surface transit	Protects space for future transit-only lanes, queue jump lanes, and transit signal priority	• Does not consider transit-only lanes, queue jump lanes, or transit signal priority	• No planned transit priority improvements identified as part of Alternative Solution 2	• Transit signal priority and queue jump lanes are recommended for further consideration under Alternative Solution 3 at King Street E & Sportsworld Crossing Road, Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-Ramp, Sportsworld Drive & Gateway Park Drive / Heldmann Road, and King Street E & Tu-Lane Street

	Improves safety for all users	Design to reduce potential fatalities and severity of collisions (traffic calming or reducing speed limits)	• Does not consider potential traffic calming measures to improve safety	• No planned traffic calming measures identified to improve safety	• Traffic calming and safety improvements are recommended at the following collision hotspots (see **Figure 15a and 15b** in **Appendix A**)
					  • Sportsworld Drive & Heldmann Road
					  • Gateway Park Drive, east of Sportsworld Drive
					  • Gateway Park Drive & Tu-Lane Street
					  • King Street E & Tu-Lane Street

		Intersection and mid-block crossing location that prioritize pedestrian safety and convenience	• Limited mid-block pedestrian crossing locations due to existing land uses and block structure	• No planned mid-block crossings identified as part of Alternative Solution 2	• Proposed local roads create new intersections facilitating additional options for mid-block pedestrian crossing locations • Additional private road connections will be provided with the development of the PMTSA to create a walkable neighbourhood
	Minimizes number of driveway access	Minimize the number of driveway access points and other points of conflict between vehicular traffic and pedestrians	• Does not consider minimizing the existing number of driveway access points	• No planned improvement to minimize the existing number of driveway access points	• Proposed road network and block structure promotes consolidating driveway accesses to reduce points of conflict between vehicular traffic and pedestrians
Healthy Community *Will neighbourhoods be enhanced and support active travel?*	Improves connectivity through walkable blocks	Meets desired MTSA block lengths of 150m or less	• Majority of block lengths exceed the desired length of 150m	• Majority of block lengths exceed the desired length of 150m; no change from existing conditions	• New public roads shorten block lengths along King Street E, Sportworld Crossing Road, and Heldmann Road / Gateway Park Drive • Additional private road connections will be provided with the development of the PMTSA to create a walkable neighbourhood
	Increases connectivity between neighbourhoods	Connections to trails, parks, open spaces, and community facilities	• Minimal connections to existing off-street trails	• Planned BMUT increases active transportation connectivity compared to existing conditions; however, does not provide a direct connection to existing or future off-street trails	• New sidewalks and bike facilities increase active transportation connectivity compared to existing conditions; however, does not provide a direct connection to existing or future off-street trails
Technological Innovation *Does it support new transportation technology and shared mobility?*	Supports emerging trends including micromobility and curbside management	Opportunity to implement bike-sharing and carsharing programs	• Neuron Mobility offers e-bikes and e-scooters for rent in Kitchener; however, no parking stations are available within the Sportsworld PMTSA • The Region of Waterloo has an existing contract with Communauto (previously VRTUCAR and Community Carshare); however, carshare coverage does not include the Sportsworld PMTSA	• No planned improvements were identified to expand the existing bikeshare and carsharing programs	• Alternative Solution 3 recommends expanding the number of bike parking stations to support Neuron Mobility services or other shared mobility services with the development of the Sportsworld PMTSA • Alternative Solution 3 recommends expanding Communauto carshare service to the Fairway PMTSA and consider dedicated carshare locations in proximity to the future Sportsworld LRT Station

Principle	Criteria	Measure	Alternative Solution 1 (Do Nothing)	Alternative Solution 2 (Planned Improvements)	Alternative Solution 3 (Optimized Network)
		Curbside management considering delivery and rideshare needs	• Does not consider curbside management needs	• No planned consideration for curbside management needs	• Curbside management strategy detailed in **Section 7.8** is proposed to support shared mobility services
Resilience & Sustainability *Can the network withstand and adapt to future challenges?*	Supports shift in travel behaviours	Implementing maximums on parking rates to support mode split targets	• Lands within the Sportsworld PMTSA are currently subject to parking requirements within Zoning By-law 85-1 and Zoning By-law 2019-051 which includes minimum parking rates that are unsupportive of transit-oriented development and sustainable intensification for MTSAs	• No planned changes to the vehicular parking requirements have been identified for Alternative Solution 2	• The proposed parking strategy in **Section 7.7** includes reducing minimum parking requirements in line with other Strategic Growth Areas in the City and implementing parking maximums to support a future auto mode split of 58%
		Implementing minimum bike parking rates near transit stations to support mode split targets	• Lands within the Sportsworld PMTSA are subject to Zoning By-law 85-1 and Zoning By-law 2019-051. Zoning By-law 85-01 does not include bicycle parking requirements	• No planned changes to the bicycle parking requirements have been identified for Alternative Solution 2	• The proposed parking strategy in **Section 7.7** includes introducing minimum bicycle parking requirements in line with other Strategic Growth Areas in the City

4 FUTURE TRAFFIC MODELLING METHODOLOGY

4.1 PROPOSED METHODOLOGY

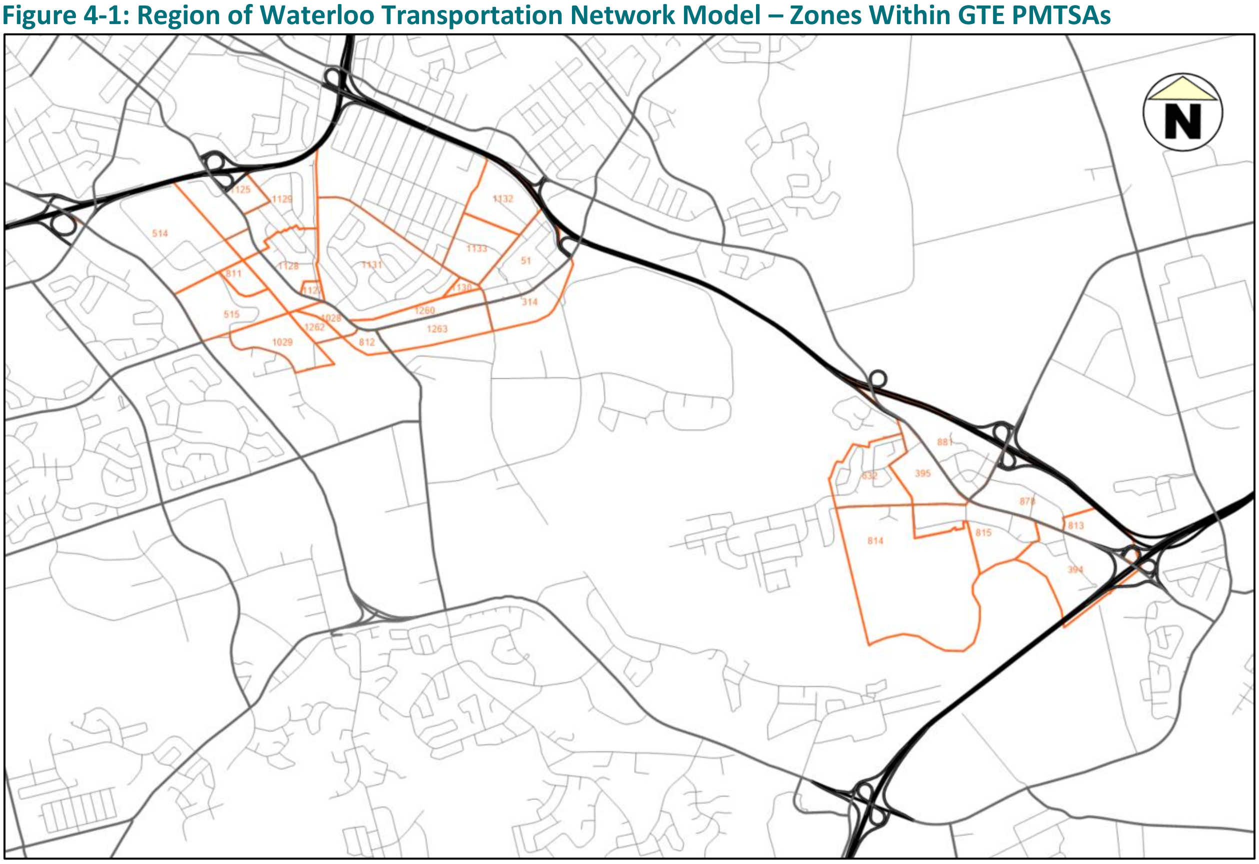
The following section discusses the proposed methodology for the completion of the Phase 2 transportation analysis that will evaluate the proposed land use framework for the Growing Together East PMTSAs.

4.1.1 Study Area

As detailed in the Phase 1 report, the mobility study area for the Growing Together East transportation study includes key intersections in the Block Line, Fairway and Sportsworld PMTSAs. Several intersections outside of the MTSA boundary were also included in the traffic analysis because of their importance to overall traffic circulation and the regional road network. The existing conditions of the study area have been reviewed and analyzed to inform the Phase 2 transportation evaluation.

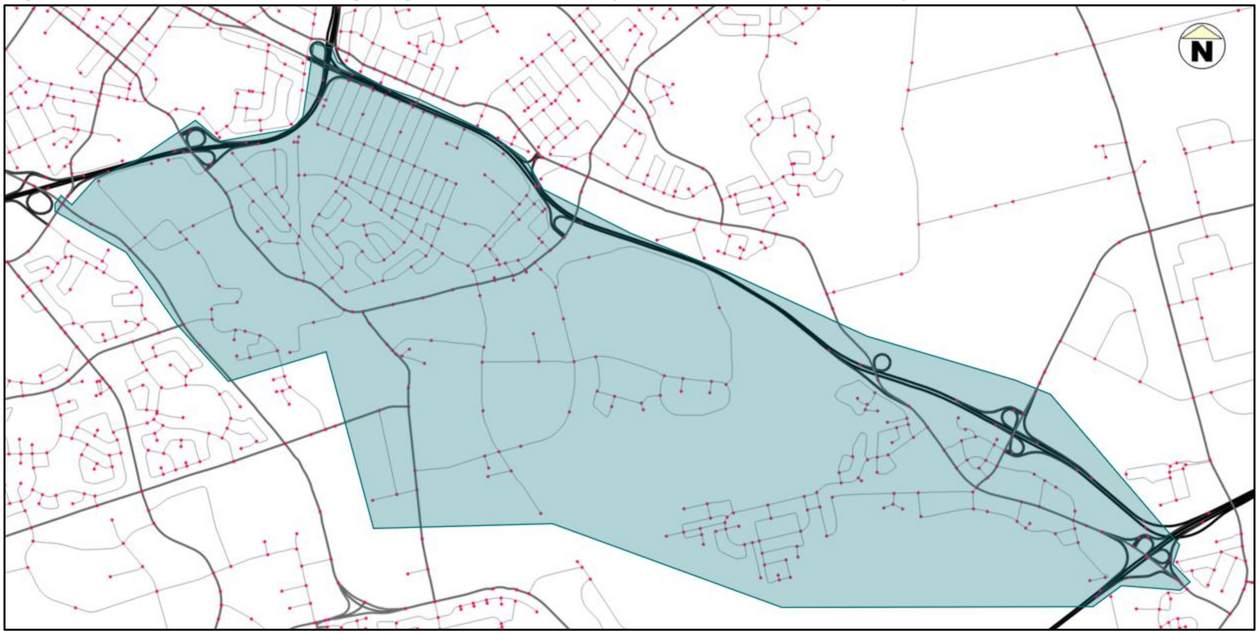
The transportation analysis of future conditions utilized the Region of Waterloo's VISUM transportation network model which divides the Region into traffic analysis zones. The VISUM zones lying partially within and fully within the PMTSA boundaries are shown in **Figure 4-1**.

Figure 4-1: Region of Waterloo Transportation Network Model – Zones Within GTE PMTSAs



Based on the identification of key analysis zones, roads and intersections, a broader study area was outlined, as shown in **Figure 4-2**.

Figure 4-2: Kitchener Growing Together East Transportation Mobility Study Area



The mobility study area is generally bounded by Highway 7/8 to the north, Highway 8 to the east, Highway 401 and the Grand River to the south, and Homer Watson Boulevard to the west. The existing land use, infrastructure and travel patterns, as well as future land use plans were considered while determining the study area boundaries to ensure that the analysis addresses key intersections and corridors of interest. The resulting mobility study area allows for a fulsome transportation assessment that aligns with key municipal and regional policy objectives.

4.1.2 Future Demand Forecasting and Volume Conversion

The study methodology for forecasting future demand and converting volumes leveraged the VISUM transportation network model as the primary tool to accurately estimate future traffic volumes within the study area. This approach was based on the preferred land use scenario identified by the City of Kitchener and aligns with the 2041 planning horizon to capture long-term trends in mobility pattern and regional growth. The study methodology involved extracting data from the VISUM transportation network model to forecast future traffic conditions at both the corridor and intersection levels. This includes converting forecasted volumes into actionable metrics, such as turning movement counts, to facilitate a detailed intersection analysis.

To ensure accuracy and relevance, the modelling process incorporated existing travel patterns, planned land use changes, and regional growth projections.

4.1.2.1 Transportation Model Software

The traffic forecasting model was developed based on existing traffic volumes and land use data. It should be noted that the analysis carried out with the help of the model is fully dependent on the accuracy of the data entered into the model. VISUM is a comprehensive flexible software package intended to be used in strategic traffic and transportation planning. It incorporates GIS mapping systems and can identify changes in travel pattern according to modifications in land use, population, employment and road network infrastructure. In addition, it can analyze the level of service for each intersection in the network.

To develop an existing traffic model for the three PMTSAs, the focus was on extracting zones, land uses, and road networks overlapping these areas from the regional traffic model developed in 2011. This process ensured that the model captures localized trip-making characteristics within the PMTSAs.

4.1.3 Future Analysis Scenarios

Building on Phase 1, which confirmed the methodology for the VISUM model calibration and scenario development, the first step of the Phase 2 analysis was input data refinement.

Data refinement involved updating, validating, and integrating all relevant information that fed into the VISUM model. This process ensured that the base model and future forecasts accurately represent existing infrastructure, travel behavior, and land use conditions. Below are the key tasks involved in data refinement.

4.1.3.1 Existing Population and Employment

The most recent population, employment, and demographic datasets were gathered for the PMTSAs from the City of Kitchener, as shown in **Table 4-1**. Employment estimates are distinguished between various employment types including retail, warehousing and education. It is noted that the Region model and its underlying data are currently based on the 2011 horizon, reflecting conditions at that time. Afterwards, these values were compared against the Region's previously used 2011 baseline data to identify significant discrepancies. Where possible, the 2024 population and employment count and projections were used to better reflect current conditions. Updated population/employment data were geo-referenced to the same Traffic Analysis Zones (TAZs) used in the VISUM model.

Table 4-1: Existing Population and Employment Dataset

Zones	Existing People	Existing Jobs IND	Existing Jobs OFFICE	Existing Jobs INS	Existing Jobs RET	Existing Jobs ALL
514	0	977	104	106	0	1,187
811	0	0	0	11	0	11
515	0	0	0	597	68	665
1029	1,922	0	0	0	0	0
1125	752	57	0	0	0	57
1129	708	143	0	94	0	237
1128	800	0	0	0	0	0
1127	0	0	0	0	128	128
1028	0	69	0	0	0	69
1262	0	12	0	0	0	12
812	0	114	0	0	9	123
1131	2,664	0	0	117	0	117
1260	0	0	0	0	677	677
1263	0	89	0	0	1,352	1,441
1130	1434	0	0	0	0	0
1132	2,297	0	0	29	0	29
1133	3,243	0	0	0	59	59
51	0	0	0	0	2,275	2,275
314	0	0	0	0	689	689
881	0	22	172	121	710	1,025

Zones	Existing People	Existing Jobs IND	Existing Jobs OFFICE	Existing Jobs INS	Existing Jobs RET	Existing Jobs ALL
878	0	0	0	0	1,956	1,956
813	0	9	0	0	53	62
632	935	0	0	0	0	0
395	134	4	1,170	0	521	1,695
814	175	0	0	11	4	15
815	294	5	0	0	73	78
394	160	0	0	0	174	174
	15,518	1,501	1,446	1,086	8,748	1,2781

4.1.3.2 Future Population and Employment

The future population and employment estimates for the PMTSAs were obtained directly from the preferred land use scenario, ensuring alignment with the City's growth forecasts and planning objectives. These projections reflect anticipated changes in residential and employment uses. These estimates were incorporated into the traffic model to simulate future travel demand as part of the three (3) future scenarios that were evaluated. Future population and employment estimates outside of the PMTSAs were reflected according to the base assumptions contained in the Region model. **Table 4-2** to **Table 4-3** shows the estimated growth, loss and the total population and employment in each zone.

Table 4-2: Population and Employment Growth

Zones	Growth PPL	Growth Jobs IND	Growth Jobs OFFICE	Growth Jobs INS	Growth Jobs RET	Growth Jobs ALL
514	0	70	104	0	0	174
811	0	0	0	0	0	0
515	202	0	0	1050	0	1050
1029	419	0	0	0	0	0
1125	1737	0	0	0	42	42
1129	1135	0	0	420	25	445
1128	3072	0	0	0	112	112
1127	587	0	0	0	19	19
1028	0	0	0	0	0	0
1262	0	0	0	0	0	0
812	0	0	0	0	0	0
1131	531	0	0	0	28	28
1260	1780	0	0	0	59	59
1263	1239	0	0	0	40	40
1130	0	0	0	0	0	0
1132	41	0	0	0	0	0
1133	728	0	0	0	19	19
51	0	0	0	0	0	0
314	1280	0	0	0	40	40
881	2761	0	0	1104	87	1191
878	3179	0	0	0	70	70
813	0	0	0	0	0	0
632	54	0	0	0	0	0
395	52	0	0	0	0	0
814	124	0	0	0	0	0
815	628	0	0	0	0	0

Zones	Growth PPL	Growth Jobs IND	Growth Jobs OFFICE	Growth Jobs INS	Growth Jobs RET	Growth Jobs ALL
394	959	0	0	0	0	0
	20508	70	104	2574	541	3289

Table 4-3: Population and Employment Loss

Zones	Lost PPL	Lost Jobs IND	Lost Jobs OFFICE	Lost Jobs INS	Lost Jobs RET	Lost Jobs ALL
514	0	0	0	0	0	0
811	0	0	0	0	0	0
515	0	0	0	0	22	22
1029	0	0	0	0	0	0
1125	0	20	0	0	0	20
1129	58	15	0	0	0	15
1128	16	0	0	0	0	0
1127	0	0	0	0	9	9
1028	0	0	0	0	0	0
1262	0	0	0	0	0	0
812	0	0	0	0	0	0
1131	78	0	0	21	0	21
1260	0	0	0	0	34	34
1263	0	0	0	0	86	86
1130	0	0	0	0	0	0
1132	11	0	0	0	0	0
1133	15	0	0	0	59	59
51	0	0	0	0	0	0
314	0	0	0	0	76	76
881	0	0	0	0	132	132
878	0	0	0	0	254	254
813	0	0	0	0	0	0
632	13	0	0	0	0	0
395	6	0	0	0	0	0
814	0	0	0	0	0	0
815	20	0	0	0	56	56
394	0	0	0	0	0	0
	217	35	0	21	728	784

Table 4-4: Total 2041 Population and Employment Forecasts

Zones	2041 PPL	2041 Jobs ALL
514	0	1361
811	0	11
515	202	1693
1029	2341	0
1125	2489	79
1129	1785	667
1128	3856	112
1127	587	138
1028	0	69
1262	0	12
812	0	123

Zones	2041 PPL	2041 Jobs ALL
1131	3117	124
1260	1780	702
1263	1239	1395
1130	1434	0
1132	2327	29
1133	3956	19
51	0	2275
314	1280	653
881	2761	2084
878	3179	1772
813	0	62
632	976	0
395	180	1695
814	299	15
815	902	22
394	1119	174
	35809	15286

In addition to updating internal zones based on the City's preferred land use scenario, external zones and associated through traffic volumes were uniformly increased by 2% annually to account for anticipated regional growth influences. This represents a conservative estimate of regional traffic growth. This growth factor was applied in the VISUM model to ensure that travel demand forecasts realistically reflected both local and external traffic pressures, providing a more comprehensive view of future network performance.

4.1.3.3 Road Network and Traffic Count Data

Throughout the data refinement process, the study team drew upon a combination of orthophotos, GIS maps, and in-person field verification to ensure that the VISUM model accurately captured existing conditions. Specifically, posted speeds, lane configurations, and intersection controls were confirmed through direct observation and cross-referencing with the latest aerial imagery and municipal records. Any new or widened road segments and intersection modifications completed since the previous model update in 2011 were added to the model's database, providing a current and comprehensive inventory of regional transportation infrastructure. Where discrepancies emerged between the existing road classification data and the observed functionality in the field, the road classifications were adjusted to reflect their true operational roles within the network.

A variety of traffic data were collected to ensure a comprehensive understanding of travel patterns in the study area. This included turning movement counts (TMCs) sourced from both the City and Region, encompassing critical intersections and key road segments. All collected data sets were standardized to align with the AM and PM peak-hour modeling intervals, and any anomalies or inconsistencies were closely examined and resolved. In addition, existing Synchro files were reviewed and integrated where appropriate, providing further detail on intersection operations and control settings to enhance the accuracy of the final model inputs.

4.1.4 Model Structure

The model uses the traditional four-step demand modelling approach:

- Trip generation;

- Trip distribution;
- Mode split; and
- Trip assignment

4.1.4.1 Trip Generation

The traffic model is designed to predict the AM and PM peak hour volumes. The trips taken during the peak hours can be divided into four basic trip types:

- Home-Based Work (HBW)
- Home-Based School (HBS)
- Home-Based Other (HBO)
- Non-Home Based (NHB)

Each of these trip types has different characteristics and therefore produces different travel patterns. Below is a short description of each trip type:

- **Home-Based Work (HBW):** Trips made between residential areas and employment locations, typically representing the daily commute. These trips are a major contributor to peak hour traffic, with the majority of AM peak trips originating from homes and traveling to employment zones, and the reverse occurring during the PM peak. HBW trips are highly predictable, following consistent patterns aligned with standard work hours. Employment hubs, such as office districts, industrial parks, and commercial centers, serve as primary destinations, while residential neighborhoods are the primary origin points. Mode choice for HBW trips varies based on factors like commute distance, urban density, and transportation infrastructure, with options ranging from personal vehicles to public transit, cycling, or walking. These trips are critical in traffic modeling as they form the backbone of peak period congestion, influencing roadway demand, transit capacity, and overall network performance.
- **Home-Based School (HBS):** These trips are primarily associated with travel between residential areas and educational institutions, such as schools or colleges. During the AM peak hour, these trips are predominantly from home to school, while the PM peak hour includes return trips from school to home. The travel patterns for HBS trips are heavily influenced by school start and end times, with a significant concentration around these periods, often resulting in localized congestion near schools.
- **Home-Based Other (HBO):** During PM peak hour, these trips (home to others and others to home) are normally attracted to retail areas and generated by the residential areas. These trips represent travel between residential areas and a variety of non-work, non-school destinations, encompassing a broad range of activities such as shopping, recreational outings, dining, social visits, and errands.

- **Non-Home Based (NHB):** Non-home-based trips are trips that do not start or end at a residential location. Instead, these trips occur between other types of origins and destinations, such as travel from a workplace to a retail area, from one commercial zone to another, or between recreational locations. During the PM peak hour, NHB trips are typically generated by employment areas (e.g., offices, industrial parks) and attracted to destinations like retail centers, service locations, or recreational venues. These trips often reflect midday or after-work activities, such as running errands, attending appointments, or socializing. NHB trips tend to have more complex travel patterns and less predictable peak periods compared to home-based trips, as they are influenced by a wide range of trip purposes and behaviors. Their impact on the transportation network can be significant, particularly in urban or mixed-use areas where high concentrations of employment and commercial activities generate substantial NHB traffic volumes.

In addition, the model considers external-external trips that involve trips through the study network but no origin or destination.

Table 4-5, **Table 4-6**, and **Table 4-7** show the trip generation rates for the different land uses. In addition, the trips were also divided into the three (3) basic trip types which were then treated as input values into VISUM.

Table 4-5: Trip Generation Rates/Splits

Land Use	Unit	Generation Rate		Split AM		Split PM		Trip Type Split		
		AM	PM	In	Out	In	Out			
				In	Out	In	Out	HBW	HBO	NHB
Population	Population	0.21	0.31	20%	80%	60%	40%	50%	50%	0%
Elementary School	Students	0.74	0.016	10%	90%	46%	54%	30%	30%	40%
Post Secondary	Students	0.15	0.015	10%	90%	32%	68%	40%	40%	20%
Retail	Employees	0.8	1.5	54%	46%	50%	50%	30%	30%	40%
Office	Employees	0.4	0.45	88%	12%	17%	83%	40%	40%	20%
Industrial	Employees	0.4	0.3	83%	17%	30%	70%	40%	30%	30%
Warehouse	Employees	0.4	0.6	87%	13%	14%	86%	40%	30%	30%
Educational	Employees	0.5	0.3	80%	20%	48%	52%	40%	40%	20%
Service	Employees	0.1	0.3	86%	14%	16%	84%	40%	50%	10%

Table 4-6: Trip Generation Rates (AM)

Trip Generation Rates AM					
HBW		HBO		NHB	
In	Out	In	Out	In	Out
0.02100	0.08400	0.02100	0.08400	0.00000	0.00000
0.02220	0.19980	0.02220	0.19980	0.02960	0.26640
0.00600	0.05400	0.00600	0.05400	0.00300	0.02700
0.12960	0.11040	0.12960	0.11040	0.17280	0.14720
0.14080	0.01920	0.14080	0.01920	0.07040	0.00960
0.13280	0.02720	0.09960	0.02040	0.09960	0.02040
0.13920	0.02080	0.10440	0.01560	0.10440	0.01560
0.16000	0.04000	0.16000	0.04000	0.08000	0.02000
0.03440	0.00560	0.04300	0.00700	0.00860	0.00140

Table 4-7: Trip Generation Rates (PM)

Trip Generation Rates PM					
HBW		HBO		NHB	
In	Out	In	Out	In	Out
0.09300	0.06200	0.09300	0.06200	0	0
0.00221	0.00259	0.00221	0.00259	0.00294	0.00346
0.00192	0.00408	0.00192	0.00408	0.00096	0.00204
0.22500	0.22500	0.22500	0.22500	0.30000	0.30000
0.03060	0.14940	0.03060	0.14940	0.01530	0.07470
0.03600	0.08400	0.02700	0.06300	0.02700	0.06300
0.03360	0.20640	0.02520	0.15480	0.02520	0.15480
0.05760	0.06240	0.05760	0.06240	0.02880	0.03120
0.01920	0.10080	0.02400	0.12600	0.00480	0.02520

4.1.5 Model Calibration/Validation

Model calibration is an iterative process that involves changing the existing model attributes to adjust the travel patterns to match the counted turning movements at the intersections and screen lines.

To check if the model is well calibrated, a regression method was used (see **Figure 4-3** and **Figure 4-4**). Models with an R2 of 0.8 or higher are considered good. Some exceptions should be noted – i.e. low volumes roads which are difficult to calibrate accurately as small shifts in volume can improve or worsen the results. Multiple sources of traffic counts were used to calibrate the model.

321 and 352 count locations were used to calibrate and validate the AM and PM models. The regression statistics for the AM and PM peak hour are summarized in **Table 4-8** and **Table 4-9**.

Figure 4-3: Regression Model (AM Peak Hour)

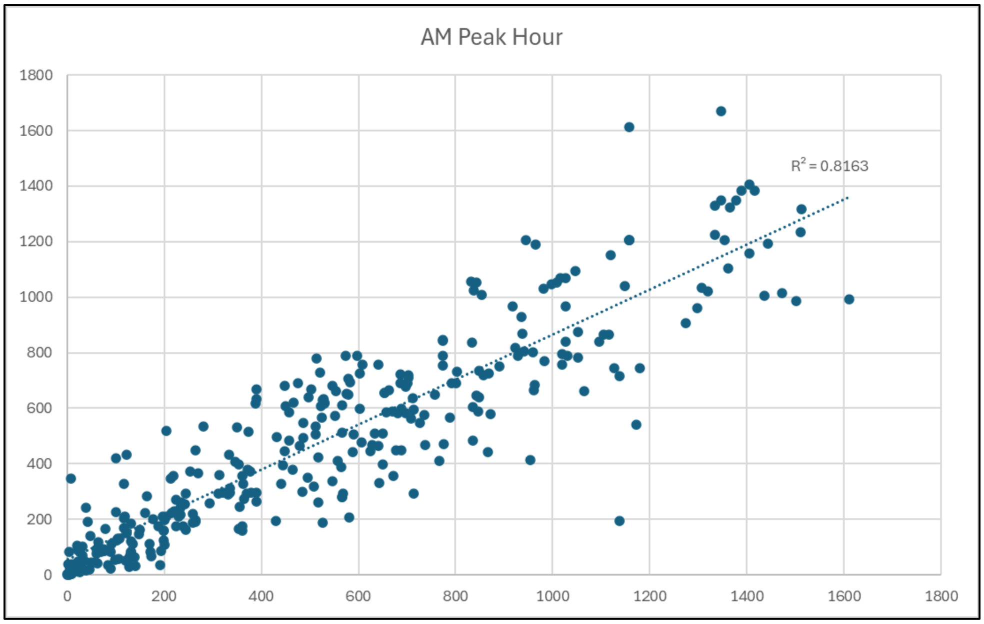


Table 4-8: Regression Statistics (AM)

Regression Statistics	
Multiple R	0.903466
R Square	0.816251
Adjusted R Square	0.815675
Standard Error	172.5571
Observations	321

Figure 4-4: Regression Model (PM Peak Hour)

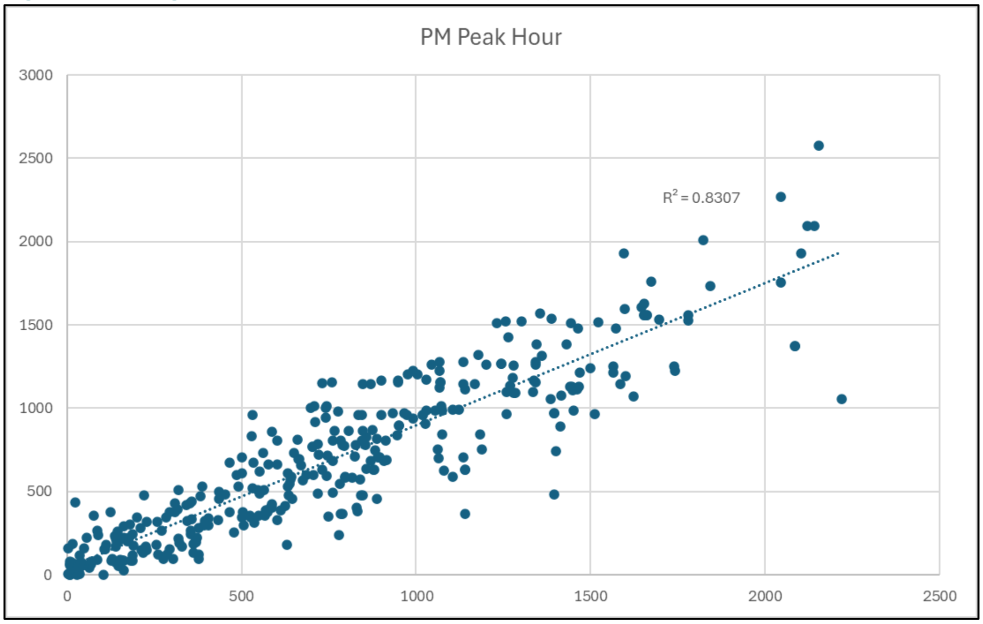


Table 4-9: Regression Statistics (PM)

Regression Statistics	
Multiple R	0.911435
R Square	0.830714
Adjusted R Square	0.830231
Standard Error	216.7358
Observations	352

Having completed a thorough calibration and validation of the existing traffic model—ensuring that observed traffic counts and travel patterns are accurately reflected—the model was well-positioned to undertake the future horizon analysis. With a robust and reliable baseline established, the next phase involved applying the calibrated model to forecast 2041 conditions under various land use and network scenarios, thereby identifying potential infrastructure needs and informing strategic transportation planning decisions.

Mode Share Approach

To establish a realistic baseline for mode share in the three study areas, 2022 Transportation Tomorrow Survey (TTS) data was reviewed, focusing on the Regional Municipality of Waterloo as an initial reference point. This regional-level mode split served as the starting input value. The specific Traffic Analysis Zones (TAZs) that overlap the three PMTSA study areas (see **Table 4-10**) were subsequently examined, calculating an average car usage percentage across those zones. This average was then compared against the 2041 target mode share identified in the Region 2018 TMP (see **Figure 4-5**) and subsequently applied to each relevant TAZ within the study areas. Through this process, the modeling work accurately captured existing travel behaviors while also aligning with the aspirational shift toward more sustainable modes of transportation.

Table 4-10: Mode Split by Traffic Analysis Zones

Mode/TAZ	7180	7181	7192	7194	7195	7300
Auto driver	4366	314	1177	4433	3250	1300
Transit excluding GO rail	582	31	133	138	389	0
Cycle	0	0	40	0	134	0
E-scooter	0	0	0	0	0	0
GO rail only	0	0	0	0	0	0
Joint GO rail and local transit	0	0	0	0	101	0
Motorcycle	0	0	0	0	0	0
Other	0	0	0	9	19	0
Auto passenger	1262	157	272	1254	744	209
School bus	209	0	51	578	87	75
Taxi passenger	19	0	0	0	57	0
Paid rideshare	0	0	0	39	0	0
Walk	687	61	231	493	646	0
Percentage Auto driver	61.28	55.773	61.817	63.839	59.886	82.071

Figure 4-5: Region of Waterloo 2018 TMP Target Mode Share

EXHIBIT 4.4: PM PEAK PERIOD (2:30 P.M.–5:30 P.M.) MODE SHARE TARGETS FOR *MOVING FORWARD*

Travel Mode	PM Peak Period Mode Shares		
	2016 (actual)*	2031 (target)	2041 (target)
Auto Driver	69.8%	63.6%	58.0%
Auto Passenger	12.3%	12.3%	12.0%
Transit	4.9%	9.7%	14.8%
Walk	7.2%	8.4%	9.0%
Cycle	1.4%	2.3%	3.0%
School Bus	3.8%	3.1%	2.7%
Other	0.6%	0.6%	0.5%
Total	**100.0%**	**100.0%**	**100.0%**

*** Source:** Transportation Tomorrow Survey, 2016.

4.1.6 2041 Horizon Year Solutions

Building upon the calibrated and validated existing conditions model, now reflecting both baseline and target mode shares, the analysis progressed to evaluating future network performance under 2041 conditions. In alignment with the study's objectives, three (3) distinct solutions were developed to explore the impacts of planned land uses, network enhancements, and targeted mode shifts. These solutions provide a framework for how varying levels of infrastructure modal priorities could influence future travel behaviors, congestion levels, and overall network efficiency within the study areas.

4.1.6.1 Alternative Solution 1 (Do Nothing)

Under this solution, the existing road network was assessed with the implementation of the preferred land use scenario using the VISUM model. This baseline analysis provided an initial understanding of how effectively the current infrastructure could accommodate future traffic volumes, identifying potential bottlenecks or areas where congestion might worsen. As such, this solution served as a critical benchmark, highlighting the limitations of the existing network in handling projected increases in traffic demand.

Figure 4-6 to **Figure 4-8** show the Average Daily Traffic volumes for Block Line, Fairway and Sportsworld PMTSAs. The Average Daily Traffic (ADT) volumes for the 2041 planning horizon were derived using the VISUM travel demand model. Once the model was run, daily link volumes were extracted from the assigned network and aggregated to produce the ADT values for key road segments, ensuring a consistent and data-driven basis for long-term infrastructure planning and analysis.

Figure 4-6: Average Daily Traffic Volumes – Alternative Solution 1 (Block Line PMTSA)

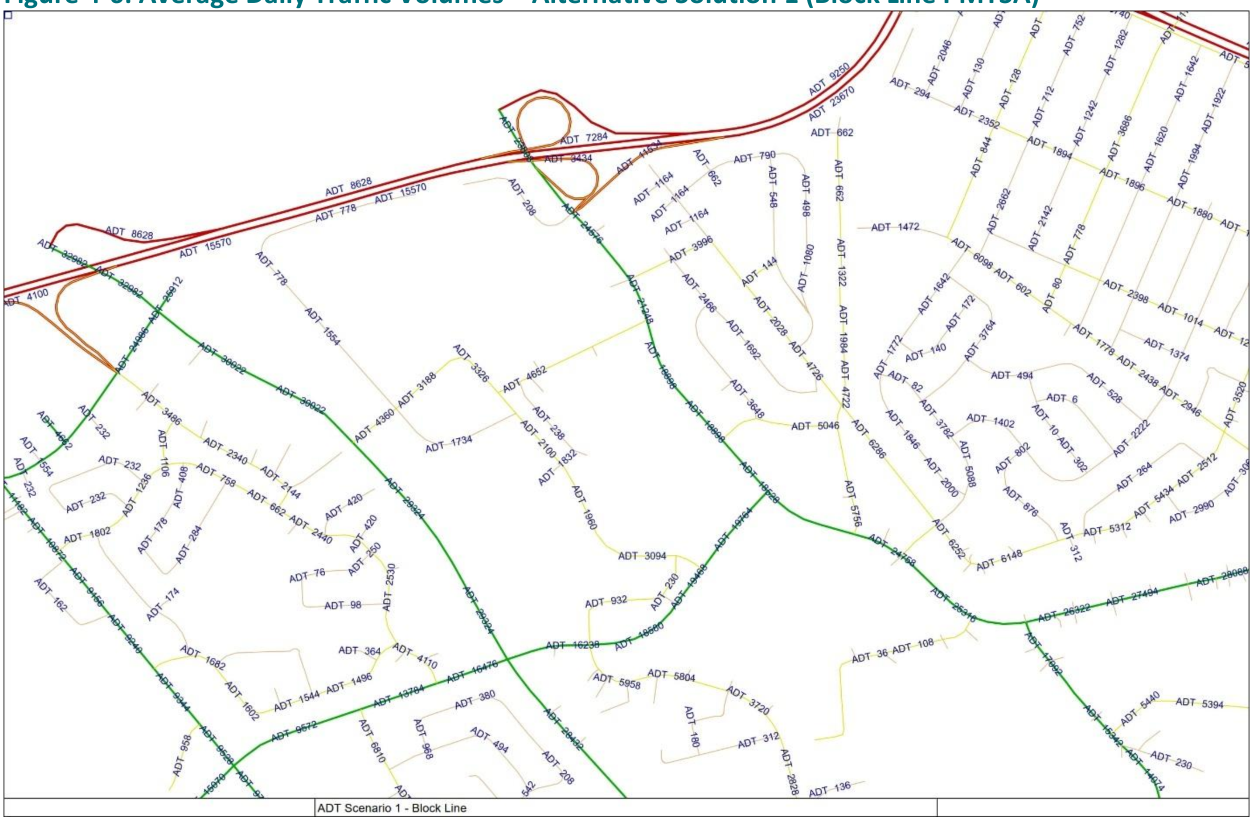
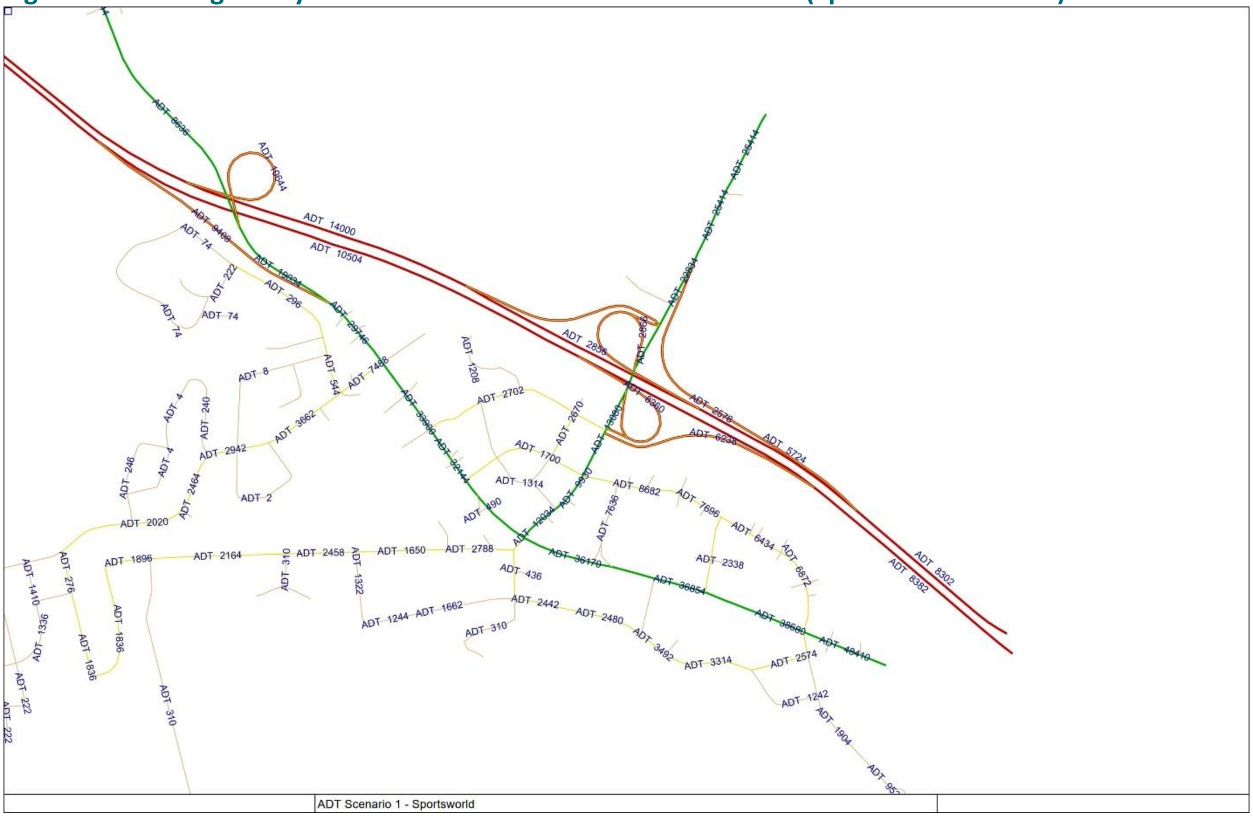


Figure 4-7: Average Daily Traffic Volumes – Alternative Solution 1 (Fairway PMTSA)

Figure 4-8: Average Daily Traffic Volumes – Alternative Solution 1 (Sportsworld PMTSA)



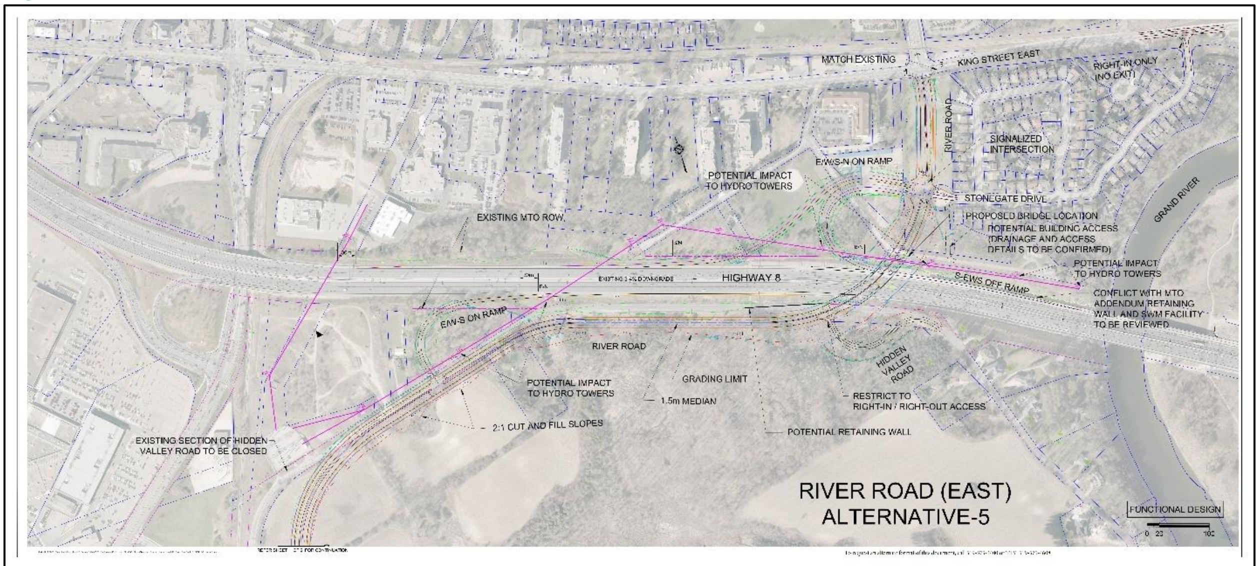
AM and PM link volume outputs and the turning movements for the key intersections can be found in **Appendix B**.

4.1.6.2 Alternative Solution 2 (Planned Improvements)

Under Alternative Solution 2, the future road network was assessed in tandem with the preferred land use scenario, incorporating all planned infrastructure enhancements identified by the City and Region in their respective policy planning documents. These enhancements included roadway capacity expansions, corridor extensions, and transit service improvements scheduled for future implementation.

The future transportation network was enhanced through the introduction of a new half interchange and extending River Road and Goodrich Drive between King Street East and Manitou Drive in Kitchener, designed to divert a portion of traffic away from the primary route (see **Figure 4-9**). By offering an additional point of entry and exit for drivers, the half interchange effectively distributed vehicular flow across the broader network, thereby reducing congestion on the main corridor. This improvement also provided more direct access for certain origins and destinations, lowering travel times and alleviating operational bottlenecks previously observed under Scenario 1. Overall, these targeted measures contributed to a notable improvement in network performance and travel efficiency. In addition to redistributing vehicular traffic, the half interchange and its connecting roadway also enhanced overall network resiliency. By creating alternate routes for peak-hour commuters, it provides a more robust system capable of accommodating fluctuations in traffic demand and mitigating the severity of potential incidents or road closures on the main corridor. This alternative routing option not only supported more balanced traffic flow but also facilitates improved access to surrounding areas, aiding in economic development by making adjacent properties more accessible. Consequently, Scenario 2 demonstrated a meaningful step forward in addressing current and anticipated travel challenges within the corridor.

Figure 4-9: River Road Extension



Through the VISUM model, the study team evaluated the effectiveness of these upgrades by analyzing changes in traffic flow, intersection performance, and overall network capacity. This solution was particularly valuable for identifying residual deficiencies and determining where additional interventions or modifications might be required to adequately accommodate the anticipated population growth.

Figure 4-10 to **Figure 4-12** shows the Average Daily Traffic volumes for Block Line, Fairway and Sportsworld PMTSAs.

Figure 4-10: Average Daily Traffic Volumes – Alternative Solution 2 (Block Line PMTSA)

Figure 4-11: Average Daily Traffic Volumes – Alternative Solution 2 (Fairway PMTSA)

Figure 4-12: Average Daily Traffic Volumes – Alternative Solution 2 (Sportsworld PMTSA)

4.1.6.3 Alternative Solution 3 (Optimized Network)

In the final Alternative Solution 3, the road network was further optimized based on insights gleaned from Solution 1 and 2. Using the VISUM model, the project team evaluated a range of strategic adjustments and targeted enhancements, such as intersection reconfigurations, signal timing modifications, and the introduction of new roadways. The analysis also identified potential transit improvements, ensuring that multi-modal considerations were woven into the network refinements. By testing various optimization strategies, the study sought to achieve an optimal balance between infrastructure investment, network efficiency, and the promotion of sustainable transportation modes. This holistic approach ultimately allowed the team to pinpoint the most cost-effective and impactful improvements necessary to support future growth while aligning with the City's long-term transportation goals.

Figure 4-13 to **Figure 4-15** shows the Average Daily Traffic volumes for Block Line, Fairway and Sportsworld PMTSAs.

Figure 4-13: Average Daily Traffic Volumes – Alternative Solution 3 (Block Line PMTSA)

Figure 4-14: Average Daily Traffic Volumes – Alternative Solution 3 (Fairway PMTSA)

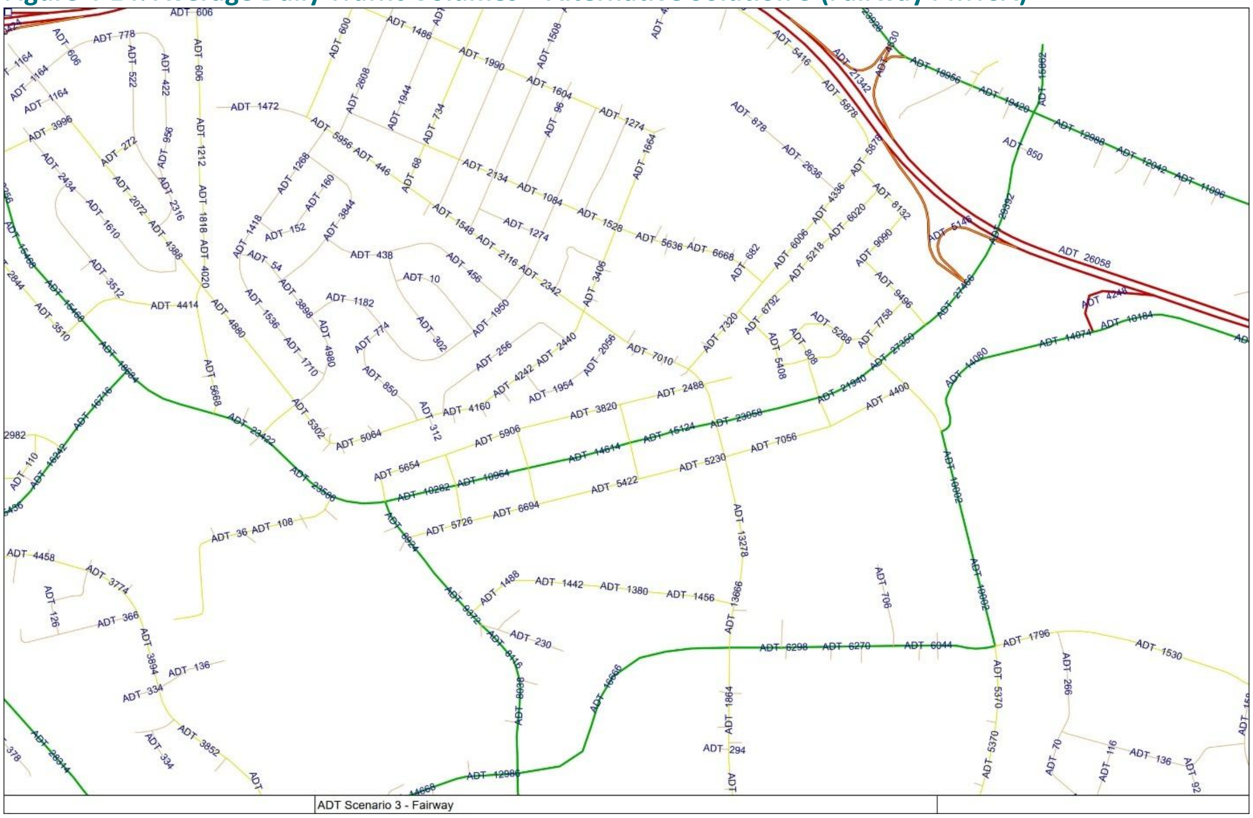
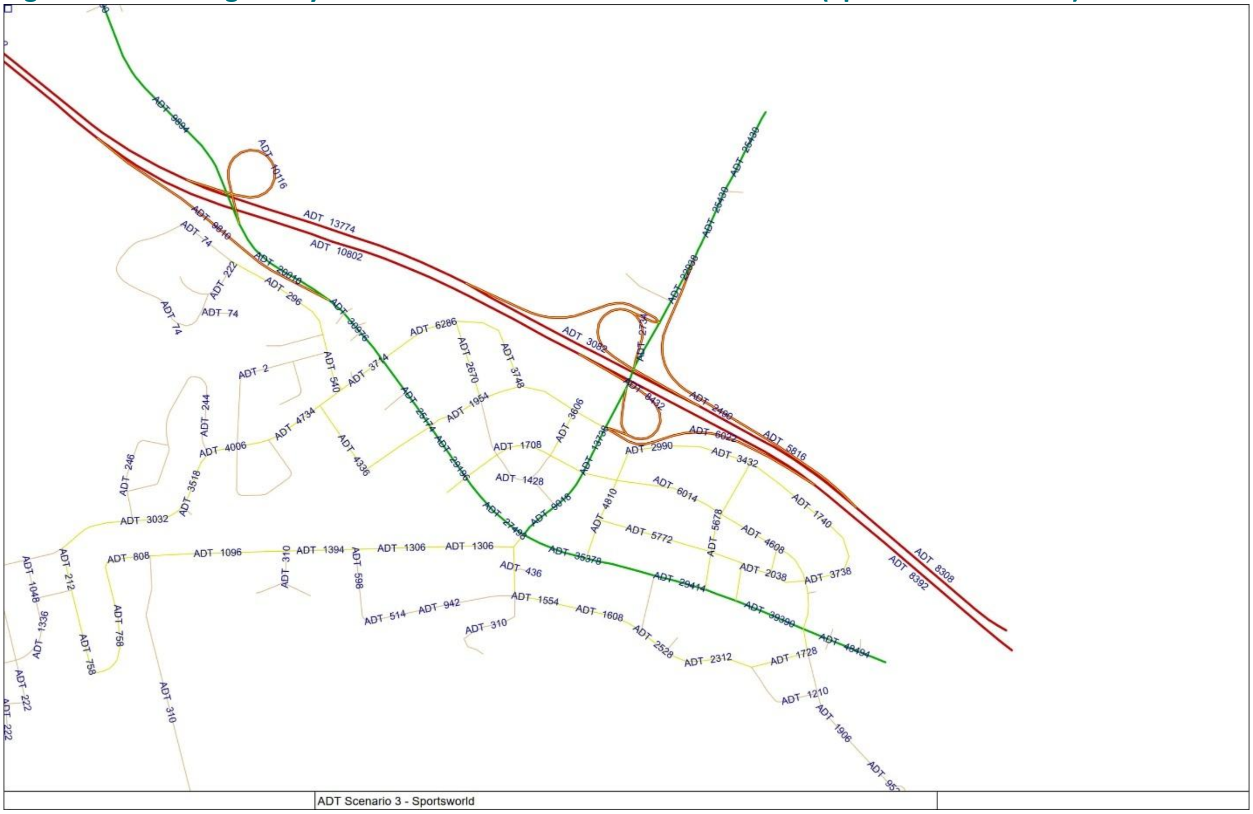


Figure 4-15: Average Daily Traffic Volumes – Alternative Solution 3 (Sportsworld PMTSA)



4.1.6.4 Summary and Comparison of the Three Alternative Solutions

The three (3) alternative solutions provide a comprehensive understanding of how different network configurations are expected to perform under the preferred land use scenario.

When evaluated side by side, Alternative Solution 1 (Do Nothing) served as a baseline, revealing the limitations of the existing network under future traffic demand and highlighting where congestion would likely worsen without any interventions. Alternative Solution 2 (Planned Improvements) built on this baseline by incorporating road widenings, new connections, and transit enhancements already identified by the City and Region, demonstrating a measurable reduction in congestion and improved intersection performance. However, some localized deficiencies persisted, indicating that additional measures would still be needed to address demand fully. Finally, Alternative Solution 3 (Optimized Network) went a step further by introducing more targeted modifications such as additional roads and intersections, aiming to maximize network efficiency and align with broader sustainability goals. Overall, while Alternative Solution 2 offered noticeable benefits compared to doing nothing, Alternative Solution 3 delivered the most comprehensive performance gains, balancing infrastructure capacity with the promotion of more sustainable transportation modes.

A review of the reported volume-to-capacity (V/C) ratios across the three scenarios revealed a clear progression in network performance. Supporting V/C plots from the VISUM model are provided in **Appendix C.** Alternative Solution 1 (Do Nothing) exhibited the highest V/C ratios, primarily due to the reliance on a single key corridor with minimal alternate routes, leading to notable congestion and limited network resilience. Alternative Solution 2 (Planned Improvements) showed reduced V/C ratios in several critical locations, thanks to the introduction of regional road upgrades and capacity enhancements, thereby alleviating bottlenecks. However, some segments still approached capacity, highlighting remaining gaps. In contrast, Alternative Solution 3 (Optimized Network) delivered the lowest V/C ratios, reflecting the benefits of multiple route options and parallel corridors designed to distribute traffic more evenly, as well as targeted intersection and transit improvements that further relieved pressure on the primary thoroughfares.

In addition to assessing volume-to-capacity ratios, the study also examined turning wait times (Turn tCur) across four selected intersections, including the mean waiting time per car unit (Turn tCur mean), the total wait time for all vehicles (Turn tCur total), and the maximum waiting time for any single vehicle (Turn tCur maximum). Consistent with the volume-to-capacity findings, Solution 1 demonstrated the longest waiting times in all categories, while Solution 2 showed moderate improvements. Solution 3, featuring enhanced capacity and multiple route options, achieved the shortest wait times, indicating it offered the greatest operational benefits among the three scenarios. **Table 4-11** provides a summary of the VISUM analysis results.

Table 4-11: VISUM Analysis Results

PM Peak	Turn tCur total Total of the wait times of all turns within the design time interval	Turn tCur mean Mean waiting time per car unit	Turn tCur maximum Maximum waiting time for a car unit
Block line Road and Courtland Avenue E			
Solution 1	2 h 47 min 21 sec	3 sec	12 sec
Solution 2	2 h 25 min 9 sec	3 sec	12 sec
Solution 3	2 h 19 min 33 sec	3 sec	12 sec
Courtland Avenue E / Fairway Road S and Manitou Drive			
Solution 1	13 h 1 min 33 s	13 s	23 s
Solution 2	9 h 41 min 26 s	12 s	22 s
Solution 3	5 h 46 min 35 s	8 s	21 s
Fairway Road S and Wilson Ave			
Solution 1	18 h 10 min 2 sec	14 sec	26 sec
Solution 2	16 h 38 min 56 sec	15 sec	26 sec
Solution 3	7 h 32 min 28 sec	9 sec	22 sec
King Street E and Sportsworld Drive			
Solution 1	13 h 17 min 43 sec	11 sec	21 sec
Solution 2	13 h 12 min 6 sec	11 sec	21 sec
Solution 3	11 h 29 min 58 sec	11 sec	21 sec
V/C Ratio	Courtland Ave	Fairway Road S	
Solution 1	0.649 / 0.611	0.912 / 0.918	
Solution 2	0.592 / 0.594	0.709 / 0.7866	
Solution 3	0.518 / 0.514	0.417 / 0.557	

5 TRAFFIC ANALYSIS OF THE PREFERRED SOLUTION

Alternative Solution 3 (Optimized Network) was selected as the preferred solution, and as such, intersection capacity analysis was completed based on the Alternative Solution 3 projected traffic volumes to compare to the existing conditions and to identify any necessary intersection-level improvements.

The analysis of existing conditions was detailed in the Phase 1 memo prepared by LEA titled "*Growing Together East, Transportation Analysis Study – Phase 1: Background & Methodology Memo*". The same analysis methodology, based in Synchro 11 and Junctions 8 (ARCADY 8), was applied for the future conditions analysis.

To analyze the future horizon of 2041, the Alternative Solution 3 traffic volumes were extracted from the VISUM model and input into the Synchro model representing existing conditions. All signal timing plans were subsequently optimized, and signal coordination was implemented along major corridors.

In accordance with the Region of Waterloo Transportation Impact Study Guidelines (2013) and the MTO General Guidelines for the Preparation of Traffic Impact Studies (March 2023), critical movements are defined as those that operate with a level of service (LOS) E or F, with V/C ratios of 0.85 or greater or with 95th percentile queues that exceed storage capacity or block entry to adjacent lanes. Additionally, highway ramps with V/C ratios of 0.75 or greater are defined as critical.

The results of the intersection capacity analysis are summarized in the following sections. For signalized intersections, only critical movements are discussed. Detailed analysis results are provided in **Appendix D**. Recommendations to extend the storage capacity of dedicated turning lanes have been made based on the projected 95th percentile queue where space may permit.

5.1 BLOCK LINE PMTSA

The following section summarizes the existing and future traffic conditions within the Block Line PMTSA. **Figure 5-1** and **Figure 5-2** illustrates the traffic volumes under existing and future traffic conditions, respectively.

Figure 5-1: Existing Traffic Volumes – Block Line PMTSA

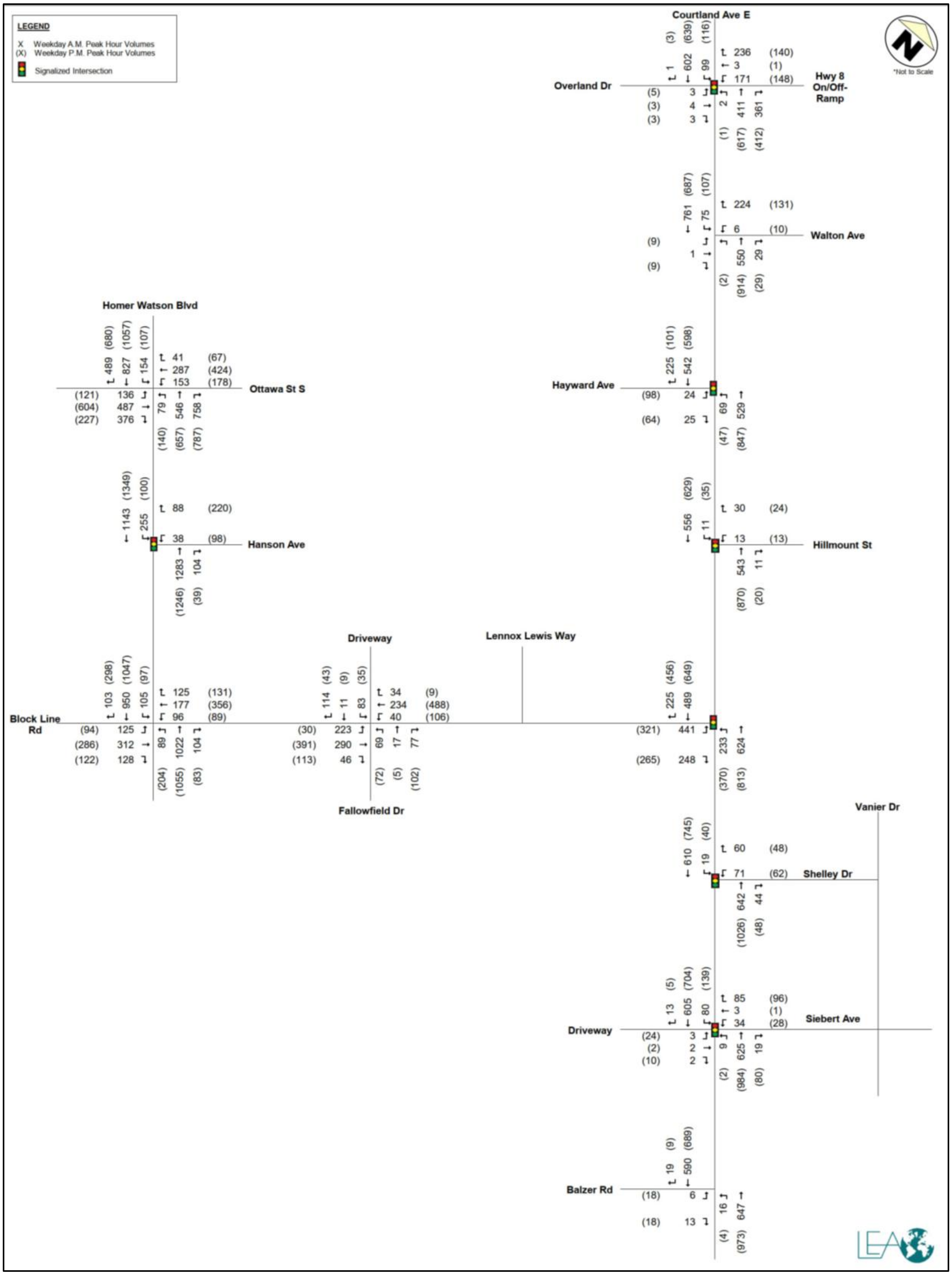


Figure 5-2: Future Traffic Volumes – Block Line PMTSA

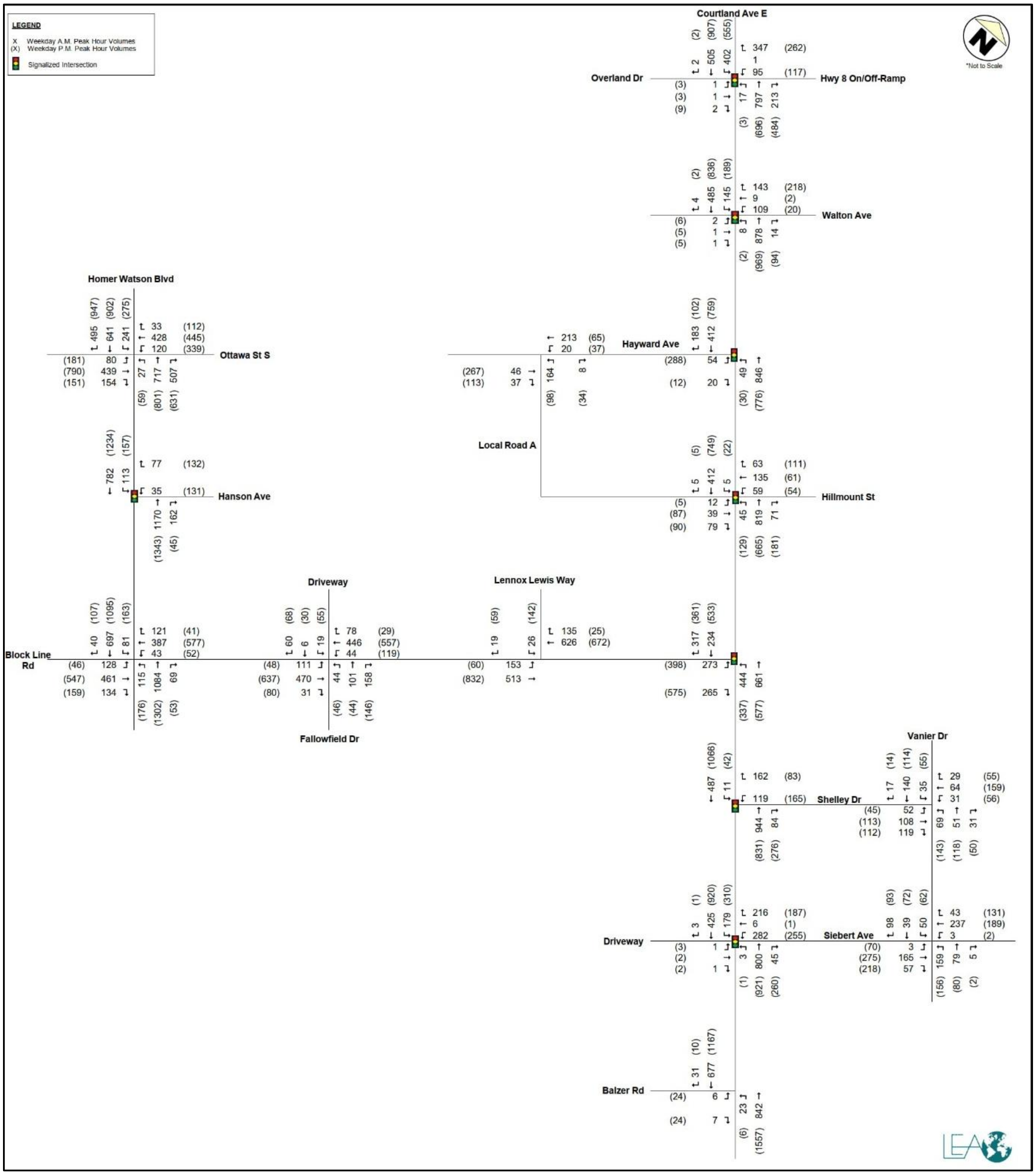
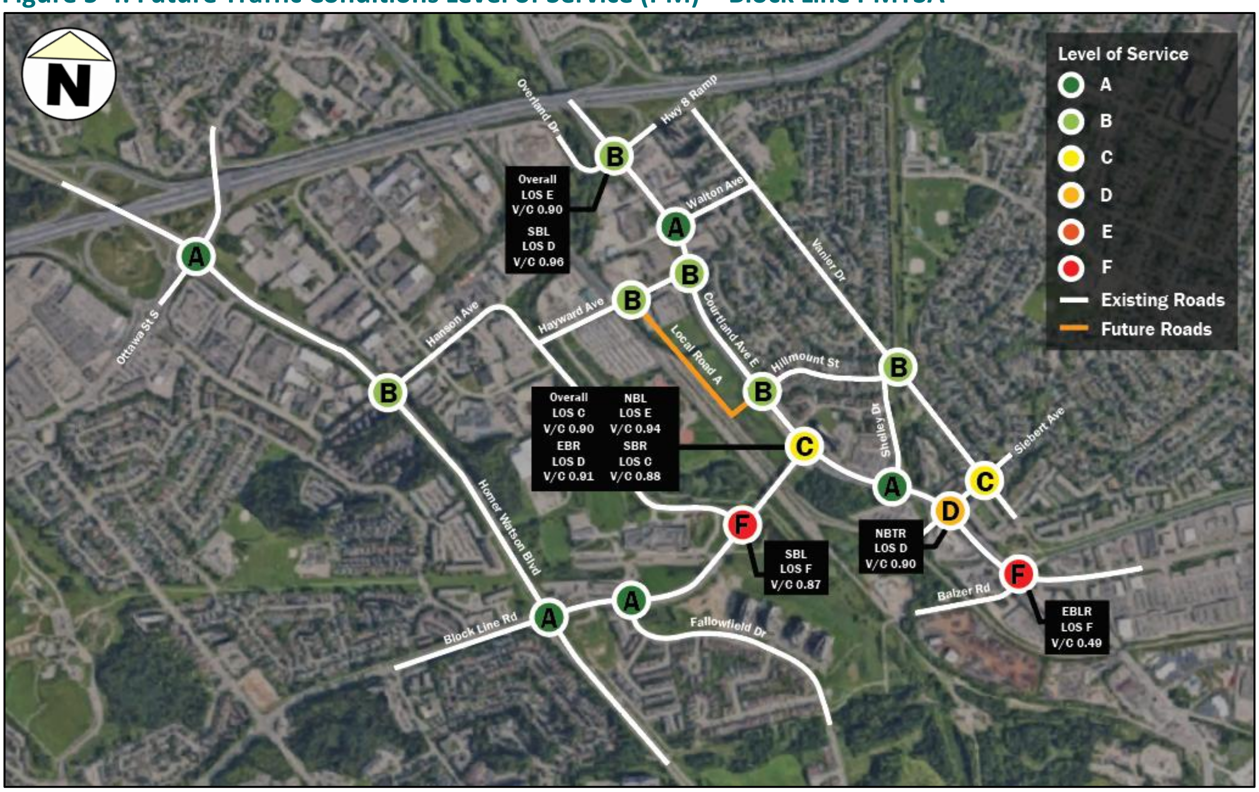


Figure 5-3 and **Figure 5-4** illustrate the resulting overall LOS at the intersections studied during the AM and PM peak hours, respectively under future conditions. Of note, the worst movement LOS is illustrated for the unsignalized intersections as HCM 2000 does not report an overall LOS.

Figure 5-3: Future Traffic Conditions Level of Service (AM) – Block Line PMTSA

Figure 5-4: Future Traffic Conditions Level of Service (PM) – Block Line PMTSA



The analysis results indicate that intersections within the Block Line PMTSA generally perform well, with most locations reporting an overall LOS C (or better) during the weekday peak hours. The unsignalized intersection of Lennox Lewis Way & Block Line Road experiences a LOS F during the PM peak hour where the SBL is deemed critical. In addition, the unsignalized intersection of Courtland Avenue E & Balzer Road experiences a LOS F during the peak hour where the EBLR is deemed critical. Despite this, all intersections are expected to operate within capacity

The analysis results are detailed for each intersection in the subsections below.

5.1.1 Signalized Intersections

5.1.1.1 Hanson Avenue & Homer Watson Boulevard

The intersection capacity analysis for the signalized intersection at Hanson Avenue & Homer Watson Boulevard is summarized in **Table 5-1**.

Table 5-1: Intersection Capacity Analysis – Hanson Avenue & Homer Watson Boulevard

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	0.67	B (12)	-/-	-	0.45	A (8)	-/-
PM Peak Hour								
Overall	-	0.55	B (10)	-/-	-	0.62	B (12)	-/-

Under existing conditions, the intersection of Hanson Avenue & Homer Watson Boulevard operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection operates well during both weekday peak hours, with all movements operating within capacity. No intersection modifications are recommended.

5.1.1.2 Courtland Avenue E & Overland Drive / Highway 8 On/Off-Ramp

The intersection capacity analysis for the signalized intersection at Courtland Avenue E & Overland Drive / Highway 8 on/off-ramp and is summarized in **Table 5-2**.

Table 5-2: Intersection Capacity Analysis – Courtland Avenue E & Overland Drive / Highway 8 On/Off-Ramp

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	0.38	B (13)	-/-	-	0.74	A (6)	-/-
SBL	99	0.17	A (6)	6/14	402	0.77	B (14)	20/64
PM Peak Hour								
Overall	-	0.37	A (10)	-/-	-	0.90	B (17)	-/-
SBL	116	0.24	A (5)	6/15	555	0.96	D (41)	48/163

Under existing conditions, the intersection of Courtland Avenue E & Overland Drive / Highway 8 on/off-ramp operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions the intersection operates within capacity however it is noted that the overall V/C ratio exceeds 0.85 in the PM peak hour, and the V/C ratio for the southbound left turn movement onto the highway on-ramp exceeds 0.75 in both peak hours. The queue for the southbound left movement is also expected to exceed the existing 30m storage length under future conditions. It is recommended that an increased storage length of approximately 165m be provided to accommodate the projected 95th percentile queue, however the intersection should be monitored to determine if forecasted traffic volumes will be realized.

5.1.1.3 Courtland Avenue E & Hayward Avenue

The intersection capacity analysis for the signalized intersection at Courtland Avenue E & Hayward Avenue is summarized in **Table 5-3**.

Table 5-3: Intersection Capacity Analysis – Courtland Avenue E & Hayward Avenue

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	0.39	B (14)	-/-	-	0.42	B (12)	-/-
PM Peak Hour								
Overall	-	0.46	B (12)	-/-	-	0.61	B (14)	-/-

Under existing conditions, the intersection of Courtland Avenue E & Hayward Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection is expected to operate similarly to in existing conditions, with all movements operating within capacity and with acceptable delays. No intersection modifications are recommended.

5.1.1.4 Courtland Avenue E & Hillmount Street / Local Road A

The intersection capacity analysis for the signalized intersection at Courtland Avenue E & Hillmount Street / Local Road A is summarized in **Table 5-4**. It is noted that Hillmount Street is proposed to extend west of Courtland Avenue E in the future horizon as part of Local Road A. As such, a west leg of the intersection has been included in the analysis. A 40m long dedicated northbound left turn lane is proposed to provide a protected phase across the LRT corridor.

Table 5-4: Intersection Capacity Analysis – Courtland Avenue E & Hillmount Street / Local Road A

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	0.19	A (4)	-/-	-	0.48	B (15)	-/-
NBL	-	-	-	-	45	0.33	E (57)	9/20
PM Peak Hour								
Overall	-	0.29	A (3)	-/-	-	0.53	B (10)	-/-

Under existing conditions, the intersection of Courtland Avenue E & Hillmount Street / Local Road A operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection is expected to operate similar to existing conditions, with all movements operating within capacity and with acceptable delays. The only exception is the northbound left movement, which is expected to operate at LOS E during the AM peak hour due to high delays resulting from the protected signal phase. No additional intersection modifications are recommended.

5.1.1.5 Block Line Road & Courtland Avenue E

The intersection capacity analysis for the signalized intersection at Block Line Road & Courtland Avenue E is summarized in **Table 5-5**.

Table 5-5: Intersection Capacity Analysis – Block Line Road & Courtland Avenue E

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	**-**	**0.60**	**C (22)**	**-/-**	**-**	**0.65**	**B (19)**	**-/-**
SBR	225	0.58	C (28)	34/63	317	0.65	C (21)	60/95
PM Peak Hour								
Overall	**-**	**0.74**	**C (28)**	**-/-**	**-**	**0.90**	**C (28)**	**-/-**
EBR	265	0.64	D (36)	51/82	575	0.91	D (40)	92/160
NBL	370	0.59	D (39)	39/58	337	0.94	E (59)	29/59
SBR	456	0.87	D (43)	91/171	361	0.88	C (35)	65/114

Under existing conditions, the intersection of Block Line Road & Courtland Avenue E operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. It is noted that the southbound right movement is approaching capacity during the PM peak hour. The queues for the southbound right movement also exceed the available storage of 40m during both peak periods, and may spill back into the through lane on occasion. No critical movements have been identified.

Under future conditions, the intersection continues to operate within capacity, however it is noted that the overall V/C ratio during the PM peak hour is 0.90, and the V/C ratios for the eastbound right, northbound left and southbound right movements will exceed 0.85. The southbound right turn lane queues are expected to improve under future conditions, however the projected average queues will still exceed the existing storage length. An increase to the storage length should be considered, subject to monitoring of future traffic growth and provided that it does not conflict with the existing bus layby that serves the Block Line ION station.

5.1.1.6 Courtland Avenue E & Shelley Drive

The intersection capacity analysis for the signalized intersection at Courtland Avenue E & Shelley Drive is summarized in **Table 5-6**.

Table 5-6: Intersection Capacity Analysis – Shelley Drive & Courtland Avenue E

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	**-**	**0.30**	**A (7)**	**-/-**	**-**	**0.46**	**A (8)**	**-/-**
WBL	71	0.35	D (38)	11/22	119	0.45	D (35)	20/33
PM Peak Hour								
Overall	**-**	**0.43**	**A (7)**	**-/-**	**-**	**0.55**	**A (7)**	**-/-**
WBL	62	0.34	D (43)	11/23	165	0.55	D (36)	28/44

Under existing conditions, the intersection of Courtland Avenue E & Shelley Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection is expected to operate similarly to in existing conditions, with all movements operating within capacity and with acceptable delays. The queues for the westbound left movement are expected to exceed the existing 25m storage length under future conditions. An increased storage length of 45m is recommended, which will necessitate eliminating the dedicated northbound left turn lane into the existing drive-thru restaurant at 1114 Courtland Ave E.

5.1.1.7 Courtland Avenue E & Siebert Avenue

The intersection capacity analysis for the signalized intersection at Courtland Avenue E & Siebert Avenue is summarized in **Table 5-7**.

Table 5-7: Intersection Capacity Analysis – Courtland Avenue E & Siebert Avenue

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	**0.38**	**B (12)**	-/-	-	**0.67**	**C (24)**	-/-
PM Peak Hour								
Overall	-	**0.56**	**B (18)**	-/-	-	**0.85**	**C (29)**	-/-
NBTR	1064	0.68	B (19)	75/141	1181	0.90	D (36)	108/157
SBL	139	0.51	B (13)	10/33	310	0.85	D (52)	43/98

Under existing conditions, the intersection of Courtland Avenue E & Siebert Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, a dedicated westbound left turn lane is recommended to minimize queuing. A storage length of 70m is proposed, subject to monitoring of future traffic growth. The intersection will operate within capacity, however it is noted that the overall V/C ratio will reach 0.85 in the PM peak hour. Additionally, the V/C ratio for the northbound through-right movement will exceed 0.85 and the southbound left movement will operate at a V/C ratio of 0.85 during the PM peak hour. The 95th percentile queues for the westbound movement are expected to exceed the existing intersection spacing, resulting in queues spilling back into the upstream intersection. Southbound left turn queues are also expected to exceed the current storage capacity of 30m under future conditions, and as such an increased storage length of 80m is recommended.

5.1.2 New Signalized Intersection

5.1.2.1 Courtland Avenue E & Walton Avenue

Under existing conditions, the intersection of Courtland Avenue E & Walton Avenue is unsignalized (see **Section 5.1.4.1**). However, under future conditions, the intersection is recommended to be signalized. The intersection capacity analysis results for the future signalized conditions are summarized in **Table 5-8**.

Table 5-8: Intersection Capacity Analysis – Courtland Avenue E & Walton Avenue

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	-	0.50	A (9)	-/-
PM Peak Hour				
Overall	-	0.69	A (10)	-/-

Under future conditions, the intersection operates well during both weekday peak hours as a signalized intersection, with all movements operating within capacity.

5.1.3 Roundabout Intersections

5.1.3.1 Ottawa Street S & Homer Watson Boulevard

The intersection capacity analysis for the roundabout at Ottawa Street South & Homer Watson Boulevard is summarized in **Table 5-9**.

Table 5-9: Intersection Capacity Analysis – Ottawa Street S & Homer Watson Boulevard

Mvmt	Existing Conditions (2024)						Future Conditions (2041)					
	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity
AM Peak Hour												
Overall	-	-	**1.92**	-	**A**	74% (Eastbound Leg)	-	-	**1.80**	-	**A**	124% (Eastbound Leg)
Westbound	0.22	~1	1.67	0.17	A		0.29	~1	1.79	0.21	A	
Southbound	0.53	1.05	1.93	0.33	A		0.46	1.04	1.86	0.31	A	
Eastbound	0.68	~1	2.45	0.39	A		0.36	~1	1.91	0.25	A	
Northbound	0.28	~1	1.60	0.21	A		0.34	~1	1.66	0.24	A	
PM Peak Hour												
Overall	-	-	**2.10**	-	**A**	63% (Eastbound Leg)	-	-	**2.52**	-	**A**	41% (Eastbound Leg)
Westbound	0.34	~1	1.85	0.25	A		0.56	~1	2.24	0.36	A	
Southbound	0.75	~1	2.31	0.42	A		0.84	~1	2.51	0.45	A	
Eastbound	0.68	~1	2.58	0.27	A		1.05	~1	3.37	0.51	A	
Northbound	0.37	~1	1.68	0.64	A		0.50	1.02	2.09	0.33	A	

Under existing weekday AM and PM peak hour conditions, the Ottawa Street S & Homer Watson Boulevard roundabout functions well with all movements operating within capacity with V/C ratios below 1.00, minimal delay at LOS A, and minimal queuing. No critical movements have been identified. The intersection operates with appropriate residual capacity.

Under future conditions, the intersection will continue to operate within capacity and with minimal delays and queues. The intersection operates with appropriate residual capacity.

5.1.3.2 Homer Watson Boulevard & Block Line Road

The intersection capacity analysis for the roundabout at Homer Watson Boulevard & Block Line Road is summarized in **Table 5-10**.

Table 5-10: Intersection Capacity Analysis – Homer Watson Boulevard & Block Line Road

Mvmt	Existing Conditions (2024)						Future Conditions (2041)					
	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity
AM Peak Hour												
Overall	-	-	**3.33**	-	**A**	46% (Northbound Leg)	-	-	**3.99**	-	**A**	34% (Northbound Leg)
Westbound	0.41	~1	3.67	0.28	A		0.71	~1	4.65	0.40	A	
Southbound	0.54	1.05	1.67	0.34	A		0.35	~1	1.55	0.25	A	
Eastbound	0.59	~1	4.58	0.36	A		0.71	~1	3.54	0.40	A	
Northbound	1.54	3.18	4.58	0.59	A		1.94	5.30	5.53	0.65	A	
PM Peak Hour												
Overall	-	-	**3.71**	-	**A**	39% (Northbound Leg)	-	-	**6.51**	-	**A**	11% (Northbound Leg)
Westbound	0.75	~1	4.72	0.42	A		1.15	~1	6.29	0.53	A	
Southbound	0.87	1.03	2.17	0.46	A		0.87	1.03	2.26	0.46	A	
Eastbound	0.51	1.03	3.68	0.33	A		1.21	~1	5.59	0.54	A	
Northbound	1.84	5.15	4.94	0.64	A		4.57	17.51	10.91	0.82	A	

Under existing weekday AM and PM peak hour conditions, the Homer Watson Boulevard & Block Line Road roundabout functions well with all movements operating within capacity with V/C ratios below 1.00, minimal delay at LOS A, and minimal queuing. No critical movements have been identified. The intersection operates with appropriate residual capacity.

Under future conditions, the intersection will continue to operate within capacity and with minimal delays and queues. The intersection operates with appropriate residual capacity.

5.1.3.3 Block Line Road & Fallowfield Drive

The intersection capacity analysis for the roundabout at Block Line Road & Fallowfield Drive is summarized in **Table 5-11**.

Table 5-11: Intersection Capacity Analysis – Block Line Road & Fallowfield Drive

Mvmt	Existing Conditions (2024)						Future Conditions (2041)					
	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity
AM Peak Hour												
Overall	-	-	**2.24**	-	**A**	176% (Northbound Leg)	-	-	**2.47**	-	**A**	117% (Northbound Leg)
Westbound	0.17	~1	1.95	0.14	A		0.35	~1	2.21	0.25	A	
Southbound	0.15	~1	2.54	0.23	A		0.06	~1	2.57	0.06	A	
Eastbound	0.30	~1	1.92	0.14	A		0.33	~1	1.91	0.24	A	
Northbound	0.16	~1	3.52	0.14	A		0.34	~1	4.08	0.25	A	
PM Peak Hour												
Overall	-	-	**2.21**	-	**A**	218% (Northbound Leg)	-	-	**2.57**	-	**A**	102% (Northbound Leg)
Westbound	0.35	~1	2.11	0.26	A		0.43	1.02	2.25	0.30	A	
Southbound	0.07	~1	2.71	0.06	A		0.13	~1	2.93	0.11	A	
Eastbound	0.28	~1	1.88	0.22	A		0.51	1.00	2.26	0.34	A	
Northbound	0.16	~1	3.26	0.14	A		0.29	~1	4.29	0.22	A	

Under existing weekday AM and PM peak hour conditions, the Block Line Road & Fallowfield Drive roundabout functions well with all movements operating within capacity with V/C ratios below 1.00, minimal delay at LOS A, and minimal queuing. No critical movements have been identified. The intersection operates with appropriate residual capacity.

Under future conditions, the intersection will continue to operate within capacity and with minimal delays and queues. The intersection operates with appropriate residual capacity.

5.1.4 Unsignalized Intersections

5.1.4.1 Courtland Avenue E & Walton Avenue

The intersection capacity analysis for the unsignalized intersection at Courtland Avenue E & Walton Avenue is summarized in **Table 5-12**.

Table 5-12: Intersection Capacity Analysis – Courtland Avenue E & Walton Avenue

Mvmt	Existing Conditions (2024)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	- (3)	-/-
NBL	0	0.00	A (0)	-/0
NBT	550	0.00	(0)	-/0
NBR	29	0.00	(0)	-/0
EBLTR	1	0.01	E (39)	-/0
WBLTR	230	0.36	B (14)	-/2
SBL	75	0.08	A (9)	-/0
SBT	761	0.00	A (1)	-/0
SBR	0	0.00	(0)	-/0
PM Peak Hour				
Overall	-	-	- (3)	-/-
NBL	2	0.00	A (9)	-/0
NBT	914	0.00	A (0)	-/0
NBR	29	0.00	(0)	-/0
EBLTR	18	0.15	E (40)	-/1
WBLTR	141	0.39	C (21)	-/2
SBL	107	0.15	B (11)	-/1
SBT	687	0.00	A (1)	-/0
SBR	0	0.00	(0)	-/0

Under existing conditions, the intersection of Courtland Avenue E & Walton Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound movement operates at LOS E during both peak hours. No other critical movements have been identified. Under future conditions, the intersection is recommended to be signalized based on predicted capacity constraints (see **Section 5.1.2.1**).

5.1.4.2 Courtland Avenue E & Balzer Road

The intersection capacity analysis for the unsignalized intersection at Courtland Avenue E & Balzer Road is summarized in **Table 5-13**.

Table 5-13: Intersection Capacity Analysis – Courtland Avenue E & Balzer Road

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour								
Overall	-	-	**- (0)**	**-/-**	-	-	**- (0)**	**-/-**
NBL	16	0.02	A (9)	-/0	23	0.03	A (9)	-/0
NBT	647	0.00	(0)	-/0	842	0.00	(0)	-/0
EBLR	19	0.04	B (14)	-/0	13	0.04	C (18)	-/0
SBT	590	0.00	(0)	-/0	677	0.00	(0)	-/0
SBR	19	0.00	(0)	-/0	31	0.00	(0)	-/0
PM Peak Hour								
Overall	-	-	**- (0)**	**-/-**	-	-	**- (1)**	**-/-**
NBL	4	0.00	A (9)	-/0	6	0.01	B (11)	-/0
NBT	973	0.00	(0)	-/0	1557	0.00	(0)	-/0
EBLR	36	0.13	C (20)	-/0	48	0.49	F (72)	-/2
SBT	689	0.00	(0)	-/0	1167	0.00	(0)	-/0
SBR	9	0.00	(0)	-/0	10	0.00	(0)	-/0

Under existing conditions, the intersection of Courtland Avenue E & Balzer Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

It is noted that there is a signalized rail crossing on Courtland Avenue E just north of Balzer Road. The signal was not modelled in the analysis as it was noted that trains cross 12 times per hour during peak periods and would not cause significant vehicle delays.

Under future conditions, the intersection operates similarly to existing conditions, however some high delays can be expected for the stop-controlled eastbound movement from Balzer Road onto Courtland Avenue E during the PM peak hour.

5.1.4.3 Block Line Road & Lennox Lewis Way

The intersection capacity analysis for the unsignalized intersection at Block Line Road & Lennox Lewis Way is summarized in **Table 5-14**. Only the future conditions were assessed as no existing traffic volumes were available.

Table 5-14: Intersection Capacity Analysis – Block Line Road & Lennox Lewis Way

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	- (2)	-/-
EBL	153	0.18	B (10)	-/1
EBT	513	0.00	(0)	-/0
WBT	626	0.00	(0)	-/0
WBR	135	0.00	(0)	-/0
SBL	26	0.19	E (38)	-/1
SBR	19	0.03	B (11)	-/0
PM Peak Hour				
Overall	-	-	- (8)	-/-
EBL	60	0.07	A (9)	-/0
EBT	832	0.00	(0)	-/0
WBT	672	0.00	(0)	-/0
WBR	25	0.00	(0)	-/0
SBL	142	0.87	F (96)	-/6
SBR	59	0.09	B (11)	-/0

Under future conditions, the intersection operates well, however it is noted that the stop-controlled southbound left movement approaches capacity during the PM peak hour and high delays can be expected. A maximum queue of six vehicles is also expected for this movement, so an increased storage lane capacity of 40m is recommended.

5.1.4.1 Vanier Drive & Shelley Drive

The intersection capacity analysis for the unsignalized intersection at Vanier Drive & Shelley Drive is summarized in **Table 5-15**. Only the future conditions were assessed as no existing traffic volumes were available.

Table 5-15: Intersection Capacity Analysis – Vanier Drive & Shelley Drive

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**A (10)**	-/-
NBLTR	151	0.22	A (10)	-/1
EBLTR	279	0.37	B (11)	-/2
WBLTR	124	0.18	A (9)	-/1
SBLTR	192	0.27	A (10)	-/1
PM Peak Hour				
Overall	-	-	**B (13)**	-/-
NBLTR	311	0.50	B (15)	-/3
EBLTR	270	0.43	B (13)	-/2
WBLTR	270	0.44	B (13)	-/2
SBLTR	183	0.31	B (12)	-/1

Under future conditions, the intersection operates well, with all movements operating within capacity.

5.1.4.1 Vanier Drive & Siebert Avenue

The intersection capacity analysis for the unsignalized intersection at Vanier Drive & Sibert Avenue is summarized in **Table 5-16**. Only the future conditions were assessed as no existing traffic volumes were available. Based on the projected traffic volumes, a dedicated eastbound right turn lane with 20m of storage capacity is recommended, and was included in the future conditions Synchro model.

Table 5-16: Intersection Capacity Analysis – Vanier Drive & Siebert Avenue

AM	Future Conditions (2041)			
Mvmt	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	B (12)	-/-
NBLTR	243	0.39	B (13)	-/2
EBLT	168	0.29	B (11)	-/1
EBR	57	0.09	A (9)	-/0
WBLTR	283	0.44	B (13)	-/2
SBLTR	187	0.29	B (11)	-/1
PM Peak Hour				
Overall	-	-	C (17)	-/-
NBLTR	238	0.47	C (16)	-/3
EBLT	345	0.66	C (22)	-/5
EBR	218	0.37	B (12)	-/2
WBLTR	322	0.58	C (18)	-/4
SBLTR	227	0.44	C (15)	-/2

Under future conditions, the intersection operates well, with all movements operating within capacity.

5.1.5 New Unsignalized Intersections

5.1.5.1 Hayward Avenue & Local Road A

A new local road is proposed in the Block Line MTSA, connecting to Hayward Avenue as a three-way intersection. The intersection is assumed to be located east of the LRT crossing on Hayward Avenue. The intersection capacity analysis for the unsignalized intersection at Hayward Avenue & Local Road A is summarized in **Table 5-17**.

Table 5-17: Intersection Capacity Analysis – Hayward Avenue & Local Road A

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	- (5)	-/-
NBLR	172	0.25	B (12)	-/1
EBT	46	0.00	(0)	-/0
EBR	37	0.00	(0)	-/0
WBL	20	0.01	A (7)	-/0
WBT	213	0.00	A (0)	-/0
PM Peak Hour				
Overall	-	-	- (3)	-/-
NBLR	132	0.23	B (13)	-/1
EBT	267	0.00	(0)	-/0
EBR	113	0.00	(0)	-/0

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
WBL	37	0.03	A (8)	-/0
WBT	65	0.00	A (0)	-/0

The proposed intersection of Hayward Avenue & Local Road A operates well under future conditions, with all movements operating within capacity and with minimal delays and queues. The analysis results indicate that the northbound movement (Local Road A) can operate as unsignalized all-moves; however, it is recommended that design of this intersection consider potential impacts to ION LRT operations which may necessitate restricting left in/out movements at this location.

5.2 FAIRWAY PMTSA

The following section summarizes the future traffic conditions within the Fairway PMTSA. **Figure 5-5** and **Figure 5-6** illustrates the traffic volumes under existing and future traffic conditions, respectively.

Figure 5-5: Existing Traffic Volumes – Fairway PMTSA

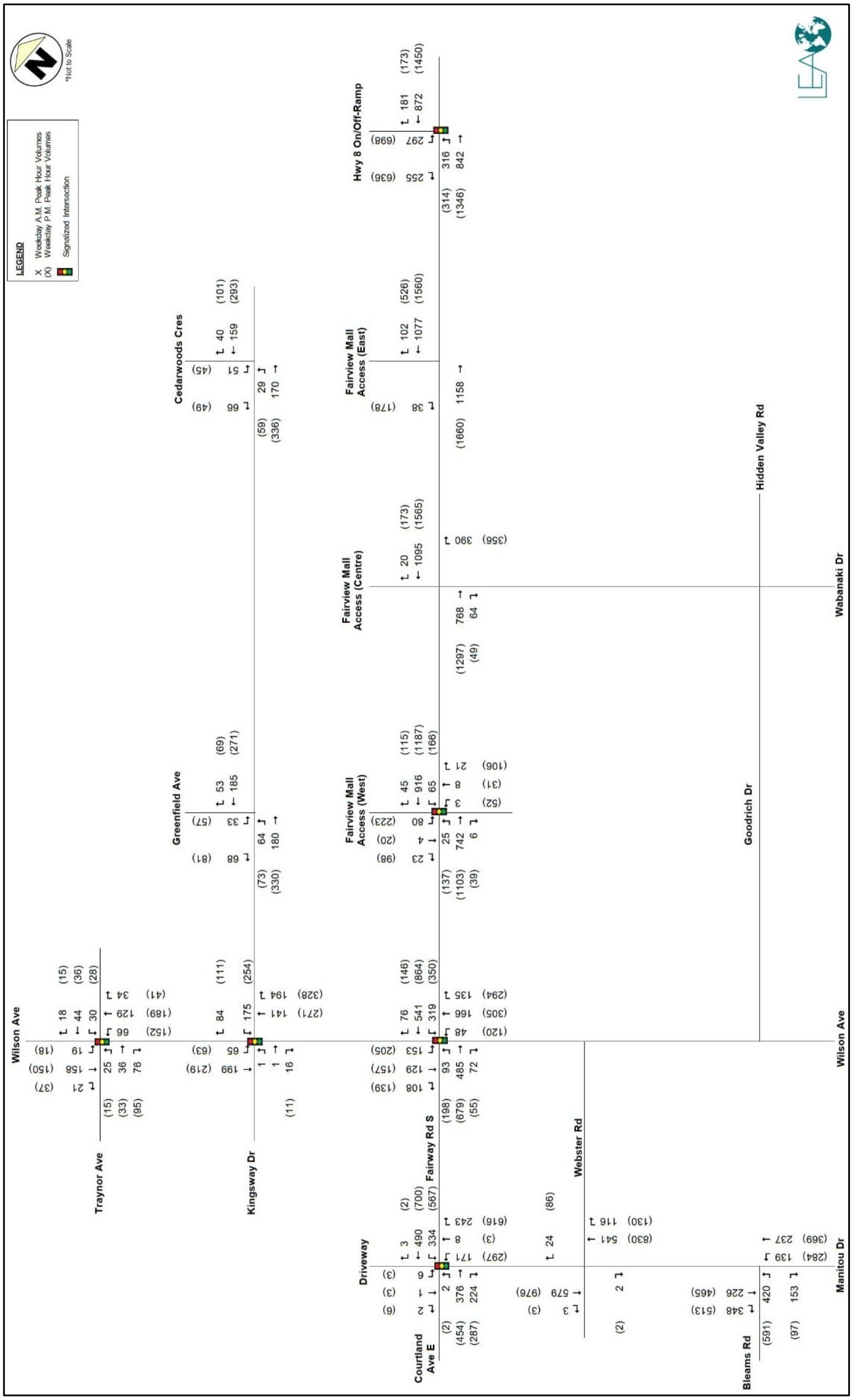


Figure 5-6: Future Traffic Volumes – Fairway PMTSA

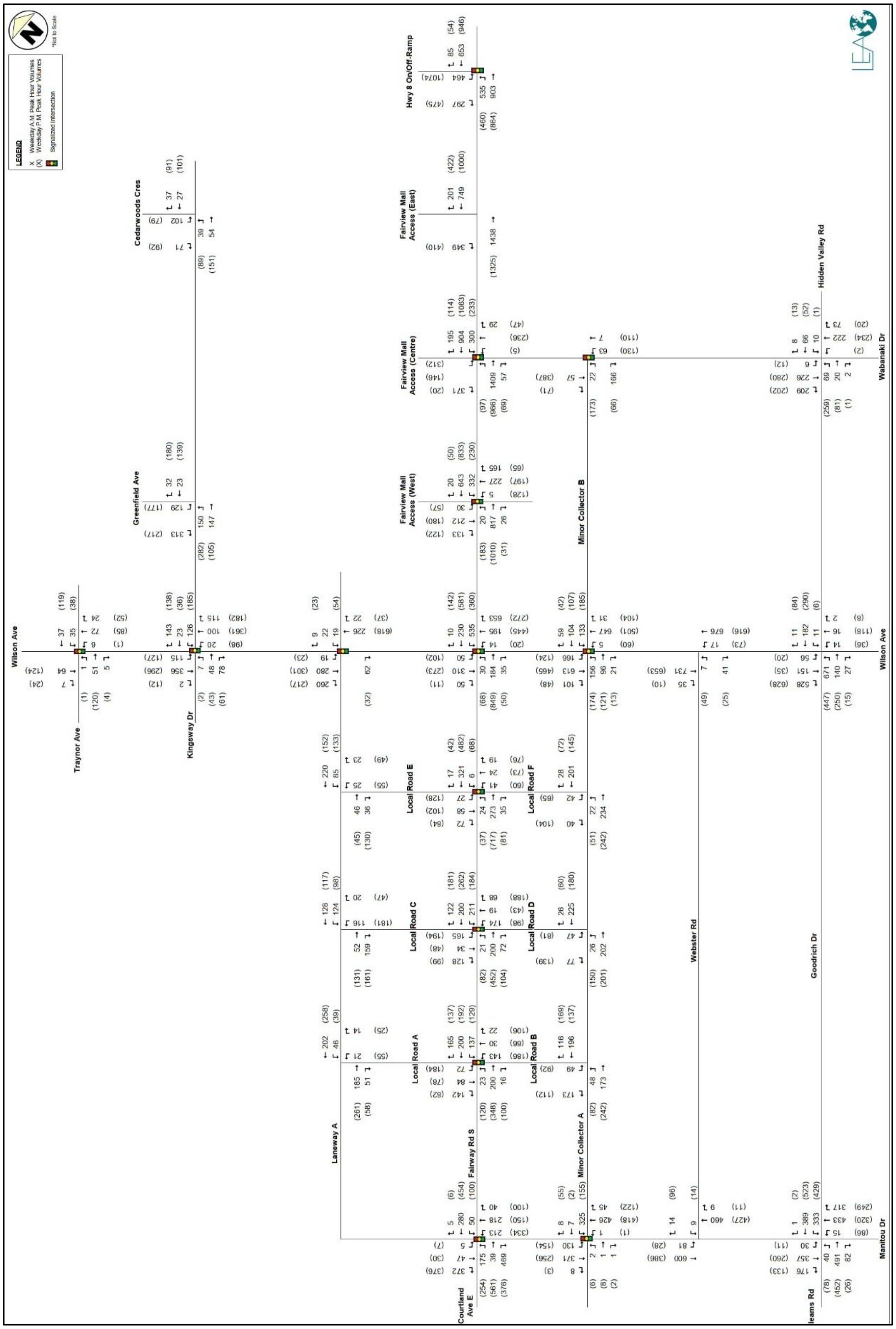


Figure 5-7 and **Figure 5-8** illustrate the resulting overall LOS at the intersections studied during the AM and PM peak hours, respectively. Of note, the worst movement LOS is illustrated for the unsignalized intersections as HCM 2000 does not report an overall LOS.

Figure 5-7: Future Traffic Conditions Level of Service (AM) – Fairway PMTSA

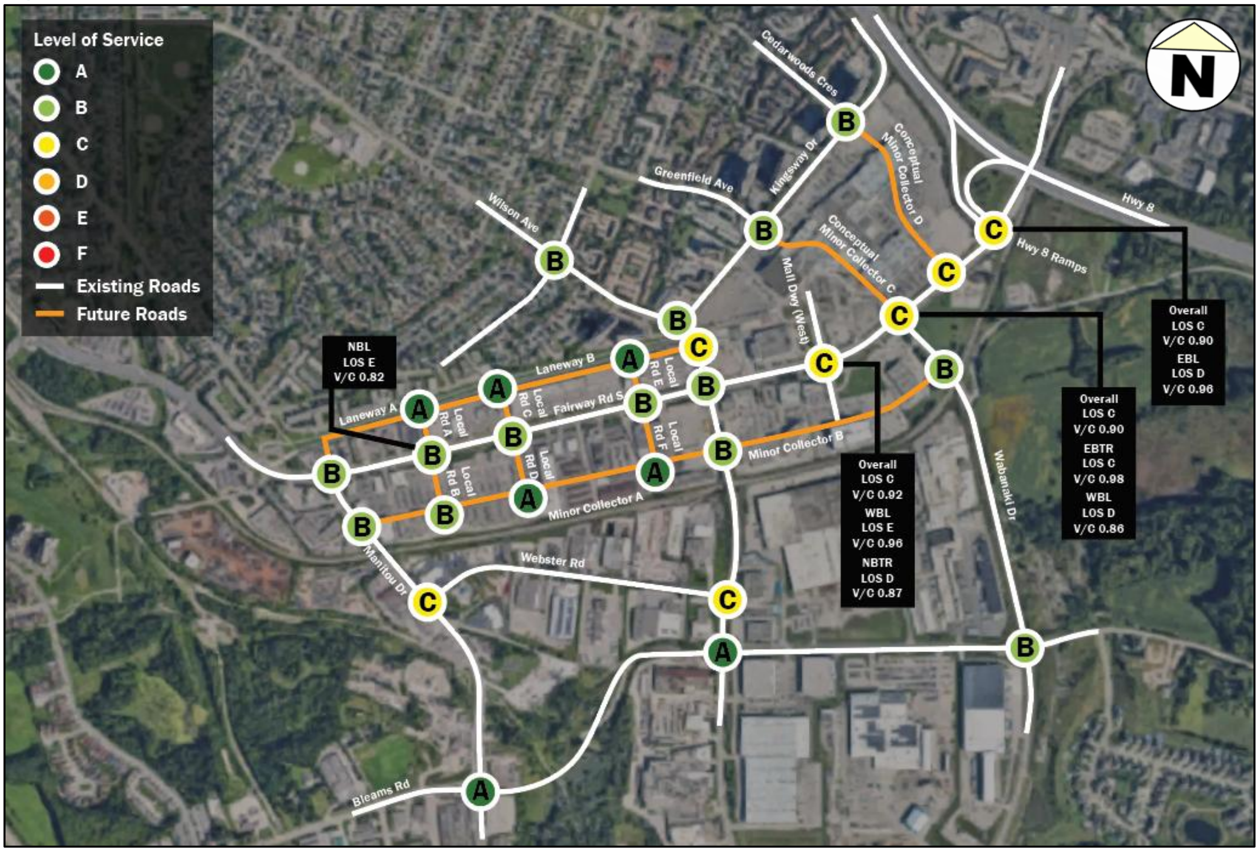
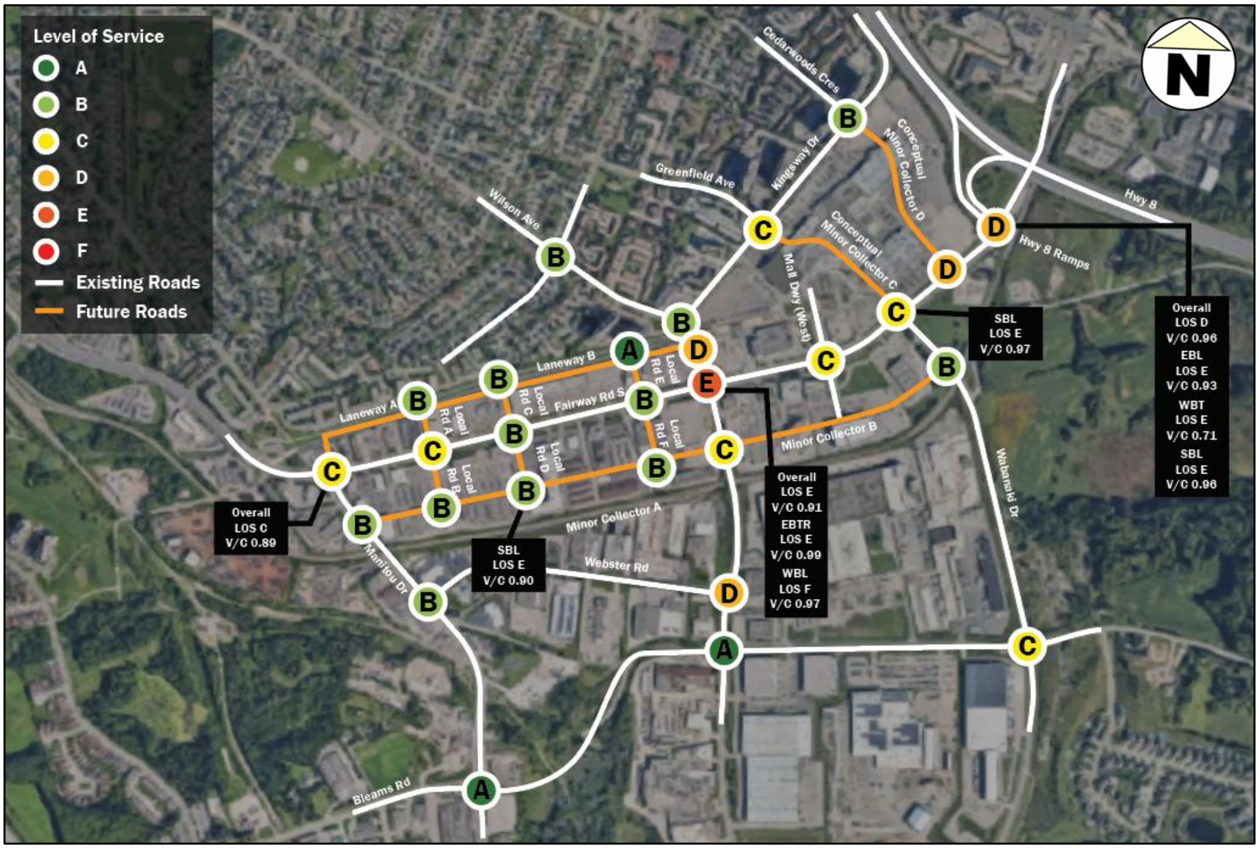


Figure 5-8: Future Traffic Conditions Level of Service (PM) – Fairway PMTSA



The analysis results indicate that intersections within the Fairway PMTSA generally perform well, with most locations reporting an overall LOS D (or better) during the weekday peak hours. Some of the major intersections along Fairway Road S and the Highway 8 ramps are expected to approach capacity during the PM peak hour; however, all individual movements are expected to operate within capacity.

The analysis results are detailed for each intersection in the subsections below.

5.2.1 Signalized Intersections

5.2.1.1 Fairway Road S / Courtland Avenue E & Manitou Drive

The intersection capacity analysis for the signalized intersection at Fairway Road S / Courtland Avenue E & Manitou Drive is summarized in **Table 5-18**.

Table 5-18: Intersection Capacity Analysis – Fairway Road S / Courtland Avenue E & Manitou Drive

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	**0.51**	**B (18)**	-/-	-	**0.44**	**B (19)**	-/-
WBL	334	0.58	B (12)	18/57	50	0.07	A (6)	3/6
PM Peak Hour								
Overall	-	**0.82**	**C (29)**	-/-	-	**0.89**	**C (23)**	-/-
WBL	567	0.92	D (37)	62/163	100	0.31	B (19)	13/42
NBR	616	0.50	C (35)	3/49	100	0.12	C (30)	5/15

Under existing conditions, the intersection of Fairway Road S / Courtland Avenue E & Manitou Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. It is noted that the westbound left movement is approaching capacity in the PM peak hour. During both peak hours, the queues for the westbound left movement exceeds the available storage of 40m. In addition, the 95th percentile queue for the northbound right movement exceeds the available storage of 30m during the PM peak hour. No other critical movements have been identified.

Under future conditions, the intersection will operate similarly to existing conditions, however the overall V/C ratio will exceed 0.85 in the PM peak hour. With an optimized signal timing plan, all movements operate with V/C ratios well below 0.85 and with acceptable delays and queues, resolving the issues identified from the existing conditions analysis.

5.2.1.2 Fairway Roads S & Wilson Avenue

The intersection capacity analysis for the signalized intersection at Fairway Road S & Wilson Avenue is summarized in **Table 5-19**.

Table 5-19: Intersection Capacity Analysis – Fairway Road S & Wilson Avenue

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	**0.68**	**C (22)**	-/-	-	**0.78**	**B (17)**	-/-
PM Peak Hour								
Overall	-	**0.88**	**D (37)**	-/-	-	**0.91**	**E (45)**	-/-
EBTR	734	0.74	D (42)	85/109	899	0.99	E (62)	112/158
WBL	350	0.95	E (64)	61/122	360	0.97	F (87)	87/140
NBT	305	0.59	D (42)	65/96	445	0.84	D (45)	70/156
SBL	205	0.79	D (50)	35/66	102	0.63	D (37)	17/34

Under existing conditions, the intersection of Fairway Road S & Wilson Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays, with the exception of the westbound left movement which approaches capacity and operates at LOS E during the PM peak hour. It is also noted that the 95th percentile queue for the southbound left movement exceeds the available storage length of 40m in the PM peak hour. No other critical movements have been identified.

Under future conditions, the intersection is expected to approach capacity in the PM peak hour, with the eastbound through-right and westbound left turn movements operating near capacity. It is noted that the queues for the southbound left movement will be improved from existing conditions, so no modifications are required. It is noted that the 95th percentile queues for the northbound through movement may conflict with the future upstream intersection of Wilson Avenue with the proposed Minor Collector A.

5.2.1.3 Fairway Road S & Fairway Mall Driveway (West)

The intersection capacity analysis for the signalized intersection at Fairway Road S & the west Fairview Mall driveway is summarized in **Table 5-20**.

Table 5-20: Intersection Capacity Analysis – Fairway Road S & Fairview Mall Driveway - West

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	**-**	**0.38**	**B (12)**	**-/-**	**-**	**0.92**	**C (32)**	**-/-**
EBTR	748	0.39	B (10)	41/62	843	0.85	C (32)	64/90
WBL	65	0.17	A (6)	4/10	332	0.96	E (66)	47/100
NBTR	29	0.09	D (38)	1/9	392	0.87	D (48)	66/127
PM Peak Hour								
Overall	**-**	**0.63**	**C (25)**	**-/-**	**-**	**0.74**	**C (26)**	**-/-**
WBL	166	0.65	C (21)	14/35	230	0.73	E (64)	44/82

Under existing conditions, the intersection of Fairway Road S & the west Fairview Mall driveway operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection will operate within capacity, however the overall V/C ratio will exceed 0.85 in the AM peak hour and several movements will have V/C ratios at or above 0.85 as well. It is noted that the 95th percentile queues for the northbound through movement may conflict with the future upstream intersection at the proposed Minor Collector A.

5.2.1.4 Fairway Road S & Highway 8 On/Off-Ramp

The intersection capacity analysis for the signalized intersection at Fairway Road S & Highway 8 On/Off-ramp is summarized in **Table 5-21**.

Table 5-21: Intersection Capacity Analysis – Fairway Road S & Highway 8 On/Off-Ramp

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	**-**	**0.71**	**B (13)**	**-/-**	**-**	**0.90**	**C (23)**	**-/-**
EBL	316	0.77	B (17)	18/67	535	0.96	D (41)	64/142
PM Peak Hour								
Overall	**-**	**0.91**	**C (28)**	**-/-**	**-**	**0.96**	**D (46)**	**-/-**
EBL	314	0.95	E (74)	63/122	460	0.93	E (69)	129/197
WBT	1450	0.71	C (31)	108/126	946	0.71	E (55)	107/125
SBL	698	0.76	D (42)	80/103	1074	0.96	E (69)	181/228

Under existing conditions, the intersection of Fairway Road S & Highway 8 On/Off-Ramp operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound left and southbound left movements operate with V/C ratios greater than 0.75 during the PM peak hour. No other critical movements have been identified.

Under future conditions, the intersection will operate near capacity during both peak hours. The eastbound left movement onto the highway on-ramp and for the southbound left movement from the highway off-ramp are both expected to operate near capacity and with above average queue lengths. It is recommended that the MTO monitor the operations of the intersection to determine if any improvements should be made to address capacity concerns at this highway on-/off-ramp. No intersection modifications are recommended at this time as all movements are expected to operate with limited capacity and experience LOS E (or better).

5.2.1.5 Traynor Avenue & Wilson Avenue

The intersection capacity analysis for the signalized intersection at Traynor Avenue & Wilson Avenue is summarized in **Table 5-22**.

Table 5-22: Intersection Capacity Analysis – Traynor Avenue & Wilson Avenue

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	0.22	A (9)	-/-	-	0.14	B (10)	-/-
PM Peak Hour								
Overall	-	0.25	B (11)	-/-	-	0.26	B (15)	-/-

Under existing conditions, the intersection of Traynor Avenue & Wilson Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection operates well during both weekday peak hours, with all movements operating within capacity. No intersection modifications are recommended.

5.2.1.6 Kingsway Drive & Wilson Avenue

The intersection capacity analysis for the signalized intersection at Kingsway Drive & Wilson Avenue is summarized in **Table 5-23**.

Table 5-23: Intersection Capacity Analysis – Kingsway Drive & Wilson Avenue

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	0.23	B (10)	-/-	-	0.37	B (14)	-/-
PM Peak Hour								
Overall	-	0.38	B (17)	-/-	-	0.58	B (16)	-/-
NBT	271	0.42	C (21)	32/57	459	0.59	B (14)	46/76

Under existing conditions, the intersection of Kingsway Drive & Wilson Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes, however the northbound through queues are noted to extend past the LRT crossing to the south. No critical movements have been identified.

Under future conditions, the intersection operates well during both weekday peak hours, with all movements operating within capacity. Northbound queues are projected to increase slightly. No intersection modifications are recommended although it is advised that the Region and GRT monitor traffic operations near the ION LRT crossing at this location.

5.2.1.7 Fairway Road S & Local Road A / Local Road B

A new north-south local road is proposed in the Fairway PMTSA, crossing Fairway Road South, east of Manitou Drive. This intersection is currently signalized and services the existing commercial plazas. The intersection capacity analysis for the proposed signalized intersection at Fairway Road S & Local Road A / Local B is summarized in **Table 5-24**.

Table 5-24: Intersection Capacity Analysis – Fairway Road S & Local Road A / Local B

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	-	**0.35**	**B (17)**	-/-
NBL	143	0.82	E (59)	25/42
PM Peak Hour				
Overall	-	**0.39**	**C (24)**	-/-
NBL	186	0.82	E (64)	44/65
SBL	184	0.85	E (69)	44/65

The proposed intersection of Fairway Road S & Local Road A / Local Road B operates well under future conditions, with all movements operating within capacity and with acceptable delays and queues. However, it is noted that the northbound left and southbound left movements will operate at LOS E.

To accommodate the project traffic volume, the following dedicated turn lanes are recommended: a 35m long eastbound left turn lane, a 30m long westbound left turn lane, a 65m long northbound left turn lane and a 65m southbound left turn lane.

5.2.1.8 Fairway Road S & Local Road C / Local Road D

A new north-south local road is proposed in the Fairway PMTSA, crossing Fairway Road S. This intersection is currently signalized and services the existing commercial plazas. The intersection capacity analysis for the proposed signalized intersection at Fairway Road S & Local Road C / Local Road D is summarized in **Table 5-25**.

Table 5-25: Intersection Capacity Analysis – Fairway Road S & Local Road C / Local Road D

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	-	**0.42**	**B (16)**	-/-
PM Peak Hour				
Overall	-	**0.54**	**B (19)**	-/-
SBL	194	0.90	E (78)	46/69

The proposed intersection of Fairway Road South & Local Road C / Local Road D operates well under future conditions, with all movements operating within capacity and with acceptable delays and queues. However, it is noted that the southbound left movement will exceed a V/C ratio of 0.85 and will operate at LOS E during the PM peak hour.

To accommodate the project traffic volume, the following dedicated turn lanes are recommended: a 35m long eastbound left turn lane, a 55m long westbound left turn lane, a 50m long northbound left turn lane and a 70m southbound left turn lane.

5.2.2 New Signalized Intersections

5.2.2.1 Fairway Road S & Wabanaki Drive / Fairview Mall Driveway (Centre)

Under existing conditions, the intersection of Fairway Road S & Wabanaki Drive / Fairview Mall Driveway (Centre) is unsignalized (see **Section 5.2.4.1**). However, under future conditions, the intersection is recommended to be signalized.

The intersection capacity analysis for the signalized intersection under future conditions is summarized in **Table 5-26**.

Table 5-26: Intersection Capacity Analysis – Fairway Road S & Wabanaki Drive / Fairview Mall Driveway (Centre)

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	**-**	**0.90**	**C (26)**	**-/-**
EBTR	1466	0.98	C (30)	158/192
WBL	300	0.86	D (45)	37/94
PM Peak Hour				
Overall	**-**	**0.86**	**C (25)**	**-/-**
SBL	312	0.97	E (76)	73/133

Under existing conditions, the intersection of Fairway Road S & Wabanaki Drive / Fairview Mall Driveway (Centre) operates well, with all movements operating within capacity and with acceptable delays and queues. However, it is noted that the V/C ratios for the overall intersection, the eastbound through-right, westbound left and southbound left movements are expected to exceed 0.85.

When the intersection is signalized, it is recommended that a 40m eastbound left turn storage lane, a 100m westbound left turn storage lane and a 30m southbound left turn storage lane be provided to accommodate projected queues.

Note: a future roadway (Minor Collector C) has been conceptually identified to link this intersection with the intersection of Kingsway Drive & Greenfield Avenue through a future redevelopment of the Fairway Park shopping mall. This roadway was not included as part of the traffic analysis as it is assumed to be implemented post-2041.

5.2.2.2 Fairway Road S & Local Road E / Local Road F

A new north-south local road is proposed in the Fairway MTSA, crossing Fairway Road S, west of Wilson Avenue. The intersection capacity analysis for the proposed signalized intersection at Fairway Road S & Local Road E / Local Road F is summarized in **Table 5-27**.

Table 5-27: Intersection Capacity Analysis – Fairway Road S & Local Road E / Local Road F

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	**-**	**0.18**	**B (10)**	**-/-**

PM Peak Hour				
Overall	-	0.42	B (17)	-/-
SBL	128	0.79	E (69)	31/50

The proposed intersection of Fairway Road S & Local Road E / Local Road F operates well under future conditions, with all movements operating within capacity and with acceptable delays and queues. However, it is noted that the southbound left movement is expected to operate at LOS E during the PM peak hour.

To accommodate the project traffic volume, the following dedicated turn lanes are recommended: a 30m long eastbound left turn lane, a 30m long westbound left turn lane, a 30m long northbound left turn lane and a 50m southbound left turn lane.

5.2.2.3 Manitou Drive & Minor Collector A

A new east-west collector road is proposed in the Fairway PMTSA, south of and parallel to Fairway Road S. The intersection capacity analysis for the proposed signalized intersection at Manitou Drive & Minor Collector A is summarized in **Table 5-28**.

Table 5-28: Intersection Capacity Analysis – Manitou Drive & Minor Collector A

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	-	0.57	B (18)	-/-
PM Peak Hour				
Overall	-	0.42	B (11)	-/-

The proposed intersection of Manitou Drive and Minor Collector A operates well under future conditions, with all movements operating within capacity and with acceptable delays and queues.

To accommodate the project traffic volume, the following dedicated turn lanes are recommended: a 70m long westbound left turn lane, a 30m long northbound right turn lane and a 40m southbound left turn lane. Although not required, a dedicated westbound left turn lane should also be considered.

5.2.2.1 Wilson Avenue & Minor Collector A / Minor Collector B

The intersection capacity analysis for the proposed signalized intersection at Wilson Avenue & Minor Collector A / Minor Collector B is summarized in **Table 5-29**.

Table 5-29: Intersection Capacity Analysis – Wilson Avenue & Minor Collector A/B

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	-	0.61	B (20)	-/-
PM Peak Hour				
Overall	-	0.56	C (23)	-/-

The proposed intersection of Wilson Avenue and Minor Collector A / Minor Collector B operates well under future conditions, with all movements operating within capacity and with acceptable delays and queues.

To accommodate the project traffic volume, the following dedicated turn lanes are recommended: a 30m long northbound right turn lane and a 30m southbound left turn lane. Although not required, dedicated eastbound, westbound, and northbound left turn lanes should also be considered.

5.2.2.1 Wabanaki Drive & Minor Collector B

The intersection capacity analysis for the proposed signalized intersection at Wabanaki Drive & Minor Collector B is summarized in **Table 5-30**.

Table 5-30: Intersection Capacity Analysis – Wabanaki Drive & Minor Collector B

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	-	0.10	B (13)	-/-
PM Peak Hour				
Overall	-	0.46	B (13)	-/-

The proposed intersection of Wabanaki Drive and Minor Collector B operates well under future conditions, with all movements operating within capacity and with acceptable delays and queues. Although not required, dedicated eastbound and northbound left turn lanes should be considered.

5.2.3 Roundabout Intersections

5.2.3.1 Bleams Road / Goodrich Drive & Manitou Drive

The intersection capacity analysis for the roundabout at Bleams Road / Goodrich Drive & Manitou Drive is summarized in **Table 5-31.** Note: the east leg (Goodrich Drive) will be implemented as part of the River Road extension project.

Table 5-31: Intersection Capacity Analysis – Bleams Road / Goodrich Drive & Manitou Drive

Mvmt	Existing Conditions (2024)						Future Conditions (2041)					
	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity
AM Peak Hour												
Overall	-	-	2.32	-	A	221% (Eastbound Leg)	-	-	2.98	-	A	99% (Northbound Leg)
Southbound	0.38	~1	2.41	0.26	A		0.50	1.07	3.19	0.32	A	
Eastbound	0.35	~1	2.22	0.25	A		0.49	1.07	2.90	0.32	A	
Northbound	0.24	~1	2.34	0.18	A		0.67	~1	3.14	0.38	A	
Westbound	-	-	-	-	-		0.55	~1	2.73	0.35	A	
PM Peak Hour												
Overall	-	-	2.96	-	A	86% (Southbound Leg)	-	-	3.07	-	A	78% (Westbound Leg)
Southbound	0.91	1.03	3.34	0.47	A		0.36	~1	3.18	0.26	A	
Eastbound	0.50	1.05	2.62	0.32	A		0.44	~1	2.71	0.30	A	
Northbound	0.50	1.03	2.75	0.33	A		0.51	1.03	2.75	0.33	A	
Westbound	-	-	-	-	-		0.90	~1	3.48	0.45	A	

Under existing weekday AM and PM peak hour conditions, the Bleams Road / Goodrich Drive & Manitou Drive roundabout functions well with all movements operating within capacity with V/C ratios below 1.00, minimal delay at LOS A, and minimal queuing. No critical movements have been identified. The intersection operates with appropriate residual capacity.

Under future conditions, the intersection will continue to operate within capacity and with minimal delays and queues. The intersection operates with appropriate residual capacity.

5.2.3.2 Goodrich Drive & Wilson Avenue

It is understood that the intersection of Goodrich Drive & Wilson Avenue is being upgraded to a roundabout with a west leg that will eventually extend to Manitou Drive at Bleams Road. Only the future conditions were assessed as no existing traffic volumes were available. The intersection capacity analysis for the roundabout at Goodrich Drive & Wilson Avenue under future conditions is summarized in **Table 5-32**.

Table 5-32: Intersection Capacity Analysis – Goodrich Drive & Wilson Avenue

Mvmt	Future Conditions (2041)					
	Queue (veh)	95% Queue (veh)	Delay (s)	V/C	LOS	Network Residual Capacity
AM Peak Hour						
Overall	-	-	2.34	-	A	135% (Eastbound Leg)
Southbound	0.10	~1	1.76	0.09	A	
Eastbound	0.59	~1	2.55	0.37	A	
Northbound	0.02	~1	2.20	0.02	A	
Westbound	0.12	~1	2.15	0.11	A	
PM Peak Hour						
Overall	-	-	2.02	-	A	188% (Westbound Leg)
Southbound	0.03	~1	1.69	0.03	A	
Eastbound	0.44	1.02	2.20	0.30	A	
Northbound	0.09	~1	2.10	0.08	A	
Westbound	0.22	~1	2.26	0.18	A	

Under future conditions, the intersection operates well, with all movements operating within capacity and with minimal delays. The intersection has sufficient residual capacity under future conditions.

5.2.4 Unsignalized Intersections

5.2.4.1 Fairway Road S & Wabanaki Drive / Fairview Mall Driveway (Centre)

The intersection capacity analysis for the unsignalized intersection at Fairway Road S & Wabanaki Drive / Fairview Mall Driveway (Centre) and the centre Fairview Mall driveway is summarized in **Table 5-33**.

Table 5-33: Intersection Capacity Analysis – Fairway Road S & Wabanaki Drive / Fairview Mall Driveway (Centre)

Mvmt	Existing Conditions (2024)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**- (4)**	**-/-**
NBR	390	0.68	C (24)	-/5
EBT	768	0.00	(0)	-/0
EBR	64	0.00	(0)	-/0
WBT	1095	0.00	(0)	-/0
WBR	20	0.00	(0)	-/0
SBR	0	0.00	A (0)	-/0
PM Peak Hour				

Overall	-	-	- (6)	-/-
NBR	356	0.92	F (61)	-/10
EBT	1297	0.00	(0)	-/0
EBR	49	0.00	(0)	-/0
WBT	1565	0.00	(0)	-/0
WBR	173	0.00	(0)	-/0
SBR	0	0.00	A (0)	-/0

Under existing conditions, the intersection of Fairway Road S & Wabanaki Drive / the centre Fairview Mall Driveway operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays, with the exception of the northbound right movement which approaches capacity and is operating at LOS F during the PM peak hour due to the high eastbound volumes limiting the available gaps for northbound right-turning vehicles. No other critical movements have been identified. All existing 95th percentile queues can be accommodated by their available storage lanes.

Under future conditions, the intersection is recommended to be signalized based on predicted capacity constraints (see **Section 5.2.2.1**).

5.2.4.2 Fairway Road S & Fairview Mall Driveway (East)

The intersection capacity analysis for the unsignalized intersection at Fairway Road S & the east Fairview Mall driveway is summarized in **Table 5-34**.

Table 5-34: Intersection Capacity Analysis – Fairway Road S & Fairview Mall Driveway - East

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour								
Overall	-	-	- (0)	-/-	-	-	- (2)	-/-
EBT	1158	0.00	(0)	-/0	1438	0.00	(0)	1438
WBT	1077	0.00	(0)	-/0	749	0.00	(0)	749
WBR	102	0.00	(0)	-/0	201	0.00	(0)	201
SBR	38	0.08	B (13)	-/0	349	0.56	C (18)	349
PM Peak Hour								
Overall	-	-	- (1)	-/-	-	-	- (4)	-/-
EBT	1660	0.00	(0)	-/0	1325	0.00	(0)	-/0
WBT	1560	0.00	(0)	-/0	1000	0.00	(0)	-/0
WBR	526	0.00	(0)	-/0	422	0.00	(0)	-/0
SBR	178	0.52	D (26)	-/3	410	0.79	D (33)	-/7

Under existing conditions, the intersection of Fairway Road S and the east Fairview Mall driveway operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection operates well, with all movements operating within capacity.

Note: a future roadway (Minor Collector D) has been conceptually identified to link this intersection with the intersection of Kingsway Drive & Cedarwoods Crescent through a future redevelopment of the Fairway Park shopping mall. This roadway was not included as part of the traffic analysis as it is assumed to be implemented post-2041.

5.2.4.3 Webster Road & Manitou Drive

The intersection capacity analysis for the unsignalized intersection at Webster Road & Manitou Drive is summarized in **Table 5-35**.

Table 5-35: Intersection Capacity Analysis – Webster Road & Manitou Drive

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour								
Overall	-	-	**- (0)**	**-/-**	-	-	**- (1)**	**-/-**
NBL	-	-	-	-	0	0.00	A (0)	-/0
NBT	541	0.00	(0)	-/0	460	0.00	(0)	-/0
NBR	116	0.00	(0)	-/0	9	0.00	(0)	-/0
EBLTR	-	-	-	-	0	0.00	A (0)	-/0
EBR	2	0.00	B (12)	-/0	-	-	-	-
WBLTR	-	-	-	-	23	0.09	C (20)	-/0
WBR	24	0.05	B (13)	-/0	-	-	-	-
SBL	-	-	-	-	81	0.07	A (9)	-/0
SBT	579	0.00	(0)	-/0	600	0.00	A (0)	-/0
SBR	3	0.00	(0)	-/0	0	0.00	(0)	-/0
PM Peak Hour								
Overall	-	-	**- (1)**	**-/-**	-	-	**- (2)**	**-/-**
NBL	-	-	-	-	0	0.00	A (0)	-/0
NBT	830	0.00	(0)	-/0	427	0.00	(0)	-/0
NBR	130	0.00	(0)	-/0	11	0.00	(0)	-/0
EBLTR	-	-	-	-	0	0.00	A (0)	-/0
EBR	2	0.01	C (17)	-/0	-	-	-	-
WBLTR	-	-	-	-	110	0.21	B (14)	-/1
WBR	86	0.25	C (19)	-/1	-	-	-	-
SBL	-	-	-	-	28	0.03	A (8)	-/0
SBT	976	0.00	(0)	-/0	386	0.00	A (0)	-/0
SBR	3	0.00	(0)	-/0	0	0.00	(0)	-/0

Under existing conditions, the intersection of Webster Road & Manitou Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, it is assumed that all movements will be permitted. The intersection operates well during both weekday peak hours, with all movements operating within capacity.

5.2.4.4 Kingsway Drive & Greenfield Avenue

The intersection capacity analysis for the unsignalized intersection at Kingsway Drive & Greenfield Avenue is summarized in **Table 5-36**. It is noted that under future conditions, all-way stop-control is recommended to mitigate southbound queueing. A dedicated 15m southbound left turn lane is also recommended.

Table 5-36: Intersection Capacity Analysis – Kingsway Drive & Greenfield Avenue

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour								
Overall	-	-	**- (3)**	**-/-**	-	-	**B (11)**	**-/-**

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
EBL	64	0.05	A (8)	-/0	150	0.26	B (11)	-/1
EBT	180	0.00	(0)	-/0	147	0.23	B (10)	-/1
WBT	185	0.00	(0)	-/0	-	-	-	-
WBR	53	0.00	(0)	-/0	-	-	-	-
WBTR	-	-	-	-	55	0.08	A (9)	-/0
SBLR	101	0.17	B (12)	-/1	-	-	-	-
SBL	-	-	-	-	129	0.22	B (10)	-/1
SBR	-	-	-	-	313	0.42	B (11)	-/2
PM Peak Hour								
Overall	**-**	**-**	**- (3)**	**-/-**	-	**-**	**B (14)**	-/-
EBL	73	0.07	A (8)	-/0	282	0.53	C (17)	-/3
EBT	330	0.00	(0)	-/0	105	0.18	B (10)	-/1
WBT	271	0.00	(0)	-/0	-	-	-	-
WBR	69	0.00	(0)	-/0	-	-	-	-
WBTR	-	-	-	-	319	0.51	B (15)	-/3
SBLR	138	0.32	C (17)	-/1	-	-	-	-
SBL	-	-	-	-	177	0.34	B (13)	-/2
SBR	-	-	-	-	217	0.35	B (12)	-/2

Under existing conditions, the intersection of Kingsway Drive & Greenfield Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection operates well, with all movements operating within capacity.

Note: a future roadway (Minor Collector C) has been conceptually identified to link this intersection with Fairway Road S through a future redevelopment of the Fairway Park shopping mall. This roadway was not included as part of the traffic analysis as it is assumed to be implemented post-2041.

5.2.4.5 Kingsway Drive & Cedarwoods Crescent

The intersection capacity analysis for the unsignalized intersection at Kingsway Drive & Cedarwoods Crescent is summarized in **Table 5-37**.

Table 5-37: Intersection Capacity Analysis – Kingsway Drive & Cedarwoods Crescent

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour								
Overall	**-**	**-**	**- (3)**	**-/-**	-	**-**	**- (6)**	**-/-**
EBL	29	0.02	A (8)	-/0	39	0.03	A (7)	-/0
EBT	170	0.00	(0)	-/0	54	0.00	(0)	-/0
WBT	159	0.00	(0)	-/0	27	0.00	(0)	-/0
WBR	40	0.00	(0)	-/0	37	0.00	(0)	-/0
SBLR	117	0.16	B (11)	-/1	173	0.20	B (10)	-/1
PM Peak Hour								
Overall	**-**	**-**	**- (2)**	**-/-**	-	**-**	**- (5)**	**-/-**
EBL	59	0.05	A (8)	-/0	89	0.06	A (8)	-/0
EBT	336	0.00	(0)	-/0	151	0.00	(0)	-/0

WBT	293	0.00	(0)	-/0	101	0.00	(0)	-/0
WBR	101	0.00	(0)	-/0	91	0.00	(0)	-/0
SBLR	94	0.20	B (15)	-/1	171	0.26	B (12)	-/1

Under existing conditions, the intersection of Kingsway Drive & Cedarwoods Crescent operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection operates well, with all movements operating within capacity.

Note: a future roadway (Minor Collector D) has been conceptually identified to link this intersection with Fairway Road S through a future redevelopment of the Fairway Park shopping mall. This roadway was not included as part of the traffic analysis as it is assumed to be implemented post-2041.

5.2.4.6 Webster Road & Wilson Avenue

The intersection capacity analysis for the unsignalized intersection at Webster Road & Wilson Avenue is summarized in **Table 5-38**. Only the future conditions were assessed as no existing traffic volumes were available. It is assumed that left turn movements will be permitted under future conditions, noting that a concrete median currently prohibits the northbound and southbound left movements and restricts the east and west legs to right-in right-out operations only.

Table 5-38: Intersection Capacity Analysis – Webster Road & Wilson Avenue

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	- (1)	-/-
NBL	17	0.02	A (9)	-/0
NBT	676	0.00	A (0)	-/0
EBL	7	0.04	C (24)	-/0
EBR	41	0.07	B (11)	-/0
SBT	731	0.00	(0)	-/0
SBR	35	0.00	(0)	-/0
PM Peak Hour				
Overall	-	-	- (2)	-/-
NBL	73	0.08	A (9)	-/0
NBT	616	0.00	A (0)	-/0
EBL	49	0.27	D (32)	-/1
EBR	25	0.04	B (11)	-/0
SBT	653	0.00	(0)	-/0
SBR	10	0.00	(0)	-/0

Under future conditions, the intersection operates well, with all movements operating within capacity.

5.2.4.7 Wabanaki Drive & Goodrich Drive / Hidden Valley Road

The intersection capacity analysis for the unsignalized intersection at Wabanaki Drive & Goodrich Drive / Hidden Valley Road is summarized in **Table 5-39**. Only the future conditions were assessed as no existing traffic volumes were available.

Table 5-39: Intersection Capacity Analysis – Wabanaki Drive & Goodrich Drive / Hidden Valley Road

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**B (12)**	**-/-**
NBLTR	295	0.39	B (11)	-/2
EBLTR	91	0.15	A (10)	-/1
WBLTR	84	0.13	A (10)	-/1
SBLTR	441	0.55	B (13)	-/3
PM Peak Hour				
Overall	-	-	**C (19)**	**-/-**
NBLTR	256	0.44	B (14)	-/2
EBLTR	341	0.60	C (19)	-/4
WBLTR	66	0.13	B (11)	-/0
SBLTR	494	0.75	C (24)	-/7

Under future conditions, the intersection operates well, with all movements operating within capacity.

5.2.4.8 Wilson Avenue & Laneway A / Fairview Mall Bus Loop

The intersection capacity analysis for the unsignalized intersection of Wilson Avenue and the Fairview Mall Bus Loop, which will also connect to the future Laneway A, is summarized in **Table 5-40**. Note: it is assumed that movements associated with Laneway A will be restricted to right-in/right-out to minimize potential conflicts with bus loop operations.

Table 5-40: Intersection Capacity Analysis – Wilson Avenue & Laneway A / Fairview Mall Bus Loop

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**- (2)**	**-/-**
NBT	226	0.00	(0)	-/0
NBR	22	0.00	(0)	-/0
EBR	62	0.10	B (11)	-/0
WBLR	50	0.15	C (17)	-/1
SBL	19	0.01	A (8)	-/0
SBT	280	0.00	(0)	-/0
SBR	260	0.00	(0)	-/0
PM Peak Hour				
Overall	-	-	**- (2)**	**-/-**
NBT	618	0.00	(0)	-/0
NBR	37	0.00	(0)	-/0
EBR	32	0.05	B (11)	-/0
WBLTR	77	0.37	D (32)	-/2
SBL	23	0.03	A (9)	-/0
SBT	301	0.00	(0)	-/0
SBR	217	0.00	(0)	-/0

Under future conditions, the proposed intersection of Wilson Avenue & Laneway A / Fairview Mall Bus Loop operates well, with all movements operating within capacity and with minimal delays and queues.

Note: although not required, it is recommended that the Region and GRT consider providing a dedicated bus signal to facilitate egress movements and minimize delays to transit users, provided that the signal can be coordinated with the adjacent traffic signals on Wilson Avenue and the at-grade ION LRT rail crossing to the north.

5.2.5 New Unsignalized Intersections

5.2.5.1 Minor Collector A & Local Road B

The intersection capacity analysis for the proposed intersection of Minor Collector A & Local Road B is summarized in **Table 5-41**.

Table 5-41: Intersection Capacity Analysis – Minor Collector A & Local Road B

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**B (10)**	**-/-**
EBLT	221	0.30	A (10)	-/1
WBTR	312	0.39	B (11)	-/2
SBLR	222	0.29	A (10)	-/1
PM Peak Hour				
Overall	-	-	**B (11)**	**-/-**
EBLT	324	0.44	B (12)	-/2
WBTR	306	0.39	B (10)	-/2
SBLR	204	0.29	B (10)	-/1

Under future conditions, the proposed intersection of Minor Collector A & Local Road B operates well, with all movements operating within capacity and with minimal delays and queues. No dedicated turn lanes are required as this intersection can operate as all-way stop control.

5.2.5.2 Minor Collector A & Local Road D

The intersection capacity analysis for the proposed intersection of Minor Collector A & Local Road D is summarized in **Table 5-42**.

Table 5-42: Intersection Capacity Analysis – Minor Collector A & Local Road D

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**A (9)**	**-/-**
EBLT	228	0.29	A (9)	-/1
WBTR	251	0.31	A (9)	-/1
SBLR	124	0.16	A (9)	-/1
PM Peak Hour				
Overall	-	-	**B (11)**	**-/-**
EBLT	351	0.48	B (12)	-/3
WBTR	240	0.32	B (10)	-/1
SBLR	220	0.31	B (10)	-/1

Under future conditions, the proposed intersection of Minor Collector A & Local Road D operates well, with all movements operating within capacity and with minimal delays and queues. No dedicated turn lanes are required as this intersection can operate as all-way stop control.

5.2.5.3 Minor Collector A & Local Road F

The intersection capacity analysis for the proposed intersection of Minor Collector A & Local Road F is summarized in **Table 5-43**.

Table 5-43: Intersection Capacity Analysis – Minor Collector A & Local Road F

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	A (9)	-/-
EBLT	256	0.31	A (9)	-/1
WBTR	229	0.28	A (9)	-/1
SBLR	82	0.11	A (8)	-/0
PM Peak Hour				
Overall	-	-	A (10)	-/-
EBLT	293	0.38	B (10)	-/2
WBTR	217	0.27	A (9)	-/1
SBLR	169	0.23	A (9)	-/1

Under future conditions, the proposed intersection of Minor Collector A & Local Road F operates well, with all movements operating within capacity and with minimal delays and queues. No dedicated turn lanes are required as this intersection can operate as all-way stop control.

5.2.5.4 Laneway A & Local Road A

The intersection capacity analysis for the proposed intersection of Laneway A & Local Road A is summarized in **Table 5-44**.

Table 5-44: Intersection Capacity Analysis – Laneway A & Local Road A

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	A (9)	-/-
NBLR	35	0.05	A (8)	-/0
EBTR	236	0.27	A (9)	-/1
WBLT	248	0.29	A (9)	-/1
PM Peak Hour				
Overall	-	-	A (10)	-/-
NBLR	80	0.12	A (9)	-/0
EBTR	319	0.39	B (10)	-/2
WBLT	297	0.37	B (10)	-/2

Under future conditions, the proposed intersection of Laneway A & Local Road A operates well, with all movements operating within capacity and with minimal delays and queues. No dedicated turn lanes are required as this intersection can operate as all-way stop control.

5.2.5.5 Laneway A & Local Road C

The intersection capacity analysis for the proposed intersection of Laneway A & Local Road C is summarized in **Table 5-45**.

Table 5-45: Intersection Capacity Analysis – Laneway A & Local Road C

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**A (9)**	**-/-**
NBLR	136	0.19	A (9)	-/1
EBTR	211	0.24	A (9)	-/1
WBLT	252	0.32	A (10)	-/1
PM Peak Hour				
Overall	-	-	**B (10)**	**-/-**
NBLR	228	0.33	B (11)	-/1
EBTR	292	0.37	B (10)	-/2
WBLT	215	0.30	B (10)	-/1

Under future conditions, the proposed intersection of Laneway A & Local Road C operates well, with all movements operating within capacity and with minimal delays and queues. No dedicated turn lanes are required as this intersection can operate as all-way stop control.

5.2.5.6 Laneway A & Local Road E

The intersection capacity analysis for the proposed intersection of Laneway A & Local Road E is summarized in **Table 5-46**.

Table 5-46: Intersection Capacity Analysis – Laneway A & Local Road E

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**A (9)**	**-/-**
NBLR	48	0.06	A (8)	-/0
EBTR	82	0.09	A (8)	-/0
WBLT	305	0.35	A (9)	-/2
PM Peak Hour				
Overall	-	-	**A (9)**	**-/-**
NBLR	104	0.14	A (9)	-/1
EBTR	175	0.20	A (8)	-/1
WBLT	285	0.35	A (10)	-/2

Under future conditions, the proposed intersection of Laneway A & Local Road E operates well, with all movements operating within capacity and with minimal delays and queues. No dedicated turn lanes are required as this intersection can operate as all-way stop control.

5.3 SPORTSWORLD PMTSA

The following section summarizes the future traffic conditions within the Sportsworld PMTSA. **Figure 5-9** and **Figure 5-10** illustrates the traffic volumes under existing and future traffic conditions, respectively.

Figure 5-9: Existing Traffic Volumes – Sportsworld PMTSA

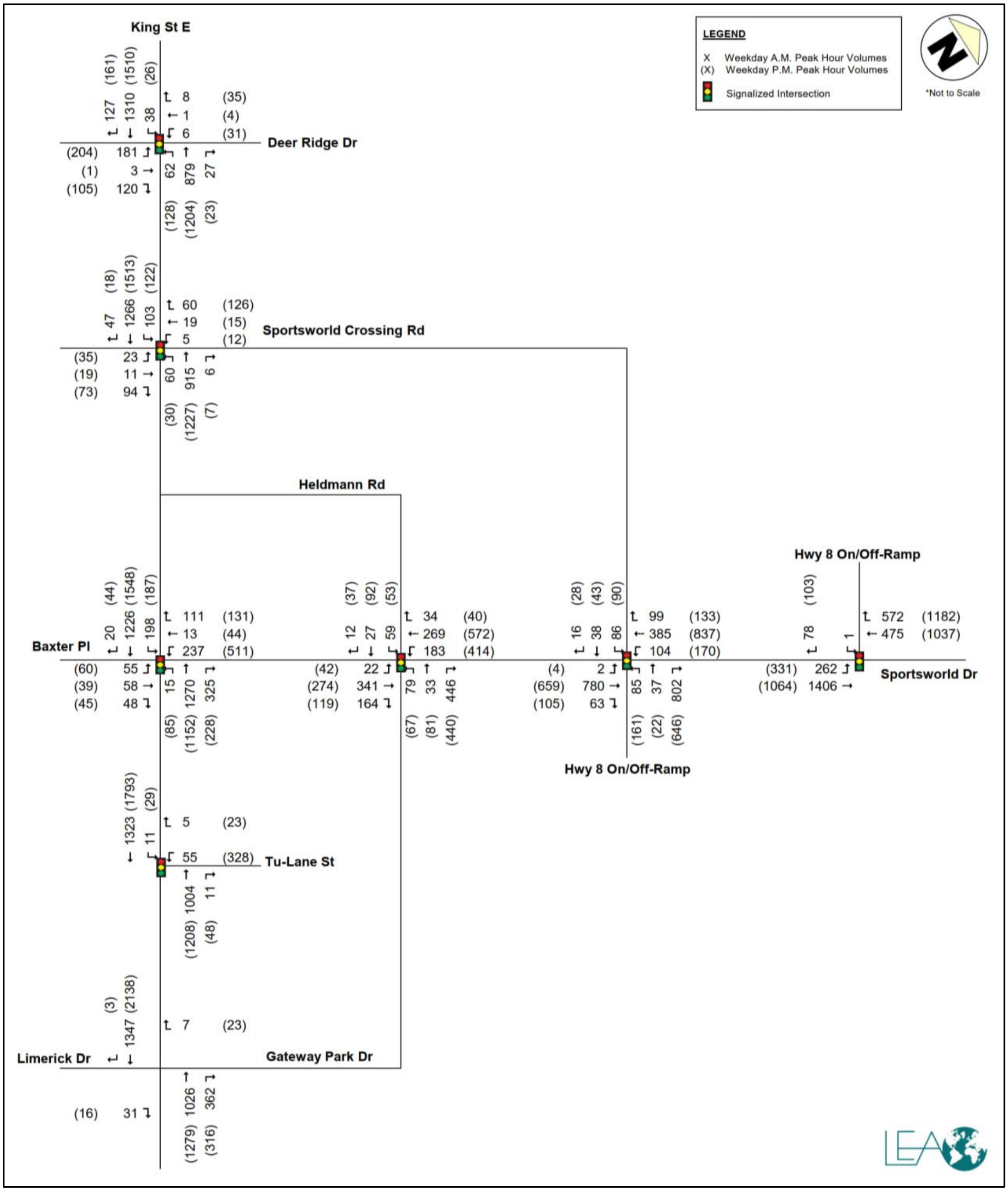


Figure 5-10: Future Traffic Volumes – Sportsworld PMTSA

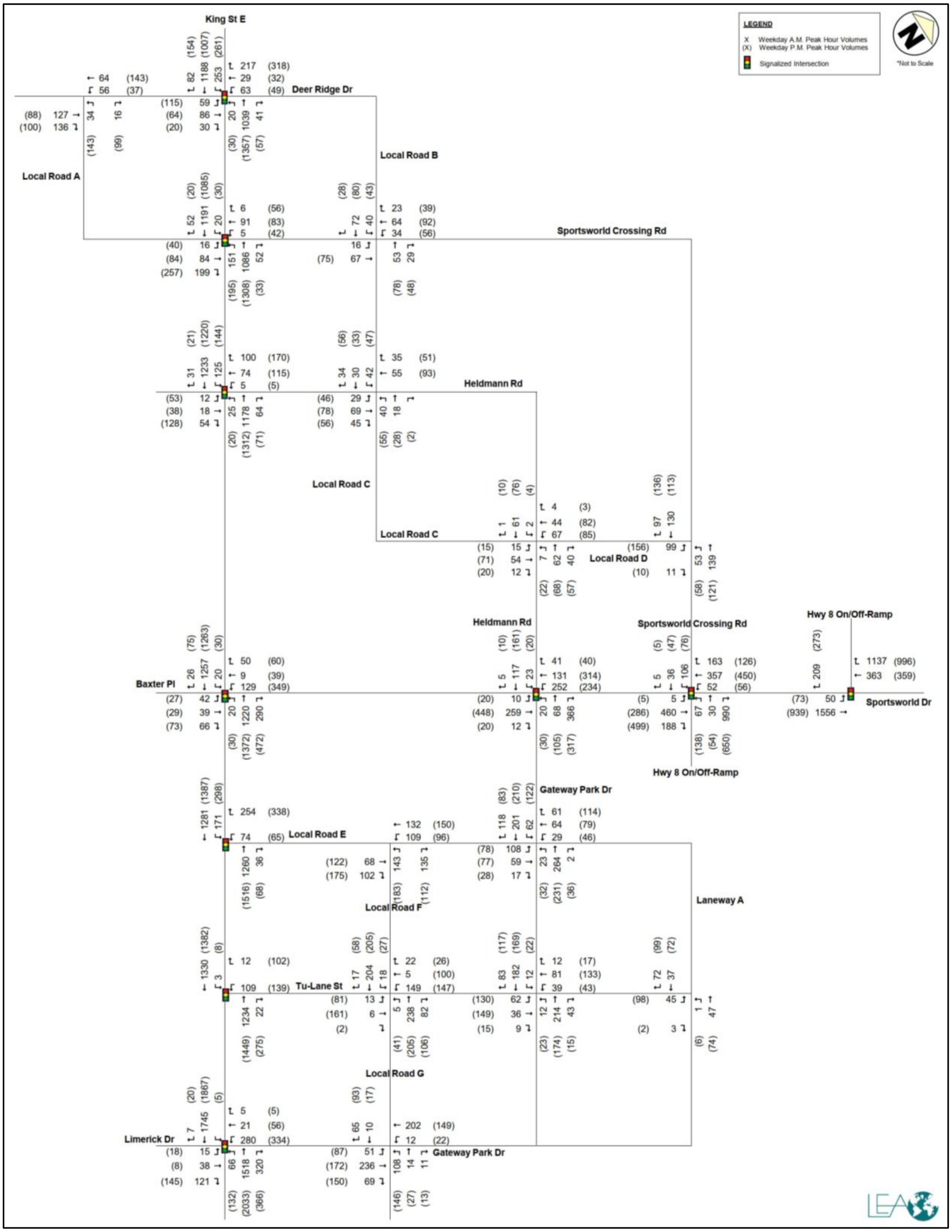


Figure 5-11 and **Figure 5-12** illustrate the resulting overall LOS at the intersections studied during the AM and PM peak hours, respectively. Of note, the worst movement LOS is illustrated for the unsignalized intersections as HCM 2000 does not report an overall LOS.

Figure 5-11: Future Traffic Conditions Level of Service (AM) – Sportsworld PMTSA

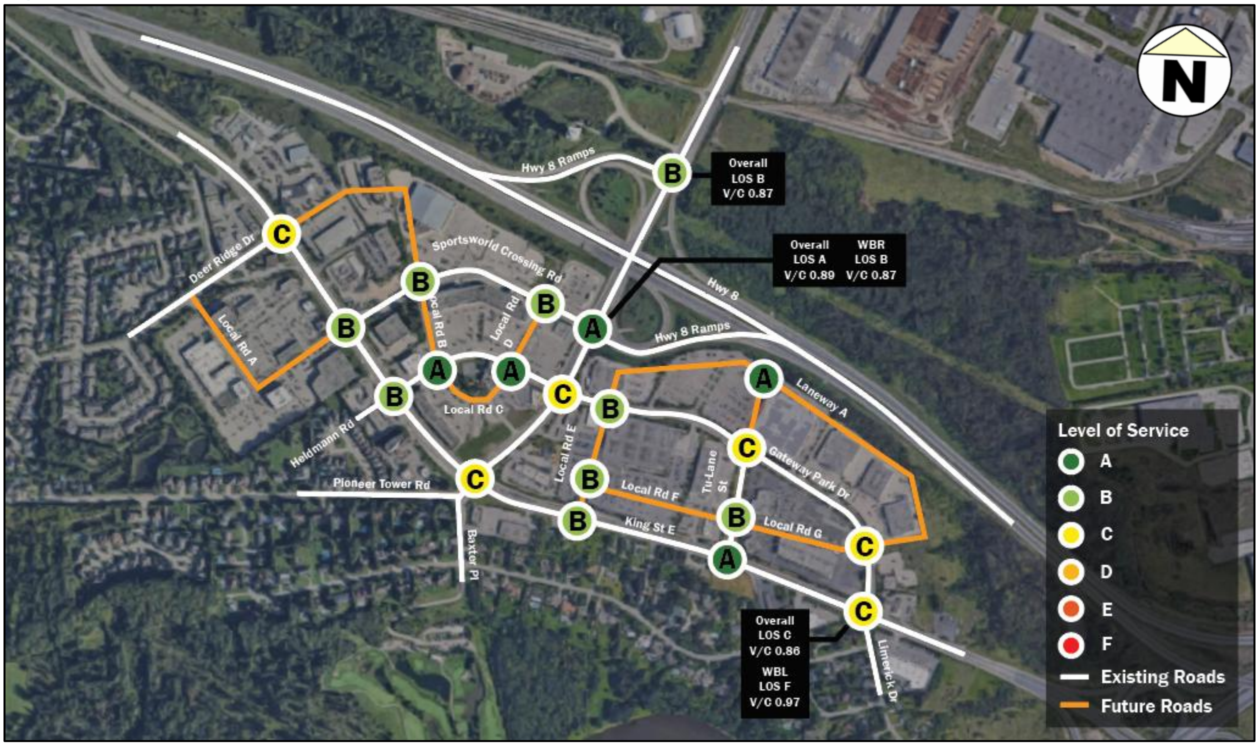
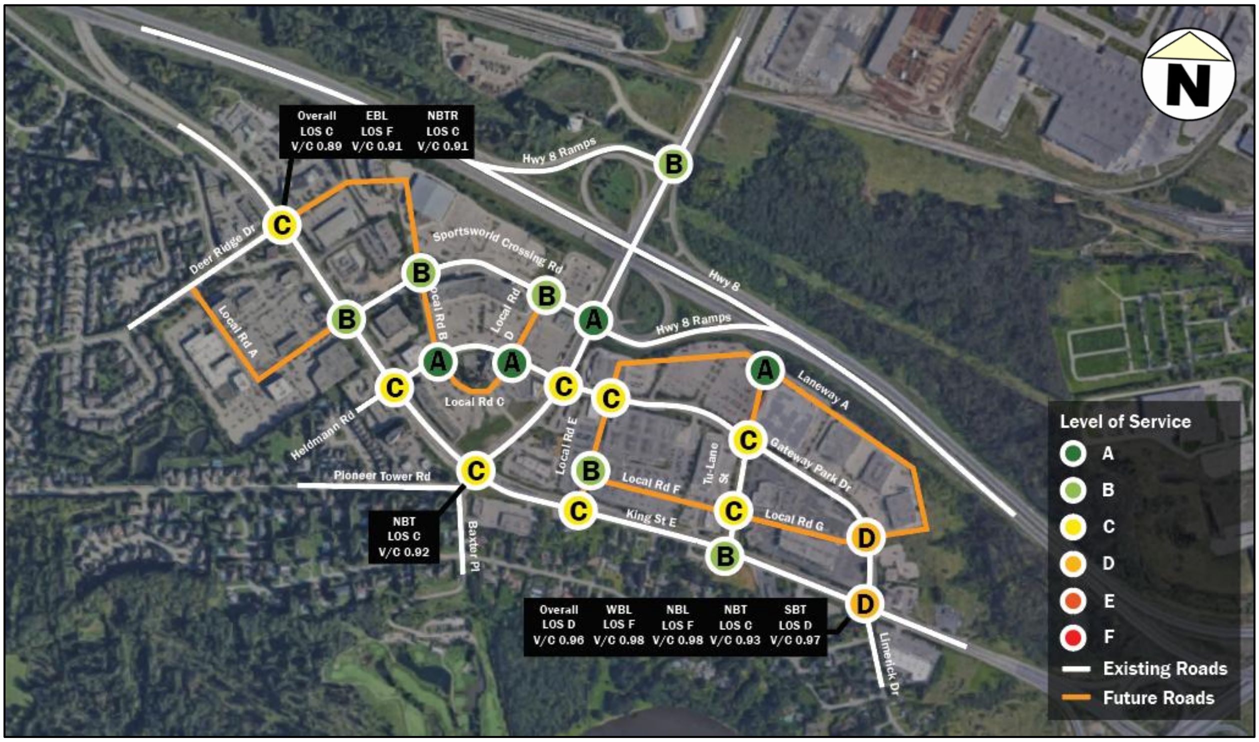


Figure 5-12: Future Traffic Conditions Level of Service (PM) – Sportsworld PMTSA



The analysis results indicate that intersections within the Sportsworld PMTSA generally perform well, with all locations reporting an overall LOS C (or better) during the weekday peak hours. Some capacity constraints are noted at the intersection of King Street E & Gateway Park Drive / Limerick Drive where some movements operate close to capacity; however, all movements operate with V/C ratios less than 1.00.

The analysis results are detailed for each intersection in the subsections below.

5.3.1 Signalized Intersections

5.3.1.1 Deer Ridge Drive & King Street E

The intersection capacity analysis for the signalized intersection at Deer Ridge Drive & King Street E is summarized in **Table 5-47**.

Table 5-47: Intersection Capacity Analysis – Deer Ridge Drive & King Street E

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	**0.59**	**B (14)**	-/-	-	**0.66**	**C (21)**	-/-
EBL	181	0.69	D (52)	42/63	59	0.58	E (56)	14/23
NBL	62	0.26	A (9)	2/5	20	0.34	E (75)	6/13
SBL	38	0.11	A (8)	2/7	253	0.78	E (61)	64/96
PM Peak Hour								
Overall	-	**0.69**	**B (18)**	-/-	-	**0.89**	**C (32)**	-/-
EBL	204	0.80	E (69)	56/87	115	0.91	F (102)	26/51
WBTR	39	0.04	D (45)	1/11	350	0.68	E (59)	30/66

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
NBL	128	0.59	C (34)	3/31	30	0.39	E (71)	7/18
NBTR	1227	0.55	A (7)	103/24	1414	0.91	C (28)	86/247
SBL	26	0.10	A (10)	2/5	261	0.81	E (64)	65/122

Under existing conditions, the intersection of Deer Ridge Drive & King Street E operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound left movement operates at LOS E during the PM peak hour, but within capacity and with acceptable queues. No other critical movements have been identified.

Under future conditions, the intersection continues to operate within capacity, however it is noted that the overall V/C ratio exceeds 0.85 in the PM peak hour. In addition, the eastbound left and the northbound through-right movements exceed a V/C ratio of 0.85 in the PM peak hour. In both peak periods, several movements operate with high delays due to the long cycle length of 130 seconds and the priority given to north-south traffic flow, resulting in level of service E or F. The southbound left movement will operate with 50th percentile and 95th percentile queues exceeding the existing storage length of 45m. It is recommended that the intersection be monitored as the 2041 horizon approaches to determine whether an increased storage length is warranted. A length of 125m will meet the 95th percentile queue demand forecasted for the 2041 horizon. To accommodate this, the length of the southbound right turn lane can be reduced.

5.3.1.2 Sportsworld Crossing Road & King Street E

The intersection capacity analysis for the signalized intersection at Sportsworld Crossing Road & King Street E is summarized in **Table 5-48**.

Table 5-48: Intersection Capacity Analysis – Sportsworld Crossing Road & King Street E

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	**0.44**	**A (9)**	-/-	-	**0.53**	**B (16)**	-/-
NBL	60	0.22	A (6)	2/9	151	0.72	E (71)	42/67
SBL	103	0.24	A (3)	3/7	20	0.54	E (75)	6/12
PM Peak Hour								
Overall	-	**0.52**	**B (10)**	-/-	-	**0.69**	**B (19)**	-/-
EBL	35	0.24	E (57)	10/19	40	0.28	D (52)	10/20
EBT	19	0.09	E (56)	5/12	84	0.35	D (52)	22/33
EBR	73	0.05	E (55)	0/14	257	0.21	D (49)	2/25
WBL	12	0.09	E (56)	3/9	42	0.32	D (53)	11/20
WBT	15	0.07	E (55)	4/10	83	0.34	D (52)	21/33
WBR	126	0.09	E (56)	0/17	56	0.04	D (50)	0/4
NBL	30	0.14	A (6)	1/5	195	0.80	E (59)	53/86
SBL	122	0.37	A (7)	4/12	30	0.53	E (68)	9/19

Under existing conditions, the intersection of Sportsworld Crossing Road & King Street E operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound and westbound movements operate at LOS E during the PM peak hour. No other critical movements have been identified.

Under future conditions, the intersection will have similar operations to existing conditions. With an optimized signal timing plan, east-west delays are expected to improve, however northbound left and southbound left delays will increase due to the conversion to protected phases, resulting in LOS E. It is noted that the 95th percentile queues for the northbound left movement are expected to exceed the available storage of 60m in both peak hours. It is recommended that the intersection be monitored as the 2041 horizon approaches to determine whether an increased storage length is warranted. A length of 90m will meet the 95th percentile queue demand forecasted for the 2041 horizon.

5.3.1.3 Sportsworld Drive / Baxter Place & King Street E

The intersection capacity analysis for the signalized intersection at Sportsworld Drive / Baxter Place & King Street E is summarized in **Table 5-49**.

Table 5-49: Intersection Capacity Analysis – Sportsworld Drive / Baxter Place & King Street E

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	**0.67**	**C (30)**	-/-	-	**0.55**	**C (22)**	-/-
NBL	15	0.07	B (19)	1/6	20	0.36	E (77)	6/9
NBR	325	0.36	C (24)	26/66	290	0.28	B (12)	9/27
SBL	198	0.71	D (43)	33/70	20	0.16	E (61)	3/7
PM Peak Hour								
Overall	-	**0.76**	**D (39)**	-/-	-	**0.75**	**C (35)**	-/-
EBL	60	0.35	E (59)	16/34	27	0.15	D (53)	7/15
EBTR	84	0.14	E (56)	5/15	102	0.11	D (52)	4/12
WBL	511	0.80	E (63)	78/146	349	0.80	D (55)	87/127
WBT	44	0.85	E (69)	80/155	39	0.07	D (35)	8/18
NBL	85	0.52	C (28)	11/23	30	0.38	E (69)	7/10
NBT	1152	0.84	D (43)	157/215	1372	0.92	C (27)	203/287
NBR	228	0.23	C (28)	12/36	472	0.63	B (16)	83/131
SBL	187	0.67	D (43)	35/65	30	0.20	E (60)	4/9
SBT	1548	0.63	C (28)	121/143	1263	0.83	D (39)	163/245

Under existing conditions, the intersection of Sportsworld Drive / Baxter Place & King Street E operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. It is noted that the eastbound and westbound movements operate at LOS E during the PM peak hour. The westbound left movement has a 95th percentile queue length of 146m, exceeding the existing storage length of 120m. It is also noted that the 95th percentile queue length for the northbound right turn lane exceeds the available 50m storage length in the AM peak hour. No other critical movements have been identified.

Under future conditions, the intersection is expected to operate similarly to existing conditions. Similar delays will result in LOS E for some movements. It is noted that the northbound through movement is expected to operate with a V/C ratio above 0.85 but within capacity. The westbound left turn lane length is acceptable under the future conditions. However, the northbound right turn lane is recommended to be extended to a length of 135m to accommodate the projected 95th percentile queue. It is noted that under both existing and future conditions, the queues for the northbound and southbound through movements block access to the adjacent turning lanes.

5.3.1.4 Tu-Lane Street & King Street E

The intersection capacity analysis for the signalized intersection at Tu-Lane Street & King Street E is summarized in **Table 5-50**.

Table 5-50: Intersection Capacity Analysis – Tu-Lane Street & King Street E

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	**-**	**0.46**	**A (5)**	**-/-**	**-**	**0.49**	**A (6)**	**-/-**
SBL	11	0.03	A (3)	0/2	3	0.07	E (68)	1/2
PM Peak Hour								
Overall	**-**	**0.70**	**B (14)**	**-/-**	**-**	**0.67**	**B (11)**	**-/-**
WBL	328	0.69	E (59)	50/64	139	0.44	D (54)	18/30
SBL	29	0.11	A (6)	2/5	8	0.20	E (69)	2/4

Under existing conditions, the intersection of Tu-Lane Street & King Street E operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the westbound left movement operates at LOS E during the PM peak hour. No other critical movements have been identified.

Under future conditions, the intersection continues to operate within capacity, however poor levels of service can be expected for the southbound left movement. No intersection modifications are recommended.

5.3.1.5 Sportsworld Drive & Gateway Park Drive / Heldmann Road

The intersection capacity analysis for the signalized intersection at Sportsworld Drive & Gateway Park Drive / Heldmann Road is summarized in **Table 5-51**.

Table 5-51: Intersection Capacity Analysis – Sportsworld Drive & Gateway Park Drive / Heldmann Road

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	**-**	**0.30**	**C (22)**	**-/-**	**-**	**0.26**	**C (35)**	**-/-**
PM Peak Hour								
Overall	**-**	**0.49**	**C (26)**	**-/-**	**-**	**0.37**	**C (30)**	**-/-**
WBL	414	0.70	D (41)	40/58	234	0.58	E (55)	31/43
NBLT	148	0.67	D (45)	28/45	135	0.75	E (67)	35/55
SBTR	129	0.37	D (36)	20/33	171	0.64	E (56)	43/64

Under existing conditions, the intersection of Sportsworld Drive & Gateway Park Drive / Heldmann Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection continues to operate well, with all movements operating within capacity. The westbound left, northbound left-through and southbound through-right movements are noted to operate at LOS E. All queues are expected to be accommodated within the existing storage capacity.

5.3.1.6 Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-Ramp

The intersection capacity analysis for the signalized intersection at Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-ramp is summarized in **Table 5-52**.

Table 5-52: Intersection Capacity Analysis – Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-Ramp

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	**0.76**	**B (13)**	-/-	-	**0.87**	**B (13)**	-/-
EBTR	843	0.58	B (18)	60/97	648	0.35	B (10)	35/53
NBL	85	0.30	D (35)	9/23	67	0.33	E (57)	13/26
NBT	37	0.38	D (36)	10/24	30	0.41	E (58)	13/27
SBL	86	0.48	D (37)	13/28	106	0.56	E (63)	28/45
SBTR	54	0.24	C (34)	6/17	41	0.20	E (58)	9/20
PM Peak Hour								
Overall	-	**0.66**	**B (15)**	-/-	-	**0.59**	**B (14)**	-/-
EBTR	764	0.54	B (18)	51/83	785	0.41	B (16)	27/53

Under existing conditions, the intersection of Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-Ramp operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. No critical movements have been identified. It is noted however, that the 95th percentile queue length for the eastbound through movement exceeds the available storage of 80m, indicating the potential for an occasional spillback into the upstream intersection during both peak hours.

Under future conditions, the intersection is expected to operate within capacity, however it is noted that the overall V/C ratio exceeds 0.85 in the AM peak hour, and the northbound through and northbound right movements on the Highway 8 off-ramp exceed a V/C ratio of 0.75. Several movements are expected to operate at LOS E. No intersection modifications are recommended.

5.3.1.7 Sportsworld Drive & Highway 8 On-Ramp

The intersection capacity analysis for the signalized intersection at Sportsworld Drive & Highway 8 On-Ramp is summarized in **Table 5-53**.

Table 5-53: Intersection Capacity Analysis – Sportsworld Drive & Highway 8 On-Ramp

Mvmt	Existing Conditions (2024)				Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour								
Overall	-	**0.50**	**A (3)**	-/-	-	**0.89**	**A (4)**	-/-
WBR	572	0.43	A (7)	0/14	1137	0.87	B (12)	2/7
PM Peak Hour								
Overall	-	**1.02**	**B (17)**	-/-	-	**0.77**	**A (3)**	-/-
WBR	1182	1.03	D (47)	162/238	996	0.75	A (7)	0/4

Under existing conditions, the intersection of Sportsworld Drive & Highway 8 On-Ramp operates within capacity during the weekday AM peak hour; however, this intersection operates at theoretical capacity in the weekday PM peak hour. The westbound right movement is operating at capacity, constraining the intersection. It is also noted that the queue length of the westbound right movement will exceed the available storage in the PM peak hour, with queues likely to spill back into the westbound through lane. All other movements are operating with residual capacity and acceptable delays. No other critical movements have been identified.

Under future conditions, applying an optimized signal timing plan resolves the capacity issues present in the existing conditions. The intersection is expected to operate within capacity, however it is noted that the overall V/C ratio will exceed 0.85 in the AM peak hour and the westbound right movement will also exceed a V/C ratio of 0.85 in the AM peak hour.

5.3.2 New Signalized Intersections

5.3.2.1 King Street E & Heldmann Road

Turning movement count data for the unsignalized intersection of King Street E & Heldmann Road could not be obtained to analyze the existing condition of the intersection. Only the future conditions were assessed.

The future road network in the Sportsworld PMTSA assumes that this intersection will be signalized to provide another signalized connection in and out of the neighbourhood. In addition, the west leg of the intersection is proposed to be a through connection rather than the existing driveway. A dedicated 20m long northbound left turn lane is also proposed to facilitate protected movements across the future LRT corridor.

The intersection capacity analysis for the signalized intersection at King Street E & Heldmann Road is summarized in **Table 5-54**.

Table 5-54: Intersection Capacity Analysis – King Street E & Heldmann Road

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	**-**	**0.59**	**B (16)**	**-/-**
WBTR	174	0.60	E (56)	32/52
NBL	25	0.44	E (67)	7/17
SBL	125	0.67	F (84)	36/58
PM Peak Hour				
Overall	**-**	**0.74**	**C (23)**	**-/-**
EBLT	91	0.68	E (60)	23/42
WBTR	285	0.78	E (61)	60/90
NBL	20	0.61	F (91)	5/14
SBL	144	0.73	E (80)	34/58

Under the projected future conditions, the intersection will operate well, with all movements expected to operate within capacity. However, some high delays are expected due to the long cycle length of 130 seconds, the priority given to north-south traffic flow and the conversion to protected left turn phases for north-south traffic, resulting in a level of service of E or F. No additional intersection modifications are recommended.

5.3.2.2 Gateway Park Drive / Limerick Drive & King Street E

Under existing conditions, the intersection of Gateway Park Drive / Limerick Drive & King Street E is unsignalized (See **Section 5.3.3.1**). However, under future conditions, the intersection is recommended to be signalized. The intersection capacity analysis results for the future signalized conditions are summarized in **Table 5-55**.

Table 5-55: Intersection Capacity Analysis – Gateway Park Drive / Limerick Drive & King Street E

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	-	**0.86**	**C (29)**	-/-
EBLT	53	0.38	E (70)	17/30
EBR	121	0.26	E (68)	8/28
WBL	280	0.97	F (105)	89/111
NBL	66	0.49	E (73)	21/55
PM Peak Hour				
Overall	-	**0.96**	**D (46)**	-/-
WBL	334	0.98	F (102)	112/180
NBL	132	0.98	F (143)	45/92
NBT	2033	0.93	C (35)	265/400
SBL	5	0.16	E (80)	2/7
SBT	1867	0.97	D (47)	305/371

Under future conditions, the intersection operates near capacity during both weekday peak hours. All movements operate within capacity, however it is noted that some movements are expected to operate with LOS E/F or with V/C ratios exceeding 0.85. Some queueing issues are also anticipated, particularly for the northbound through and southbound through movements, which may impede access to adjacent turn lanes. The Region may consider widening King Street in this location to mitigate these issues.

A northbound left turn lane is proposed to have a 95m length. A northbound right turn lane, 70m in length is also proposed. Additionally, 10m long southbound left and right turn lanes are recommended. A 45m eastbound right turn is recommended on Limerick Drive. Finally, the 95th percentile queues for the westbound left turn lane are projected to extend into the upstream intersection 115m to the east. No additional intersection modifications are recommended.

5.3.2.3 Local Road E & King Street E

A new local road is proposed, connecting to King Street E at the existing driveway to the Costco commercial plaza. The intersection is proposed to be signalized and as such, the intersection capacity analysis is summarized in **Table 5-56**.

Table 5-56: Intersection Capacity Analysis – Local Road E & King Street E

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - m
AM Peak Hour				
Overall	-	**0.60**	**B (15)**	-/-
SBL	171	0.63	E (71)	44/74
PM Peak Hour				
Overall	-	**0.78**	**C (24)**	-/-
WBL	65	0.37	E (55)	17/30
NBTR	1584	0.85	C (24)	185/264
SBL	298	0.81	E (55)	85/114

The proposed intersection of King Street E & Local Road E operates well under future conditions, with all movements operating within capacity and with acceptable delays and queues. Some movements are expected to operate at LOS E.

To accommodate the projected traffic volumes, a 115m southbound left turn lane is recommended. No additional intersection modifications are recommended.

5.3.3 Unsignalized Intersection

5.3.3.1 Gateway Park Drive / Limerick Drive & King Street E

The intersection capacity analysis for the unsignalized intersection at Gateway Park Drive / Limerick Drive & King Street E is summarized in **Table 5-57**.

Table 5-57: Intersection Capacity Analysis – Gateway Park Drive / Limerick Drive & King Street E

Mvmt	Existing Conditions (2024)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	- (0)	-/-
NBT	1026	0.00	(0)	-/0
NBR	362	0.00	(0)	-/0
EBR	31	0.08	B (15)	-/0
WBR	7	0.02	B (15)	-/0
SBT	1347	0.00	(0)	-/0
SBR	0	0.00	(0)	-/0
PM Peak Hour				
Overall	-	-	- (0)	-/-
NBT	1279	0.00	(0)	-/0
NBR	316	0.00	(0)	-/0
EBR	16	0.07	C (23)	-/0
WBR	23	0.07	C (17)	-/0
SBT	2138	0.00	(0)	-/0
SBR	3	0.00	(0)	-/0

Under existing conditions, the intersection of Gateway Park Drive / Limerick Drive & King Street E operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Under future conditions, the intersection is recommended to be signalized to permit all movements (see **Section 5.3.2.2**).

5.3.4 New Unsignalized Intersections

Several unsignalized intersections were assessed as part of the future road network, many of which are part of the existing private street network in the Sportsworld MTSA.

5.3.4.1 Local Road B & Sportsworld Crossing Road

The intersection capacity analysis for the unsignalized intersection at Local Road B & Sportsworld Crossing Road is summarized in **Table 5-58**. The intersection is proposed to operate under two-way stop control for Local Road B. Following the existing condition, dedicated eastbound right and westbound left turn lanes are assumed.

Table 5-58: Intersection Capacity Analysis – Local Road B & Sportsworld Crossing Road

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**- (7)**	**-/-**
NBLTR	82	0.11	B (11)	-/0
EBL	16	0.01	A (7)	-/0
EBT	67	0.00	A (0)	-/0
EBR	0	0.00	(0)	-/0
WBL	34	0.02	A (7)	-/0
WBT	64	0.00	(0)	-/0
WBR	23	0.00	(0)	-/0
SBLTR	112	0.18	B (12)	-/1
PM Peak Hour				
Overall	-	-	**- (7)**	**-/-**
NBLTR	126	0.18	B (11)	-/1
EBL	0	0.00	A (0)	-/0
EBT	75	0.00	(0)	-/0
EBR	0	0.00	(0)	-/0
WBL	56	0.04	A (8)	-/0
WBT	92	0.00	(0)	-/0
WBR	39	0.00	(0)	-/0
SBLTR	151	0.25	B (13)	-/1

Under future conditions, the intersection of Local Road B & Sportsworld Crossing Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.2 Local Road D & Sportsworld Crossing Road

The intersection capacity analysis for the unsignalized intersection at Local Road D & Sportsworld Crossing Road is summarized in **Table 5-59**. The intersection is proposed to operate under two-way stop control for Local Road D. Following the existing condition, dedicated southbound right and northbound left turn lanes are assumed.

Table 5-59: Intersection Capacity Analysis – Local Road D & Sportsworld Crossing Road

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**- (3)**	**-/-**
NBL	53	0.04	A (8)	-/0
NBT	139	0.00	(0)	-/0
EBLR	110	0.18	B (12)	-/1
SBT	130	0.00	(0)	-/0
SBR	97	0.00	(0)	-/0
PM Peak Hour				
Overall	-	-	**- (4)**	**-/-**
NBL	58	0.04	A (8)	-/0

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
NBT	121	0.00	(0)	-/0
EBLR	166	0.26	B (13)	-/1
SBT	113	0.00	(0)	-/0
SBR	136	0.00	(0)	-/0

Under future conditions, the intersection of Local Road D & Sportsworld Crossing Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.3 Local Road B / Local Road C & Heldmann Road

The intersection capacity analysis for the unsignalized intersection at Local Road B, Local Road C & Heldmann Road is summarized in **Table 5-60**. The intersection is proposed to operate under all-way stop control. Following the existing condition, a dedicated eastbound right turn lane is assumed on Heldmann Road.

Table 5-60: Intersection Capacity Analysis – Local Road B/C & Heldmann Road

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**A (8)**	**-/-**
NBLTR	58	0.08	A (8)	-/0
EBLT	98	0.14	A (9)	-/1
EBR	45	0.05	A (7)	-/0
WBLTR	90	0.11	A (8)	-/0
SBLTR	106	0.13	A (8)	-/0
PM Peak Hour				
Overall	-	-	**A (9)**	**-/-**
NBLTR	85	0.12	A (9)	-/0
EBLT	124	0.19	A (9)	-/1
EBR	56	0.07	A (8)	-/0
WBLTR	144	0.18	A (9)	-/1
SBLTR	136	0.18	A (9)	-/1

Under future conditions, the intersection of Local Road B, Local Road C & Heldmann Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.4 Local Road C / Local Road D & Heldmann Road

The intersection capacity analysis for the unsignalized intersection at Local Road C, Local Road D & Heldmann Road is summarized in **Table 5-61**. The intersection is proposed to operate under all-way stop control. Following the existing condition, a dedicated northbound right turn lane is assumed on Heldmann Road.

Table 5-61: Intersection Capacity Analysis – Local Road C/D & Heldmann Road

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**A (8)**	-/-
NBLT	69	0.10	A (8)	-/0
NBR	40	0.05	A (7)	-/0
EBLTR	81	0.10	A (8)	-/0
WBLTR	115	0.15	A (8)	-/1
SBLTR	64	0.08	A (8)	-/0
PM Peak Hour				
Overall	-	-	**A (9)**	-/-
NBLT	90	0.14	A (9)	-/1
NBR	57	0.07	A (8)	-/0
EBLTR	106	0.14	A (8)	-/1
WBLTR	170	0.22	A (9)	-/1
SBLTR	90	0.12	A (9)	-/0

Under future conditions, the intersection of Local Road C, Local Road D & Heldmann Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.5 Gateway Park Drive & Local Road E

The intersection capacity analysis for the unsignalized intersection at Gateway Park Drive and Local Road E is summarized in **Table 5-62**. The intersection is proposed to operate under all-way stop control. Following the existing condition, a dedicated northbound left turn lane and southbound left turn lane are assumed on Gateway Park Drive.

Table 5-62: Intersection Capacity Analysis – Gateway Park Drive & Local Road E

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**B (13)**	-/-
NBL	23	0.04	A (10)	-/0
NBTR	266	0.46	B (14)	-/2
EBLTR	184	0.32	B (12)	-/1
WBLTR	154	0.26	B (11)	-/1
SBL	62	0.11	B (10)	-/0
SBTR	319	0.51	B (14)	-/3
PM Peak Hour				
Overall	-	-	**B (14)**	-/-
NBL	32	0.06	B (10)	-/0
NBTR	267	0.49	C (15)	-/3
EBLTR	183	0.34	B (13)	-/2
WBLTR	239	0.41	B (14)	-/2
SBL	122	0.24	B (12)	-/1
SBTR	293	0.51	C (16)	-/3

Under future conditions, the intersection of Gateway Park Drive and Local Road E operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.6 Local Road E & Local Road F

The intersection capacity analysis for the unsignalized intersection at Local Road E and Local Road F is summarized in **Table 5-63**. The intersection is proposed to operate under all-way stop control.

Table 5-63: Intersection Capacity Analysis – Local Road E & Local Road F

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**A (10)**	**-/-**
NBLR	278	0.37	B (10)	-/2
EBTR	170	0.22	A (9)	-/1
WBLT	241	0.33	B (10)	-/1
PM Peak Hour				
Overall	-	-	**B (11)**	**-/-**
NBLR	295	0.42	B (12)	-/2
EBTR	297	0.39	B (11)	-/2
WBLT	246	0.35	B (11)	-/2

Under future conditions, the intersection of Local Road E and Local Road F operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.7 Tu-Lane Street & Laneway A

The intersection capacity analysis for the unsignalized intersection at Tu-Lane Street & Laneway A is summarized in **Table 5-64**. The intersection is proposed to operate under all-way stop control.

Table 5-64: Intersection Capacity Analysis – Tu-Lane Street & Laneway A

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**A (7)**	**-/-**
NBLT	48	0.06	A (7)	-/0
EBLR	48	0.06	A (8)	-/0
SBTR	109	0.11	A (7)	-/0
PM Peak Hour				
Overall	-	-	**A (8)**	**-/-**
NBLT	80	0.10	A (8)	-/0
EBLR	100	0.13	A (8)	-/0
SBTR	171	0.19	A (8)	-/1

Under future conditions, the intersection of Tu-Lane Street & Laneway A operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.8 Gateway Park Drive & Tu-Lane Street

The intersection capacity analysis for the unsignalized intersection at Gateway Park Drive and Tu-Lane Street is summarized in **Table 5-65**. The intersection is proposed to operate under two-way stop control for Tu-Lane Street. Following the existing condition, a dedicated northbound left turn lane is assumed on Gateway Park Drive. In addition, and southbound left turn lane is proposed on Gateway Park Drive and a dedicated eastbound left turn lane is proposed on Tu-Lane Street.

Table 5-65: Intersection Capacity Analysis – Gateway Park Drive & Tu-Lane Street

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	- (5)	-/-
NBL	12	0.01	A (8)	-/0
NBT	214	0.00	(0)	-/0
NBR	43	0.00	(0)	-/0
EBL	62	0.17	C (17)	-/1
EBTR	45	0.09	B (13)	-/0
WBLTR	132	0.29	C (16)	-/1
SBL	12	0.01	A (8)	-/0
SBT	182	0.00	(0)	-/0
SBR	83	0.00	(0)	-/0
PM Peak Hour				
Overall	-	-	- (10)	-/-
NBL	23	0.02	A (8)	-/0
NBT	174	0.00	(0)	-/0
NBR	15	0.00	(0)	-/0
EBL	130	0.42	C (25)	-/2
EBTR	164	0.35	C (17)	-/2
WBLTR	193	0.48	C (22)	-/3
SBL	22	0.02	A (8)	-/0
SBT	169	0.00	(0)	-/0
SBR	117	0.00	(0)	-/0

Under future conditions, the intersection of Gateway Park Drive and Tu-Lane Street operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.9 Tu-Lane Street & Local Road G / Local Road F

The intersection capacity analysis for the unsignalized intersection at Tu-Lane Street & Local Road G / Local Road F is summarized in **Table 5-66**. The intersection is proposed to operate under all-way stop control.

Table 5-66: Intersection Capacity Analysis – Tu-Lane Street & Local Road G/F

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	B (11)	-/-
NBLTR	325	0.42	B (11)	-/2
EBLTR	19	0.03	A (9)	-/0

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
WBLTR	176	0.26	B (10)	-/1
SBLTR	239	0.32	B (10)	-/1
PM Peak Hour				
Overall	-	-	**C (17)**	**-/-**
NBLTR	352	0.61	C (18)	-/4
EBLTR	244	0.46	C (15)	-/2
WBLTR	273	0.51	C (16)	-/3
SBLTR	290	0.52	C (16)	-/3

Under future conditions, the intersection of Tu-Lane Street & Local Road G / Local Road F operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.3.4.10 Gateway Park Drive & Local Road G

The intersection capacity analysis for the unsignalized intersection at Gateway Park Drive and Local Road G is summarized in **Table 5-67**. The intersection is proposed to operate under two-way stop control for Local Road G. Following the existing condition, a dedicated westbound left turn lane is assumed on Gateway Park Drive.

Table 5-67: Intersection Capacity Analysis – Gateway Park Drive & Local Road G

Mvmt	Future Conditions (2041)			
	Vol	V/C	LOS (Delay - s)	Queues (50/95) - veh
AM Peak Hour				
Overall	-	-	**- (5)**	**-/-**
NBLTR	133	0.37	C (21)	-/2
EBL	51	0.04	A (8)	-/0
EBT	236	0.00	A (0)	-/0
EBR	69	0.00	(0)	-/0
WBL	12	0.01	A (8)	-/0
WBT	202	0.00	(0)	-/0
WBR	0	0.00	(0)	-/0
SBLTR	75	0.10	B (11)	-/0
PM Peak Hour				
Overall	-	-	**- (9)**	**-/-**
NBLTR	186	0.58	D (31)	-/4
EBL	87	0.06	A (8)	-/0
EBT	172	0.00	A (0)	-/0
EBR	150	0.00	(0)	-/0
WBL	22	0.02	A (8)	-/0
WBT	149	0.00	(0)	-/0
WBR	0	0.00	(0)	-/0
SBLTR	110	0.15	B (11)	-/1

Under future conditions, the intersection of Gateway Park Drive and Local Road G operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays and queues. No critical movements have been identified.

5.4 SUMMARY OF INTERSECTION CAPACITY ANALYSIS

For the most part, the operations of the future road network are acceptable, with some critical movements identified. In summary, the most notable critical intersections are as follows:

- Fairway Road S & Highway 8 On/Off-Ramp (V/C = 0.96 in PM)
- Gateway Park Drive / Limerick Drive & King Street E (V/C = 0.96 in PM)
- Fairway Road S & Fairview Mall Driveway (West) (V/C = 0.92 in AM)
- Fairway Road S & Wilson Avenue (V/C = 0.91 in PM)
- Block Line Road & Courtland Avenue E (V/C = 0.90 in PM)
- Overland Drive / Highway 8 On/Off-Ramp & Courtland Avenue E (V/C = 0.90 in PM)
- Fairway Road S & Wabanaki Drive / Fairview Mall Driveway (Centre) (V/C = 0.90 in AM)
- Fairway Road S & Courtland Avenue E & Manitou Drive (V/C = 0.89 in PM)
- Sportsworld Drive & Highway 8 On-Ramp (V/C = 0.89 in AM)
- Deer Ridge Drive & King Street E (V/C = 0.89 in PM)
- Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-Ramp (V/C = 0.87 in AM)
- Siebert Avenue & Courtland Avenue E (V/C = 0.85 in PM)

Network recommendations to support forecasted 2041 traffic levels are detailed in **Table 5-68**.

Table 5-68: Road Network Recommendations

Intersection	Recommendations
Block Line MTSA	
Block Line Road & Lennox Lewis Way	Increase SBL storage length to 40m;
Block Line Road & Courtland Avenue E	Increase SBR storage length to 115m;
Overland Drive / Highway 8 On/Off-Ramp & Courtland Avenue E	Increase SBL storage length to 165m;
Walton Avenue & Courtland Avenue E	Signalize;
Hillmount Street & Courtland Avenue E	Extend Hillmount west of Courtland Ave E to Local Road A; Provide a dedicated NBL lane with a 40m storage length;
Shelley Drive & Courtland Avenue E	Increase WBL storage length to 45m;
Siebert Avenue & Courtland Avenue E	Increase SBL storage length to 80m; Provide a dedicated WBL lane with a 70m storage length;
Vanier Drive & Siebert Avenue	Add a dedicated EBR lane (min. 20m) on Siebert Ave;
Hayward Avenue & Local Road A	Future one-way stop-controlled intersection;
Fairway MTSA	
Webster Road & Manitou Drive	Remove concrete median to permit all moves;
Kingsway Drive & Greenfield Avenue	Implement all-way stop-control; Provide a dedicated SBR lane (min. 15m);
Fairway Road S & Wabanaki Drive / Fairway Mall Driveway (Centre)	Signalize; Provide dedicated turn lanes for EBL (min. 40m), WBL (min. 100m) and SBL (min. 30m);
Fairway Road S & Local Road A/B (Future signalized intersection)	Provide dedicated turn lanes for EBL (min. 35m), WBL (min. 30m), NBL (min. 65m), SBL (min. 65m);

<table>
<tr><th>Intersection</th><th colspan="2">Recommendations</th></tr>
<tr><td>Fairway Road S & Local Road C/D
(Future signalized intersection)</td><td colspan="2">Provide dedicated turn lanes for EBL (min. 35m), WBL (min. 55m), NBL (min. 50m), SBL (min. 70m);</td></tr>
<tr><td>Fairway Road S & Local Road E/F
(Future signalized intersection)</td><td colspan="2">Provide dedicated turn lanes for EBL (min. 30m), WBL (min. 30m), NBL (min. 30m), SBL (min. 50m);</td></tr>
<tr><td>Manitou Drive & Minor Collector A
(Future signalized intersection)</td><td colspan="2">Provide dedicated turn lanes for WBL (min. 70m), NBR (min. 30m), SBL (min. 40m);</td></tr>
<tr><td>Wilson Avenue & Minor Collector A/B
(Future signalized intersection)</td><td colspan="2">Provide dedicated turn lanes for NBL (min. 30m), SBL (min. 30m);</td></tr>
<tr><td colspan="3">Sportsworld MTSA</td></tr>
<tr><td>Deer Ridge Drive & King Street E</td><td>Increase SBL storage length to 125m;</td><td rowspan="7">Implement protected NBL and SBL phases on King Street E when LRT is constructed.</td></tr>
<tr><td>Sportsworld Crossing Rd & King Street E</td><td>Increase NBL storage length to 90m;</td></tr>
<tr><td>Heldmann Road & King Street E</td><td>Signalize;
Add a dedicated NBL lane (min. 20m) on King St;</td></tr>
<tr><td>Sportsworld Drive / Baxter Place & King Street E</td><td>Increase NBR storage length to 135m;</td></tr>
<tr><td>Local Road E & King Street E</td><td>Signalize;
Provide a SBL storage lane (min. 95m)</td></tr>
<tr><td>Tu-Lane Street & King Street E</td><td>Implement protected NBL and SBL phases on King St E when LRT is constructed.</td></tr>
<tr><td>Gateway Park Drive / Limerick Drive & King Street E</td><td>Signalize;
Add dedicated turn lanes for WBL (min. 115m), EBR (min. 45m), NBL (min. 95m), NBR (min. 70m), SBL (min. 10m) and SBR (min. 10m);</td></tr>
</table>

6 MULTI-MODAL LEVEL OF SERVICE ANALYSIS

The City of Kitchener's *Complete Streets Kitchener – Streets for All* (October 2019) report outlines several considerations for multi-modal transportation network performance through a set of scorecards that can be used to evaluate existing and proposed infrastructure. The quality of the infrastructure is evaluated on a scale of 0 (worst) to 5 (best).

The study area has been assessed based on these scorecards, as discussed in the following sections. In general, the analysis focuses on the arterial road network, as it is essential to balance the needs of all modes in these high-traffic areas. In addition, the City of Ottawa's *Multi-Modal Level of Service (MMLOS) Guidelines* (2015) were used to quantitatively evaluate transit operations level of service.

6.1 MOTORIST SCORECARD

The Kitchener Complete Streets Scorecard for motor vehicle facilities uses four categories to evaluate streets: lane widths, Average Annual Daily Traffic (AADT), turning lanes and on-street parking.

For the analysis below, lane widths have been estimated based on aerial imagery. AADT has been estimated based on the assumption that peak hour traffic is equivalent to 10% of the daily traffic. Existing traffic volumes and forecasted traffic volumes under Scenario 3 have been utilized.

Turning lanes have not been assessed in this analysis because the operations analysis discussed in **Section 5** is a more appropriate evaluation measure for the adequacy of lane configurations. It is also noted that there is no on-street parking provided on any of the arterial streets, to prioritize traffic flow, so this category has not been included in the evaluation below. The quality of the motor vehicle infrastructure along the arterial road network in the study area is summarized in **Table 6-1**.

Table 6-1: Motorist Scorecard

Street	Lane Widths		Existing AADT		Future AADT	
Homer Watson Blvd, Hanson Ave to Block Line Rd	3.5-3.6m	4	>24,000	0	>24,000	0
Block Line Rd, Homer Watson Blvd to Courtland Ave E	3.3-3.4m	5	12,001-15,000	4	15,001-18,000	3
Courtland Ave E, Highway 8 to Hayward Ave	3.3-3.4m	5	18,001-21,000	2	21,000-24,000	1
Courtland Ave E, Hayward Ave to Hillmount St	3.3-3.4m	5	15,001-18,000	3	15,001-18,000	3
Courtland Ave E, Hillmount St to Block Line Rd	3.5-3.6m	4	21,000-24,000	1	18,001-21,000	2
Courtland Ave E, Block Line Rd to Shelley Dr	3.3-3.4m	5	18,001-21,000	2	18,001-21,000	2
Courtland Ave E, Shelley Dr to Manitou Dr	3.1-3.2m	4	18,001-21,000	2	>24,000	0
Fairway Rd S, Manitou Dr to Wilson Ave	2.9-3m	3	21,000-24,000	1	15,001-18,000	3
Fairway Rd S, Wilson Ave to Wabanaki Dr	3.5-3.6m	4	>24,000	0	>24,000	0
Fairway Rd S, Wabanaki Dr to Highway 8	3.5-3.6m	4	>24,000	0	>24,000	0
King St E, Deer Ridge Dr to Sportsworld Crossing Rd	3.3-3.4m	5	>24,000	0	>24,000	0
King St E, Sportsworld Crossing Rd to Sportsworld Dr	3.3-3.4m	5	>24,000	0	>24,000	0
King St E, Sportsworld Dr to Gateway Park Dr	3.3-3.4m	5	>24,000	0	>24,000	0
Sportsworld Dr, King St E to Gateway Park Dr	3.5-3.6m	4	15,001-18,000	3	<12,000	5
Sportsworld Dr, Gateway Park Dr to Highway 8	3.5-3.6m	4	18,001-21,000	2	12,001-15,000	4

For the most part, the existing arterial road network has appropriate lane widths. Some streets are noted to have high traffic under existing conditions, particularly Homer Watson Boulevard, Fairway Road South and King Street East. Future conditions are relatively similar, with some improvements on Sportworld Drive.

6.2 PEDESTRIAN SCORECARD

The Kitchener Complete Streets Scorecard for pedestrian facilities uses five categories to evaluate streets: sidewalk widths, buffers from traffic, street trees, distances between crossings, and length of crossings.

The existing conditions of the pedestrian infrastructure along the arterial road network in the study area are summarized in **Table 6-2**.

Table 6-2: Pedestrian Scorecard

Street	Sidewalk		Boulevard		Tree Spacing		Distance Between Crossings		Length of Crossings	
Homer Watson Blvd, Hanson Ave to Block Line Rd	Both sides, 1.5m	3	0.6-0.9m	3	10m, both sides	5	>300m	0	16.6-19.8m	1
Block Line Rd, Homer Watson Blvd to Courtland Ave E	Both sides, 1.5m	3	<0.3m	0	>40m	0	>300m	0	13.3-16.5m	2
Courtland Ave E, Highway 8 to Hayward Ave	Both sides, 1.5m	3	<0.3m	0	10m, one side	4	>300m	0	>19.9m	0
Courtland Ave E, Hayward Ave to Hillmount St	One side, 1.5m	1	>1.5m	5	>40m	0	>300m	0	16.6-19.8m	1
Courtland Ave E, Hillmount St to Block Line Rd	Both sides, 1.5m	3	<0.3m	0	20-40m	1	101-150m	4	>19.9m	0
Courtland Ave E, Block Line Rd to Shelley Dr	Both sides, 1.5m	3	<0.3m	0	10m, one side	4	201-250m	2	>19.9m	0
Courtland Ave E, Shelley Dr to Manitou Dr	One side, 1.5m	1	<0.3m	0	20-40m	1	151-200m	3	>19.9m	0
Fairway Rd S, Manitou Dr to Wilson Ave	Both sides, 1.5m	3	<0.3m	0	>40m	0	>300m	0	>19.9m	0
Fairway Rd S, Wilson Ave to Wabanaki Dr	Both sides, 1.5m	3	<0.3m	0	10m, one side	4	251-300m	1	>19.9m	0
Fairway Rd S, Wabanaki Dr to Highway 8	Both sides, 1.5m	3	<0.3m	0	11-20m, one side	2	>300m	0	>19.9m	0
King St E, Deer Ridge Dr to Sportsworld Crossing Rd	Both sides, 1.8m	4	1-1.5m	4	>40m	0	151-200m	3	>19.9m	0
King St E, Sportsworld Crossing Rd to Sportsworld Dr	Both sides, 1.8m	4	0.6-0.9m	3	>40m	0	>300m	0	>19.9m	0
King St E, Sportsworld Dr to Gateway Park Dr	Both sides, 1.8m	4	>1.5m	5	>40m	0	>300m	0	>19.9m	0
Sportsworld Dr, King St E to Gateway Park Dr	Both sides, 1.8m	4	1-1.5m	4	11-20m, one side	2	201-250m	2	>19.9m	0
Sportsworld Dr, Gateway Park Dr to Highway 8	One side, 1.8m	2	<0.3m	0	11-20m, one side	2	>300m	0	>19.9m	0

The existing pedestrian network could benefit from wider sidewalks, increased buffers from traffic, more street trees, more frequent crossing opportunities and shorter crossings in many locations. It is noted that some improvements are already proposed by the City and Region, including new boulevard multi-use trails along Courtland Avenue East, Block Line Road, Fairway Road South and King Street East, as discussed further in **Section 7.2**. The scorecard above can also be used to identify other pedestrian improvement priorities.

This study also recommends a set of new public streets and new signalized intersections which will greatly improve the pedestrian crossing opportunities in much of the study area. New streets are conceptualized to have sidewalks on both sides, with widths of at least 1.8m.

6.3 CYCLING SCORECARD

The Kitchener Complete Streets Scorecard for cycling facilities is based upon the facility type and width.

The existing conditions of the cycling infrastructure along the arterial road network in the study area are summarized in **Table 6-3**.

Table 6-3: Cycling Scorecard

Street	Side	Type	Bike Lane Width	Score
Homer Watson Blvd, Hanson Ave to Block Line Rd	East	BMUT	-	3
	West	None	-	0
Block Line Rd, Homer Watson Blvd to Fallowfield Dr	North	BMUT	-	3
	South	BMUT	-	3
Block Line Rd, Fallowfield Dr to Courtland Ave E	North	On-Street	1.8m	1
	South	On-Street	1.8m	1
Courtland Ave E, Highway 8 to Hayward Ave	East	None	-	0
	West	BMUT	-	3
Courtland Ave E, Hayward Ave to Fairway Rd S	East	None	-	0
	West	None	-	0
Fairway Rd S, Courtland Ave E to Highway 8	North	None	-	0
	South	None	-	0
King St E, Deer Ridge Dr to Sportsworld Dr	East	None	-	0
	West	None	-	0
King St E, Sportsworld Dr to Gateway Park Dr	East	BMUT	-	3
	West	None	-	0
Sportsworld Dr, King St E to Gateway Park Dr	North	None	-	0
	South	None	-	0
Sportsworld Dr, Gateway Park Dr to Highway 8	North	On-Street	1.8m	1
	South	On-Street	1.8m	1

The existing cycling facilities on the arterial road network are limited. On-street painted bike lanes only score 1, while multi-use trails score 3.

As noted above, there are some cycling improvements currently planned for the study areas, including new boulevard multi-use trails along Courtland Avenue East, Block Line Road, Fairway Road South and King Street East. The on-street bike lanes on Sportsworld Drive are also planned to be extended to King Street East.

It is noted that as the area grows and experiences greater pedestrian activity, multi-use trails become less desirable as bicycle facilities as the shared space becomes congested. More desirable cycling facilities are cycle tracks at least 1.5m wide, or separated bike lanes at least 2.1m wide.

6.4 TRANSIT SCORECARD

The Kitchener Complete Streets Scorecard for transit facilities is based on the average distance between pedestrian crossings and transit stops, and the amenities at transit stops. The existing conditions of the transit network in the study area are summarized in **Table 6-4**.

Table 6-4: Transit Scorecard

Stop	Direction	Distance to Crosswalk		Sidewalks on Both Sides?		Amenities					
						Landing Pad	Bench	Shelter	Bike Rack	Waste Receptacle	
Block Line MTSA											
Block Line / Fallowfield	EB	51-100m	4	Y	4	Y	Y	Y	Y	Y	5
	WB	51-100m	4	Y	4	Y	Y	Y	N	Y	5
Block Line / St. Mary's HS	EB	>250m	0	Y	4	N	N	N	N	N	1
	WB	>250m	0	Y	4	N	N	N	N	N	1
Lennox Lewis / The Family Centre	NB	<50m	5	Y	4	N	N	N	N	N	1
	SB	<50m	5	Y	4	N	N	N	N	N	1
Lennox Lewis / Activa Sportsplex	NB	>250m	0	Y	4	N	N	N	N	N	1
	SB	>250m	0	Y	4	Y	N	N	N	N	2
Courtland / Overland	SB	<50m	5	Y	4	Y	N	N	N	N	2
Courtland / Walton	NB	101-150m	3	Y	4	Y	N	N	N	N	2
Courtland / Hayward	WB	<50m	5	Y	4	N	N	N	N	N	1
	SB	<50m	5	Y	4	Y	N	N	N	N	2
Block Line Station	EB	<50m	5	Y	4	Y	Y	Y	N	N	4
	WB	<50m	5	Y	4	N	N	N	N	Y	1
	NB	<50m	5	Y	4	Y	Y	Y	N	Y	4
	SB	<50m	5	Y	4	Y	Y	Y	Y	Y	5
Courtland / Manitou	WB	<50m	5	N	2	Y	Y	Y	N	Y	4
Shelley / Courtland	SB	<50m	5	N	2	N	N	N	N	N	1
Vanier / Shelley	NB	<50m	5	Y	4	N	N	N	N	N	1
Vanier / Vanier Park	SB	51-100m	4	Y	4	Y	N	N	N	N	2
Vanier / Siebert	NB	<50m	5	Y	4	Y	N	N	N	N	2
	SB	<50m	5	Y	4	Y	N	N	N	N	2
Fairway PMTSA											
Traynor / Vanier	EB	101-150m	3	Y	4	Y	N	N	N	N	2
	WB	101-150m	3	Y	4	Y	Y	Y	N	N	4
Traynor / Belwood	EB	>250m	0	Y	4	Y	N	N	N	N	2
	WB	>250m	0	Y	4	Y	Y	Y	N	N	4
Traynor / Balfour	EB	201-250m	1	Y	4	Y	N	N	N	N	2
	WB	201-250m	1	Y	4	Y	N	N	N	N	2
Wilson / Traynor	NB	<50m	5	Y	4	N	N	N	N	N	1
	SB	<50m	5	Y	4	Y	N	N	N	N	2
Wilson /Balfour	NB	101-150m	3	Y	4	N	N	N	N	N	1
	SB	101-150m	3	Y	4	Y	N	N	N	N	2
Wilson / Fairway	NB	<50m	5	Y	4	Y	Y	N	N	N	3
	SB	<50m	5	Y	4	Y	N	N	N	N	2
Greenfield / Traynor	NB	51-100m	4	Y	4	Y	N	N	N	N	2
	SB	<50m	5	Y	4	Y	N	N	N	N	2
Greenfield / Kingsway	NB	<50m	5	Y	4	Y	N	Y	N	N	2
	SB	<50m	5	Y	4	Y	N	N	N	N	2
Fairway / Manitou	EB	51-100m	4	Y	4	Y	Y	Y	N	Y	4
	WB	<50m	5	Y	4	Y	Y	Y	N	N	4
589 Fairway Rd S	EB	<50m	5	Y	4	N	Y	N	N	N	1
500 Fairway Rd S	WB	51-100m	4	Y	4	Y	Y	N	N	N	3
Fairway / Wilson	EB	201-250m	1	Y	4	N	N	N	N	N	1

Stop	Direction	Distance to Crosswalk		Sidewalks on Both Sides?		Amenities					
						Landing Pad	Bench	Shelter	Bike Rack	Waste Receptacle	
	WB	101-150m	3	Y	4	Y	N	N	N	N	2
Fairway / Wabanaki	WB	151-200m	2	Y	4	Y	N	N	N	N	2
Fairway / Highway 8	EB	<50m	5	Y	4	Y	N	N	N	N	2
Sportsworld PMTSA											
King / Deer Ridge	NB	<50m	5	Y	4	Y	Y	Y	Y	N	4
	SB	<50m	5	Y	4	Y	Y	Y	Y	N	4
Gateway Park / Sportsworld	WB	<50m	5	Y	4	Y	Y	N	N	Y	3
	EB	101-150m	3	Y	4	Y	N	N	N	N	2
Tu-Lane / Gateway Park	SB	51-100m	4	Y	4	Y	Y	Y	Y	Y	5

Based on a review of the existing transit facilities in the study area, there are some bus stops that could benefit from added crosswalks or being relocated to nearby crosswalks. There are also many stops that could be upgraded with benches, shelters, bike racks and waste receptacles.

6.5 TRANSIT OPERATIONS LEVEL OF SERVICE

Phase 2 of the LRT and additions to the conventional bus network, as discussed further in **Section 7.5**, are expected to greatly improve transit access in the Growing Together East study area. Block Line, Fairway, and Sportsworld are proposed to continue to be main transit connection points over the long-term. A summary of the future transit coverage in the study area is provided in **Table 6-5** and illustrated in **Figure 6-1** to **Figure 6-3**.

Table 6-5: Transit Coverage – Future Conditions

MTSA	Percentage of PMTSA within 250m of Transit Stops
Block Line	83%
Fairway	86%
Sportsworld	73%

Figure 6-1: Block Line Future Transit Coverage

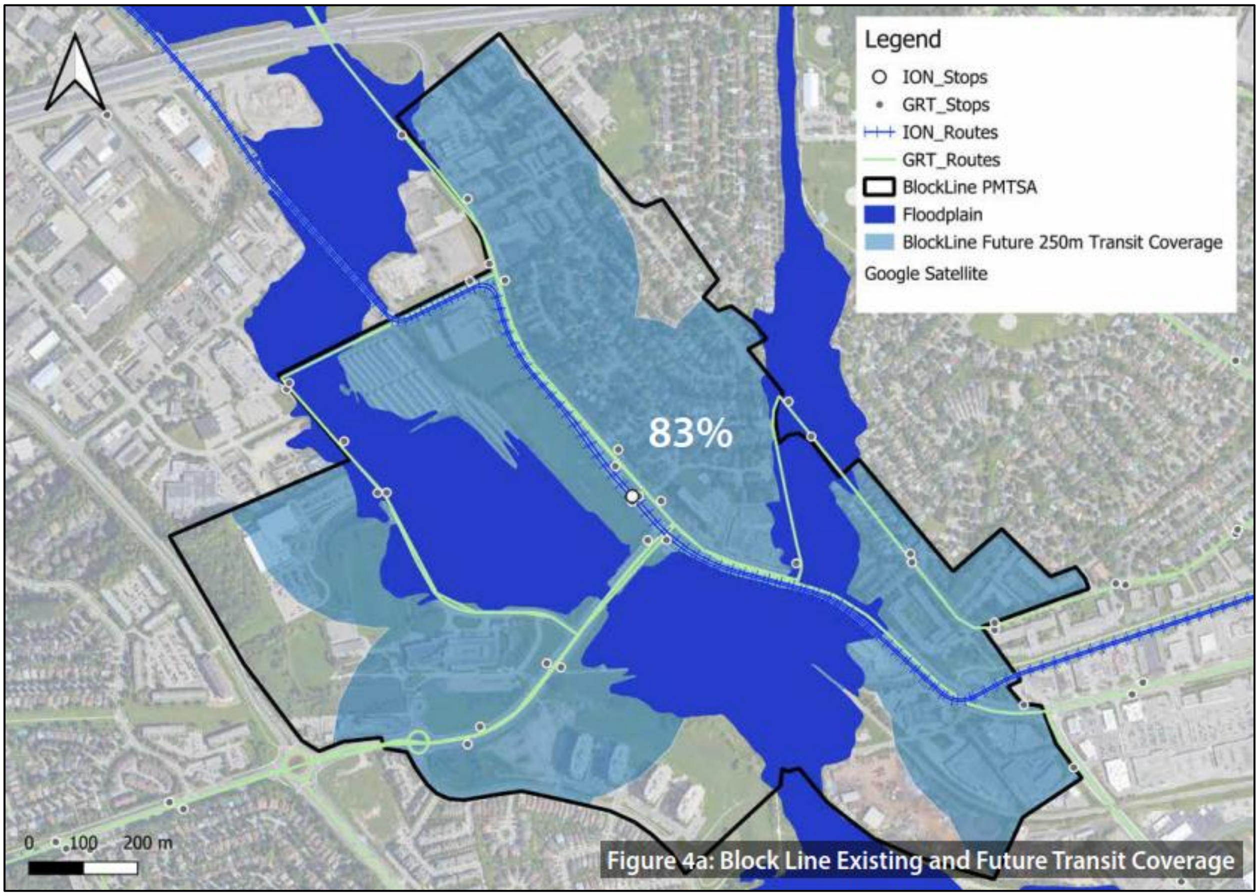


Figure 6-2: Fairway Future Transit Coverage

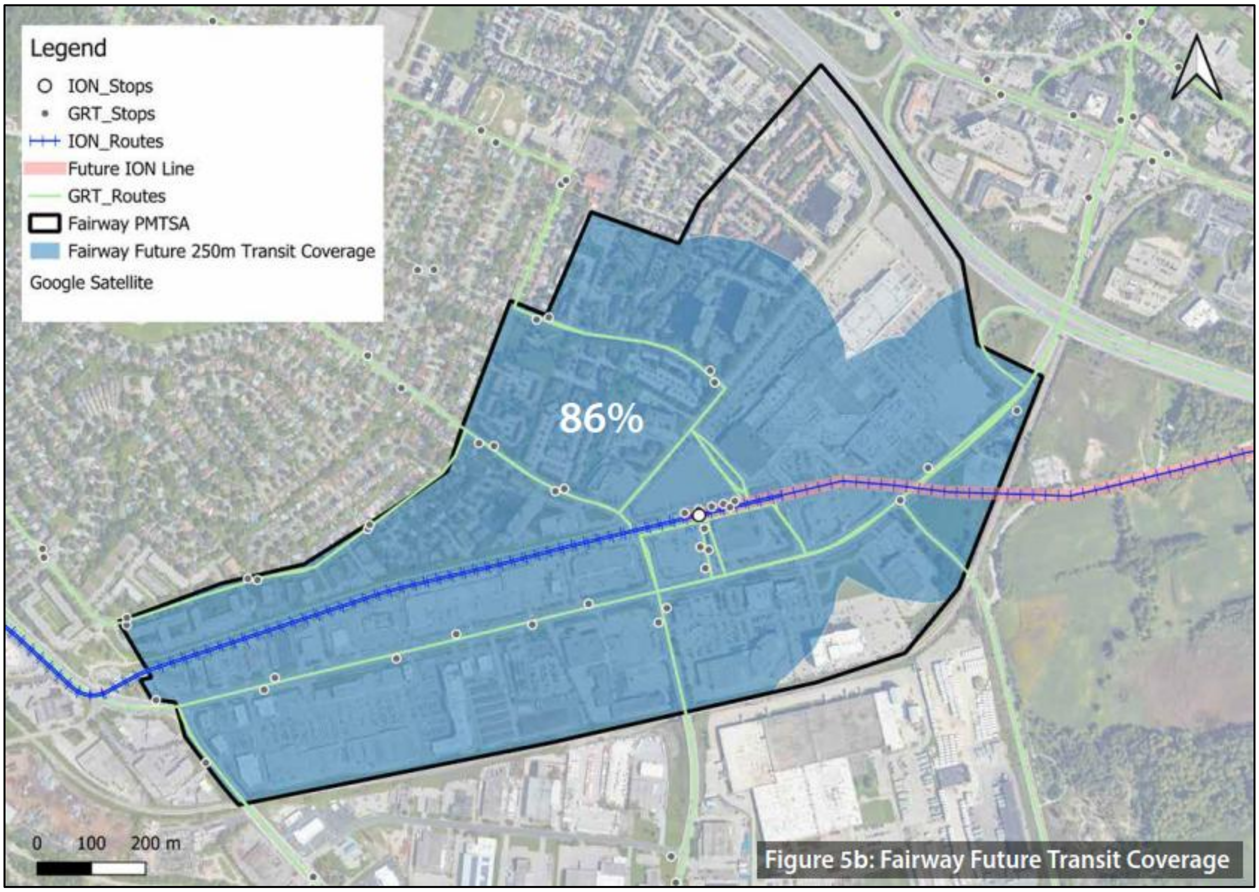
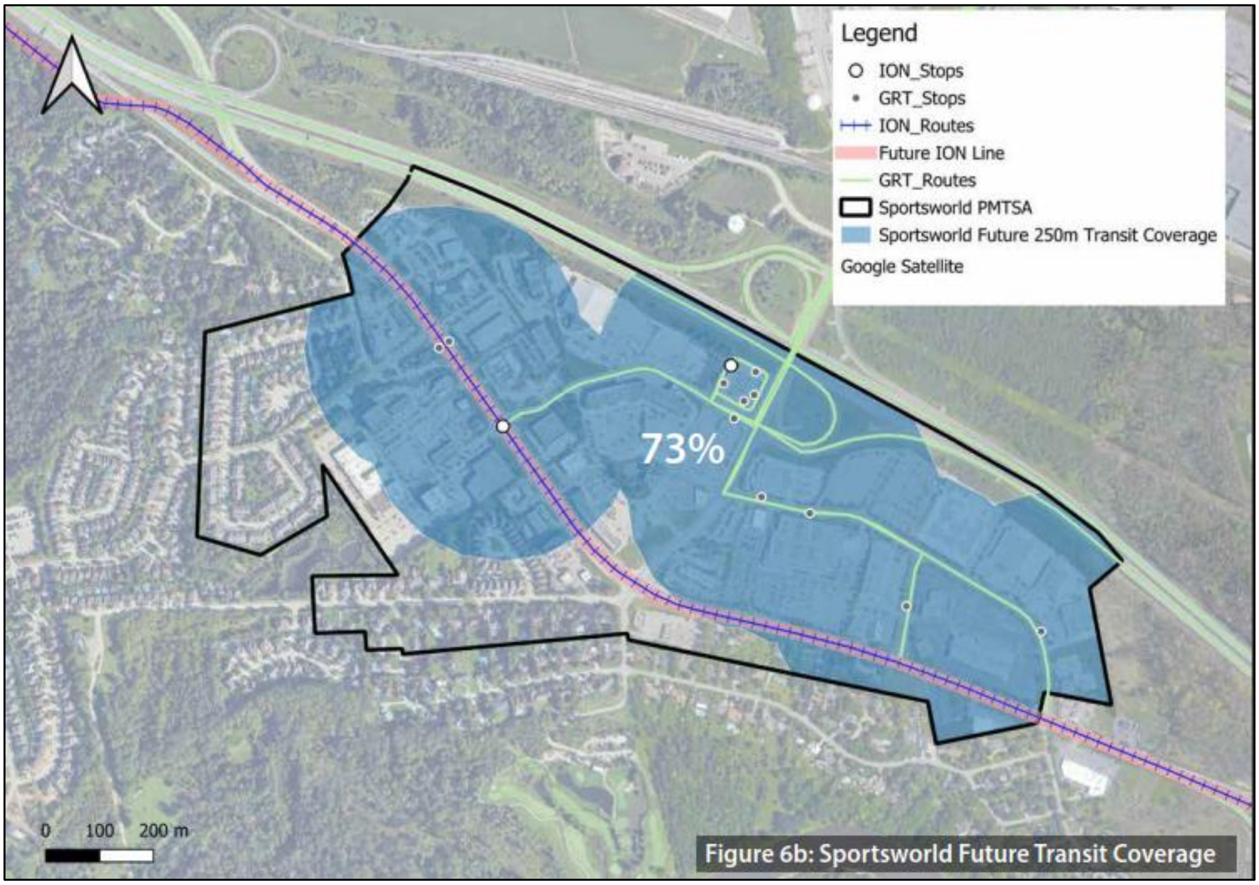


Figure 6-3: Sportsworld Future Transit Coverage



In addition to improved coverage in the future horizon, this study also recommends the implementation of transit priority measures to improve the transit level of service.

Finally, the City of Ottawa MMLOS Guidelines provide an evaluation framework for transit level of service based on traffic operations. A summary of the future TLOS is provided in **Table 6-6**, **Table 6-7**, and **Table 6-8**.

Table 6-6: Transit Level of Service – Future Conditions (Block Line PMTSA)

Intersection	Movement	Delay (s)		Transit Level of Service
		AM	PM	
Block Line Road & Homer Watson Boulevard	NB	6	11	C
	EB	4	6	B
	WB	5	6	B
Block Line & Fallowfield Drive	EB	2	2	B
	WB	2	2	B
Block Line Road & Lennox Lewis Way	SBR	11	11	C
	EBL	10	9	B
	EBT	0	0	B
	WBT	0	0	B
Courtland Avenue East & Overland Drive / Highway 8 On/Off Ramp	NBT	4	10	B
	SBT	3	4	B
Courtland Avenue East & Walton Avenue	NBT	2	5	B

Intersection	Movement	Delay (s)		Transit Level of Service
		AM	PM	
	SBT	7	9	B
Courtland Avenue East & Hayward Avenue	NBL	12	8	C
	NBT	12	8	C
	SBT	10	12	C
	EBR	0	0	A
Courtland Avenue East & Hillmount Street	NBT	6	3	B
	SBT	18	5	C
Courtland Avenue East & Block Line Road	NBL	23	59	F
	NBT	8	12	C
	SBT	10	13	C
	SBR	21	35	E
	EBL	29	20	D
	EBR	31	40	E
Courtland Avenue East & Shelley Drive	NBT	4	5	B
	SBL	1	3	B
	SBT	1	3	B
	WBR	35	30	E
Courtland Avenue East & Siebert Avenue	NBT	23	36	E
	SBT	9	9	B

In general, the road network in the Block Line PMTSA provides a good transit level of service, however some transit priority measures can be considered to improve transit level of service at the intersection of Courtland Avenue East & Block Line Road. These measures could include transit signal priority and/or queue jump lanes to minimize delay for transit users.

Table 6-7: Transit Level of Service – Future Conditions (Fairway PMTSA)

Intersection	Movement	Delay (s)		Transit Level of Service
		AM	PM	
Courtland Avenue East & Fairway Road South & Manitou Drive	NBL	20	43	F
	NBR	20	30	D
	EBR	27	11	D
	WBL	6	19	C
Manitou Drive & Minor Collector A	NBT	14	6	C
	SBT	15	5	C
Wilson Avenue & Traynor Avenue	NBL	3	4	B
	NBT	3	4	B
	SBT	3	6	B
	EBR	19	23	D
Wilson Avenue & Kingsway Drive	NBT	3	14	C
	NBR	2	8	B
	SBT	10	9	B
Wilson Avenue & Fairway Road South	NBT	19	45	F
	NBR	13	9	C
	SBL	22	37	E
	SBT	28	32	E
	SBR	11	27	D
	EBL	13	31	E

Intersection	Movement	Delay (s)		Transit Level of Service
		AM	PM	
	EBT	12	62	F
	WBL	21	87	F
	WBT	6	22	D
	WBR	6	40	E
Fairway Road South & Local Road A/B	EBT	5	3	B
	WBT	3	7	B
Fairway Road South & Local Road C/D	EBT	7	5	B
	WBT	1	3	B
Fairway Road South & Local Road E/F	EBT	7	5	B
	WBT	8	4	B
Fairway Road South & Fairview Mall Driveway – West	SBL	41	54	F
	SBR	23	36	E
	EBT	32	17	E
	WBT	10	13	C
Fairway Road South & Highway 8 On/Off-Ramp	EBT	8	18	C
	WBT	22	55	F

In general, the road network in the Fairway PMTSA provides a good transit level of service, however some transit priority measures can be considered to improve transit level of service at the intersections of Courtland Avenue East & Fairway Road South & Manitou Drive, Wilson Avenue & Fairway Road South, Fairway Road South & Fairview Mall Driveway – West and Fairway Road South & Highway 8 On/Off-Ramp. These measures could include transit signal priority and/or queue jump lanes to minimize delay for transit users.

Table 6-8: Transit Level of Service – Future Conditions (Sportsworld PMTSA)

Intersection	Movement	Delay (s)		Transit Level of Service
		AM	PM	
King Street East & Deer Ridge Drive	NBT	11	28	D
	SBT	11	14	C
King Street & Sportsworld Crossing Road	SBL	75	68	F
	WBR	49	50	F
Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-Ramp	SBL	63	46	F
	SBR	58	43	F
	EBL	8	13	C
	WBR	10	12	C
Sportsworld Drive & Highway 8 On/Off-Ramp	EBT	0	0	A
	WBT	1	1	B
Sportsworld Drive & Gateway Park Drive / Heldmann Road	NBR	51	48	F
	WBL	45	55	F
King Street East & Tu-Lane Street	WBL	54	54	F
King Street East & Gateway Park Drive / Limerick Drive	NBR	9	16	C
	SBT	29	47	F

There are opportunities to implement transit priority measures to improve transit level of service in the Sportsworld PMTSA, particularly at the intersections of King Street & Sportsworld Crossing Road, Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-Ramp, Sportsworld Drive & Gateway Park Drive / Heldmann Road and King Street East & Tu-Lane Street.

These measures could include transit signal priority and/or queue jump lanes to minimize delay for transit users (applicable to intersections with surface transit routes only).

7 RECOMMENDED ALTERNATIVE SOLUTION

Based on the results of the evaluation, Alternative Solution 3 is the overall preferred solution for each PMTSA. The following section provides a summary of the preferred alternative solution including road network and active transportation improvements as well as strategies to enhance safety, parking management, and curbside management. Policies to support the recommended solution are detailed in **Section 9**.

7.1 RECOMMENDED STREET NETWORK

The recommended public street network within each PMTSA forms a series of new connections to facilitate transit-oriented development around rapid transit while creating new opportunities for multi-modal movement, new frontage, and site access. The proposed collector roadways, local roads, and laneways create new routes to support the intensification and creation of new development blocks while reducing strain on existing roads such as Courtland Avenue E, Fairway Road S, and King Street E.

7.1.1 Block Line PMTSA Recommended Street Network

The recommended street network for the Block Line PMTSA is outlined in **Table 7-1** and illustrated in **Figure 7-1**. Local Road A is recommended to create a more fine-grained network for development of the lands west of the ION LRT. This local road will also allow for the consolidation of the two (2) driveways at 130 Hayward Avenue into a singular crossing of the LRT right-of-way, which would improve operations from a safety perspective.

Table 7-1: Block Line PMTSA Recommended Street Network

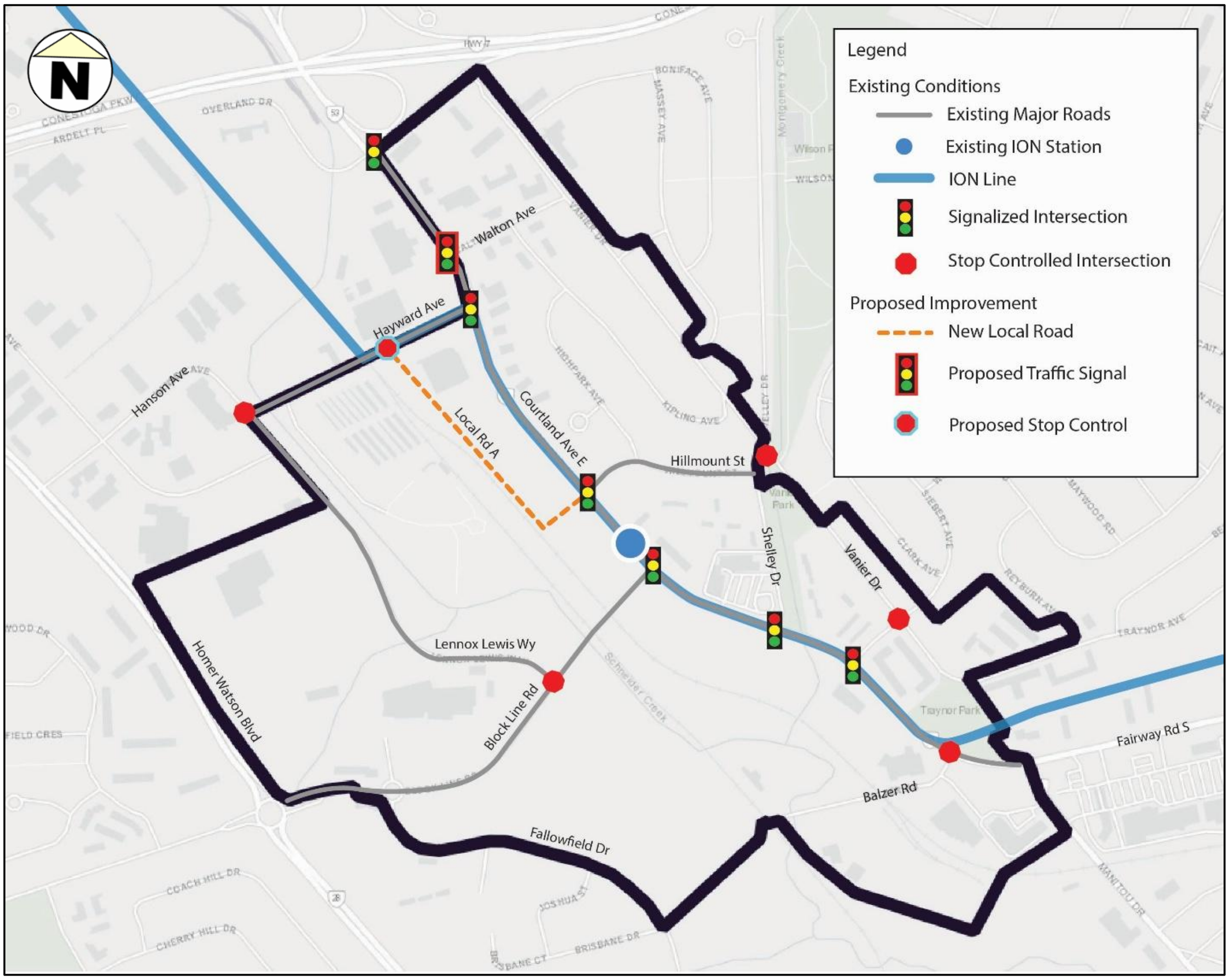
Street Name	Right-of-Way Width	From	To
Local Road A	18.0m	Hayward Avenue (mid-block)	Intersection of Courtland Avenue E & Hillmount Street

A new traffic signal is proposed to support the recommended road network and ensure sufficient traffic flow. The proposed signalized intersection is outlined in **Table 7-2** and illustrated in in **Figure 7-1**.

Table 7-2: Block Line PMTSA Proposed Signalized Intersections

E-W Street	N-S Street
Walton Avenue	Courtland Avenue E

Figure 7-1: Block Line PMTSA Recommended Street Network



7.1.2 Fairway PMTSA Recommended Street Network

The recommended street network for the Fairway PMTSA is outlined in **Table 7-3** and illustrated in **Figure 7-2**. Minor Collector A/B are recommended to alleviate future traffic on Fairway Road S and Wilson Avenue while creating frontage and access points. New local roads and laneways are recommended to create more efficient block patterns that are supportive of transit-oriented development and multi-modal travel.

In addition, two conceptual roadways (Minor Collector C and D) are proposed to support a future redevelopment of the Fairview Park mall. These roadways were not included in the traffic analysis as this redevelopment is anticipated to occur post-2041. Both roadways are recommended to support improved network connectivity for all modes and facilitate redevelopment of the mall site; additional local/private roadways will be required within the mall lands to support the creation of pedestrian-friendly block sizes and improve routing options.

Table 7-3: Fairway PMTSA Recommended Street Network

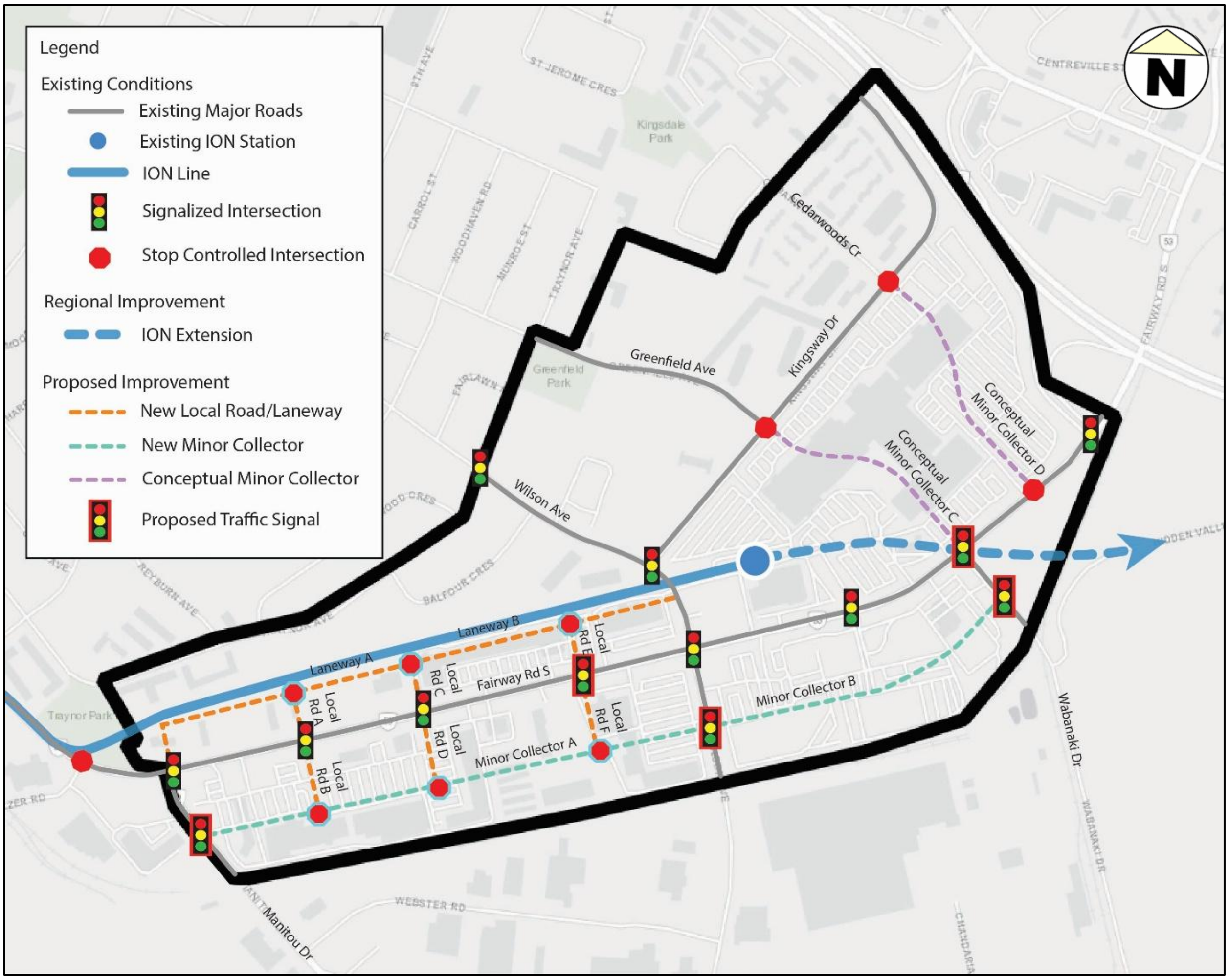
Street Name	Right-of-Way Width	From	To
Minor Collector A	20.0m	Manitou Drive (approx. 100m south of Fairway Road S)	Wilson Avenue (approx. 100m south of Fairway Road S)
Minor Collector B	20.0m	Wilson Avenue	Wabanaki Drive (approx. 100m south of Fairway Road S)
Minor Collector C	20.0m	Wabanaki Drive	Intersection of Kingsway Drive and Greenfield Avenue
Minor Collector D	20.0m	Fairway Road S (approx. 140m east of Wabanaki Drive)	Intersection of Kingsway Drive and Cedarwoods Cresent
Local Road A	18.0m	Intersection of Fairway Road S and 655 Fairway Road S	Laneway A
Local Road B	18.0m	Intersection of Fairway Road S and 655 Fairway Road S	Minor Collector A
Local Road C	18.0m	Intersection of Fairway Road S and 589 Fairway Road S	Laneway B
Local Road D	18.0m	Intersection of Fairway Road S and 589 Fairway Road S	Minor Collector A
Local Road E	18.0m	Fairway Road S, approximately 200m west of Wilson Avenue	Laneway B
Local Road F	18.0m	Fairway Road S, approximately 200m west of Wilson Avenue	Minor Collector A
Laneway A	6.0m	Intersection of Courtland Avenue E and Manitou Drive	642 Fairway Road S (east property line)
Laneway B	6.0m	600 Fairway Road S	Wilson Avenue

New traffic signals are proposed to support the recommended road network and ensure sufficient traffic flow. The proposed signalized intersections are outlined in **Table 7-4** and illustrated in in **Figure 7-2**.

Table 7-4: Fairway PMTSA Proposed Signalized Intersections

E-W Street	N-S Street
Minor Collector A	Manitou Drive
Minor Collector A / Minor Collector B	Wilson Avenue
Minor Collector B	Wabanaki Drive
Fairway Road S	Minor Collector C / Wabanaki Drive
Fairway Roads S	Local Road E / Local Road F

Figure 7-2: Fairway PMTSA Recommended Street Network



7.1.3 Sportsworld PMTSA Recommended Street Network

The recommended street network for the Sportsworld PMTSA is outlined in **Table 7-5** and illustrated in **Figure 7-3**. New local roads and laneways are recommended to create more efficient block patterns that are supportive of transit-oriented development and multi-modal travel.

Table 7-5: Sportsworld PMTSA Recommended Street Network

Street Name	Right-of-Way Width	From	To
Deer Ridge Drive Extension	18.0m	Eastern Terminus	Sportsworld Crossing Rd
Tu-Lane Street	18.0m	Gateway Park Drive	Laneway A
Local Road A	18.0m	Intersection of Deer Ridge Drive and 4295 King Street E Access	Intersection of King Street E and Sportsworld Crossing Road
Local Road B	18.0m	Sportsworld Crossing Road and 50 Sportsworld Crossing Road Access	Heldmann Road
Local Road C	18.0m	Heldmann Road and 4336 King Street E Access	Heldmann Road and 40 Sportsworld Drive Access

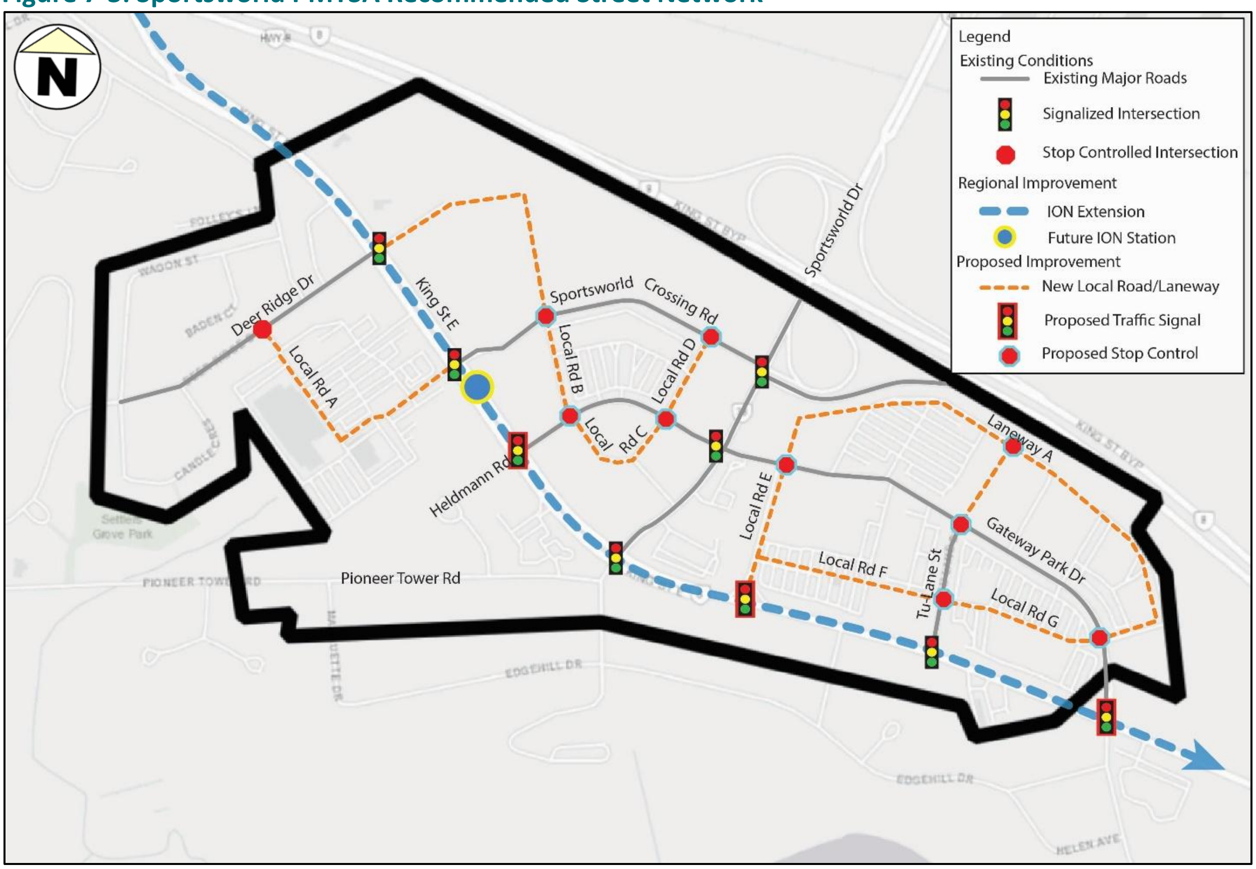
Street Name	Right-of-Way Width	From	To
Local Road D	18.0m	Heldmann Road	Sportsworld Crossing Road and 70 Sportsworld Drive
Local Road E	18.0m	100 Gateway Park Drive (west property line)	King Street E (approximately 250m east of Sportsworld Drive)
Local Road F	18.0m	Local Road E	Tu-Lane Street (approximately 70m north of King Street E)
Local Road G	18.0m	Tu-Lane Street (approximately 70m north of King Street E)	Gateway Park Drive and 170 Gateway Park Drive Access
Laneway A	6.0m	Local Road A (Sportsworld)	Local Road G

New traffic signals are proposed to support the recommended road network and ensure sufficient traffic flow. When rapid transit (LRT/BRT) is implemented along the centre of King Street E, properties on the south side of King Street E will likely be limited to right-in-right-out. To minimize access restrictions and disruption to traffic flow, the proposed signalized intersections will provide two (2) additional opportunities for vehicular U-turn movements. The proposed signalized intersection is outlined in **Table 7-6** and illustrated in in **Figure 7-3**.

Table 7-6: Sportsworld PMTSA Proposed Signalized Intersections

E-W Street	N-S Street
King Street E	Local Road E
King Street E	Heldmann Road
King Street E	Gateway Park Drive

Figure 7-3: Sportsworld PMTSA Recommended Street Network



7.2 RECOMMENDED PEDESTRIAN NETWORK

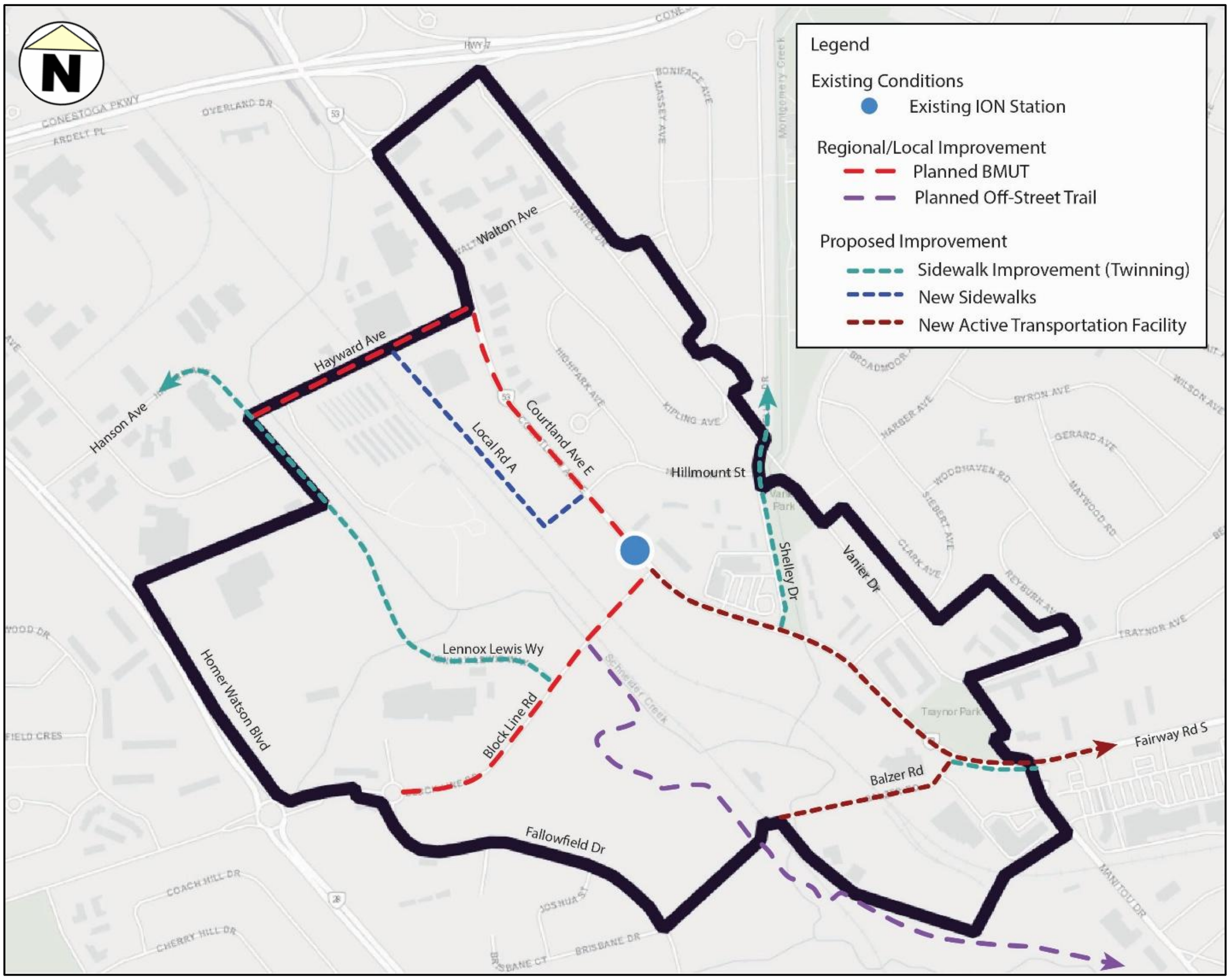
The recommended pedestrian network within each PMTSA focuses on continuity to address network gaps and missing sidewalk links. The recommended network also introduces new pedestrian crossing opportunities to improve pedestrian connectivity by reducing distances between intersections, thereby better supporting pedestrian movement throughout the PMTSAs. All proposed active transportation facilities will meet the City of Kitchener's design standards for sidewalks and boulevard multi-use trails (BMUT).

7.2.1 Block Line PMTSA Recommended Pedestrian Network

The recommended pedestrian network for the Block Line PMTSA is illustrated in **Figure 7-4**. A BMUT is planned along Hayward Avenue, Courtland Avenue E, and Block Line Road. This active transportation facility is proposed to be further extended to Fairway Road S to address the missing link along the Trans Canada Trail. A second active transportation facility is proposed along Balzer Road to provide a direct active connection to the existing and future trail network (i.e., Balzer Creek Trail and Schneider Creek Trail extension).

Additional pedestrian improvements including new sidewalks and sidewalk twinning are proposed to improve pedestrian connectivity and continuity. All new sidewalks are proposed to meet the minimum width of 1.8m and any potential BMUTs are proposed to meet the minimum width of 3.6m as per the City of Kitchener's Complete Streets Guideline.

Figure 7-4: Block Line PMTSA Recommended Pedestrian Network

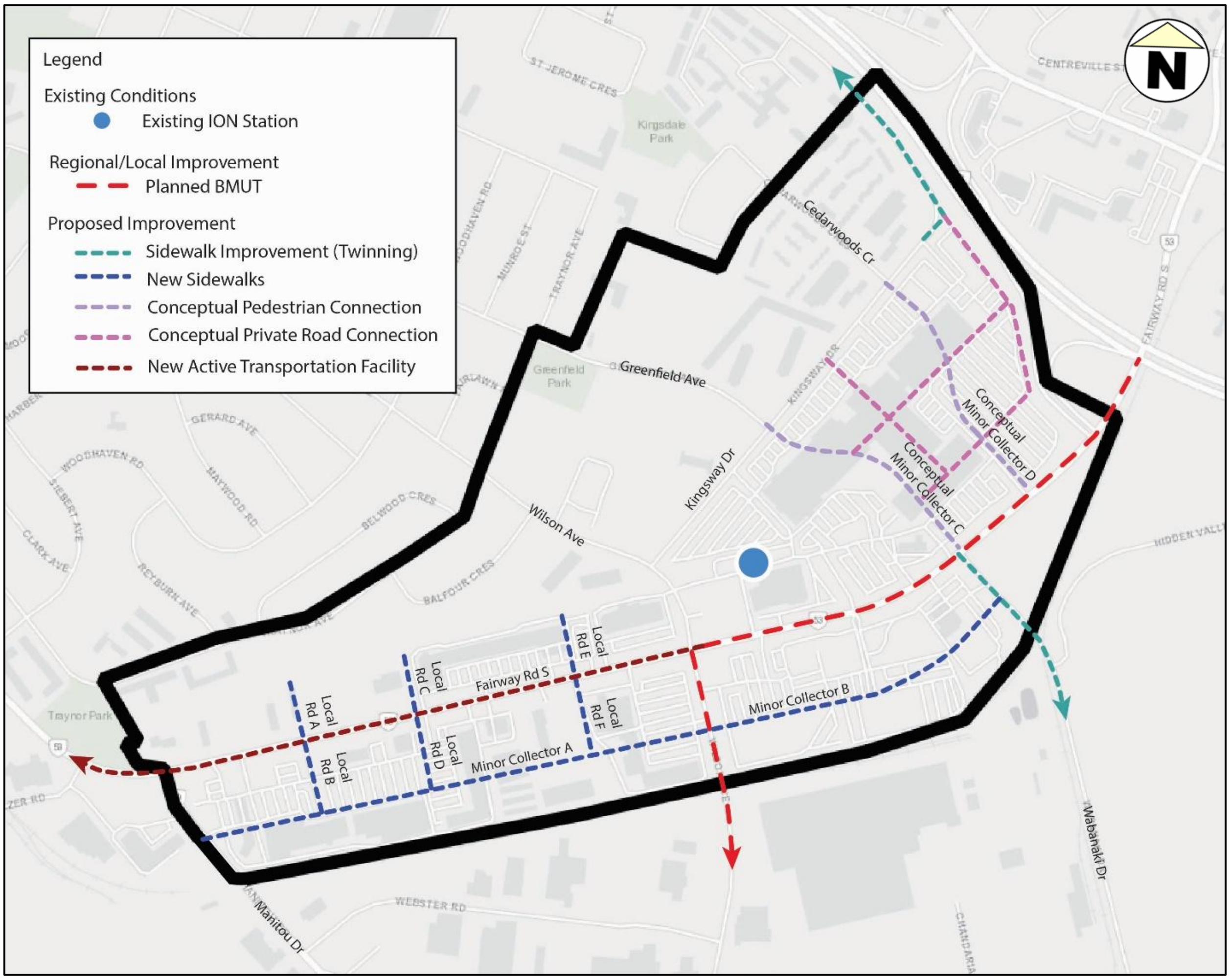


7.2.2 Fairway PMTSA Recommended Pedestrian Network

The recommended pedestrian network for the Fairway PMTSA is illustrated in **Figure 7-5**. A BMUT is planned along Wilson Avenue and Fairway Road S. This active transportation facility is proposed to be extended west to Courtland Avenue E to provide a continuous multi-modal transportation network to/from the Fairway PMTSA.

Additional pedestrian improvements including new sidewalks, sidewalk twinning, and potential private roads/mid-block connections are proposed to improve pedestrian connectivity and continuity. All new sidewalks are proposed to meet the minimum width of 1.8m for local roads/laneways and 2.0m for collector roads. In addition, any potential BMUTs are proposed to meet the minimum width of 3.6m as per the City of Kitchener's Complete Streets Guideline.

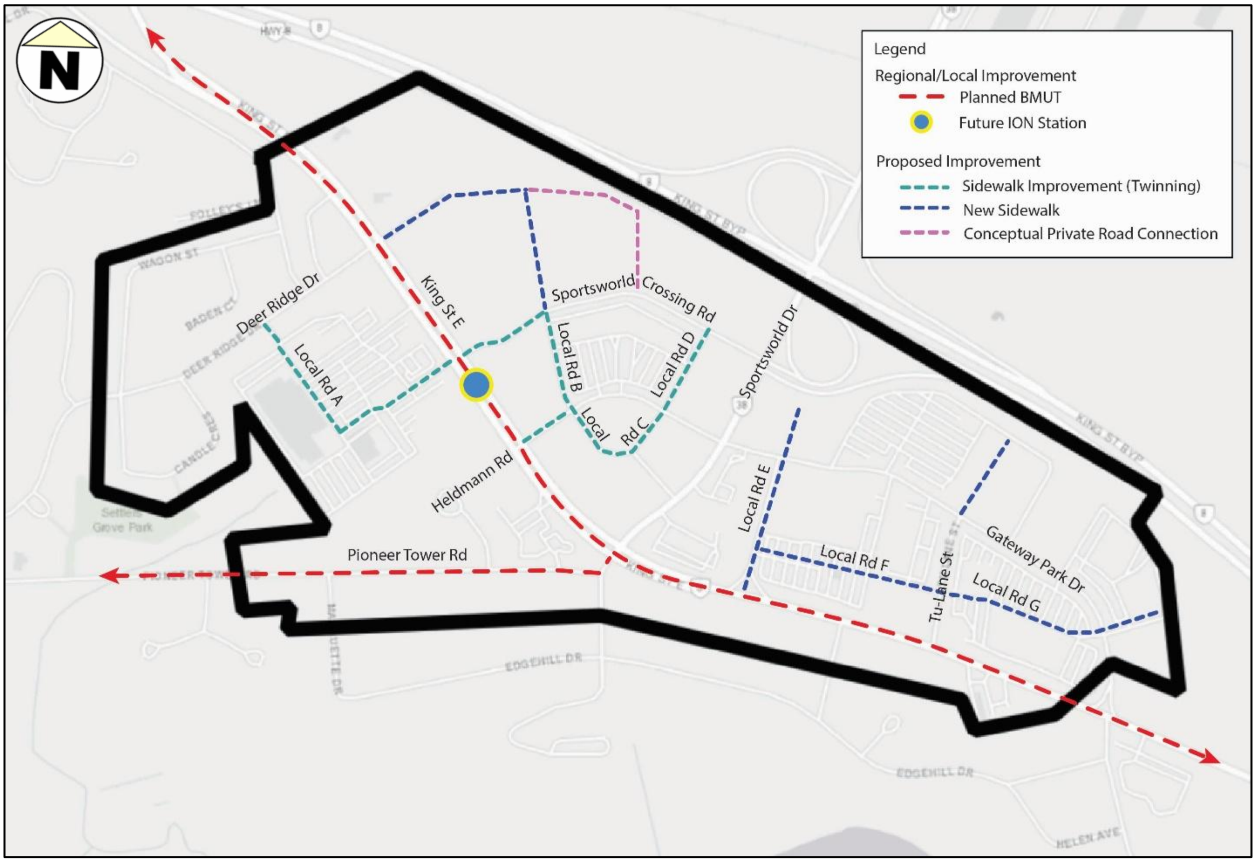
Figure 7-5: Fairway PMTSA Recommended Pedestrian Network



7.2.3 Sportsworld PMTSA Recommended Pedestrian Network

The recommended pedestrian network for the Sportsworld PMTSA is illustrated in **Figure 7-6**. A BMUT is planned by the Region along King Street E and Pioneer Tower Road to introduce multi-modal travel options within the Sportsworld PMTSA. Additional pedestrian improvements including new sidewalks and sidewalk twinning are proposed to improve pedestrian connectivity, continuity, and access.

Figure 7-6: Sportsworld PMTSA Recommended Pedestrian Network



7.3 RECOMMENDED CYCLING NETWORK

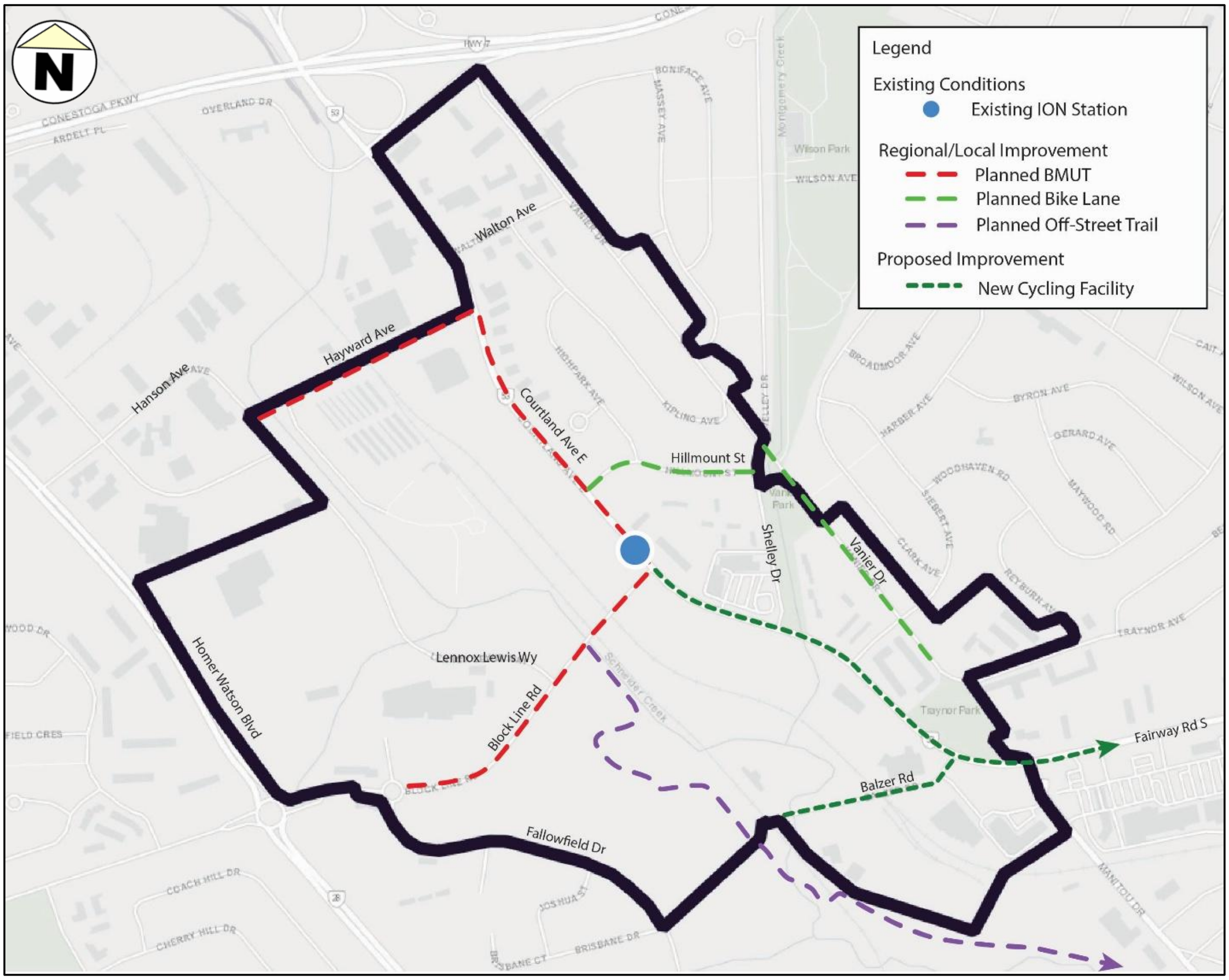
The recommended cycling network within each PMTSA focuses on expanding the cycling network to increase the number of dedicated facilities, support cycling as a travel mode, and address concerns regarding safety and discomfort. All proposed active transportation facilities will meet the City of Kitchener's design standards for cycling infrastructure and boulevard multi-use trails.

7.3.1 Block Line PMTSA Recommended Cycling Network

The recommended cycling network for the Block Line PMTSA is illustrated in **Figure 7-7**. As previously mentioned, a BMUT is planned along Hayward Avenue, Courtland Avenue E, and Block Line Road to address the missing link along the Trans Canada Trail. Furthermore, a new active transportation facility is proposed along Balzer Road for a direct active connection to the existing and future trail network (i.e., Balzer Creek Trail and Schneider Creek Trail extension).

Additional cycling improvements include planned bike lanes along Hillmount Street and Vanier Drive to infill existing gaps in the network. All new bike lanes are proposed to meet the minimum width of 1.8m and all new BMUT are proposed to meet the minimum width of 3.6m as per the City of Kitchener's Complete Streets Guideline.

Figure 7-7: Block Line PMTSA Recommended Cycling Network

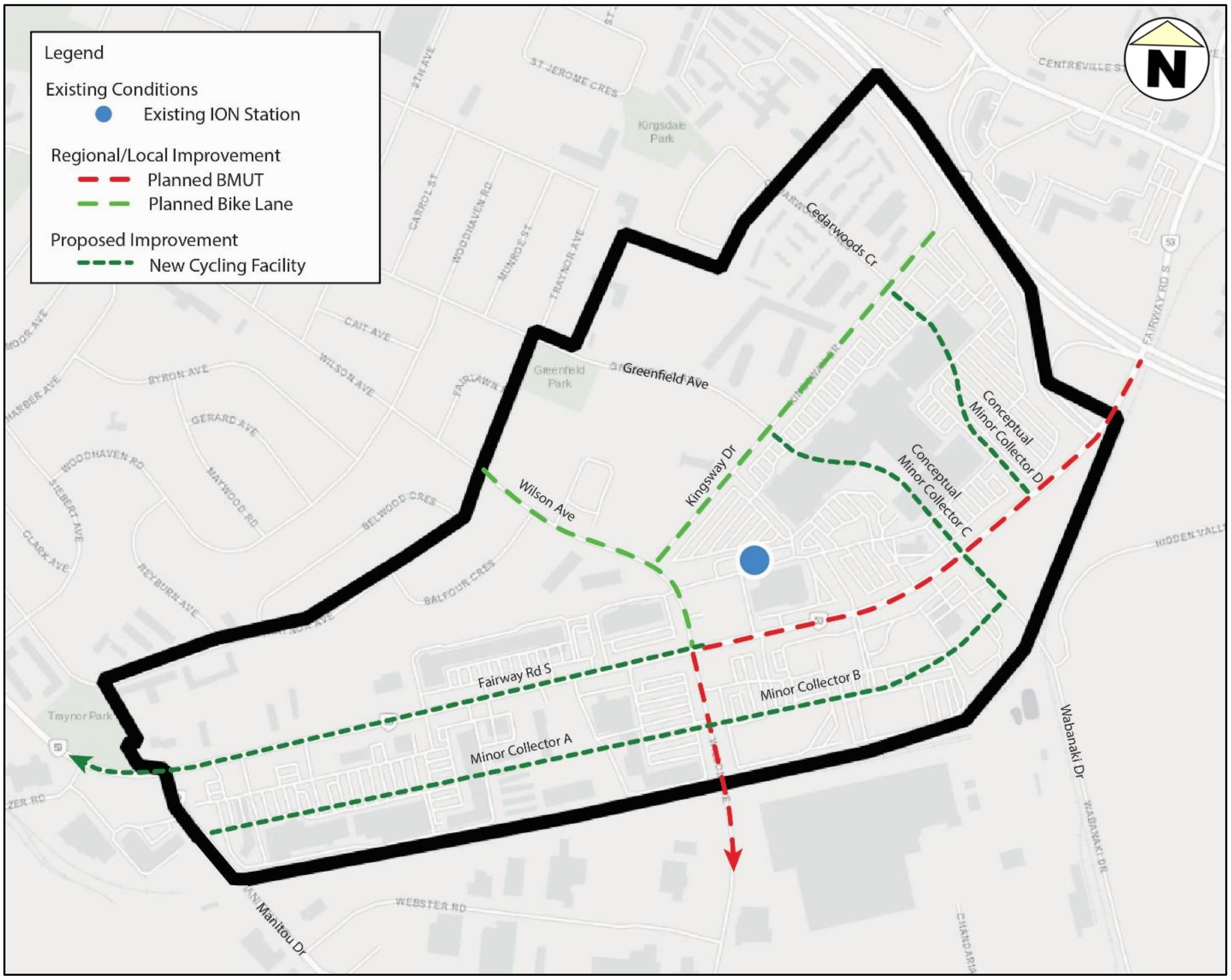


7.3.2 Fairway PMTSA Recommended Cycling Network

The recommended cycling network for the Fairway PMTSA is illustrated in **Figure 7-8**. As previously mentioned, a BMUT is planned on Fairway Road S and Wilson Avenue to provide a continuous multi-modal transportation network to/from the Fairway PMTSA.

Additional cycling improvements include planned bike lanes along Wilson Avenue and Kingsway Drive to infill existing gaps in the network. As part of the recommended cycling network, cycling facilities are also proposed along all new minor collectors to improve cycling connectivity and continuity. All new cycling facilities will meet the minimum widths outlined in the City of Kitchener's Complete Streets Guideline.

Figure 7-8: Fairway PMTSA Recommended Cycling Network

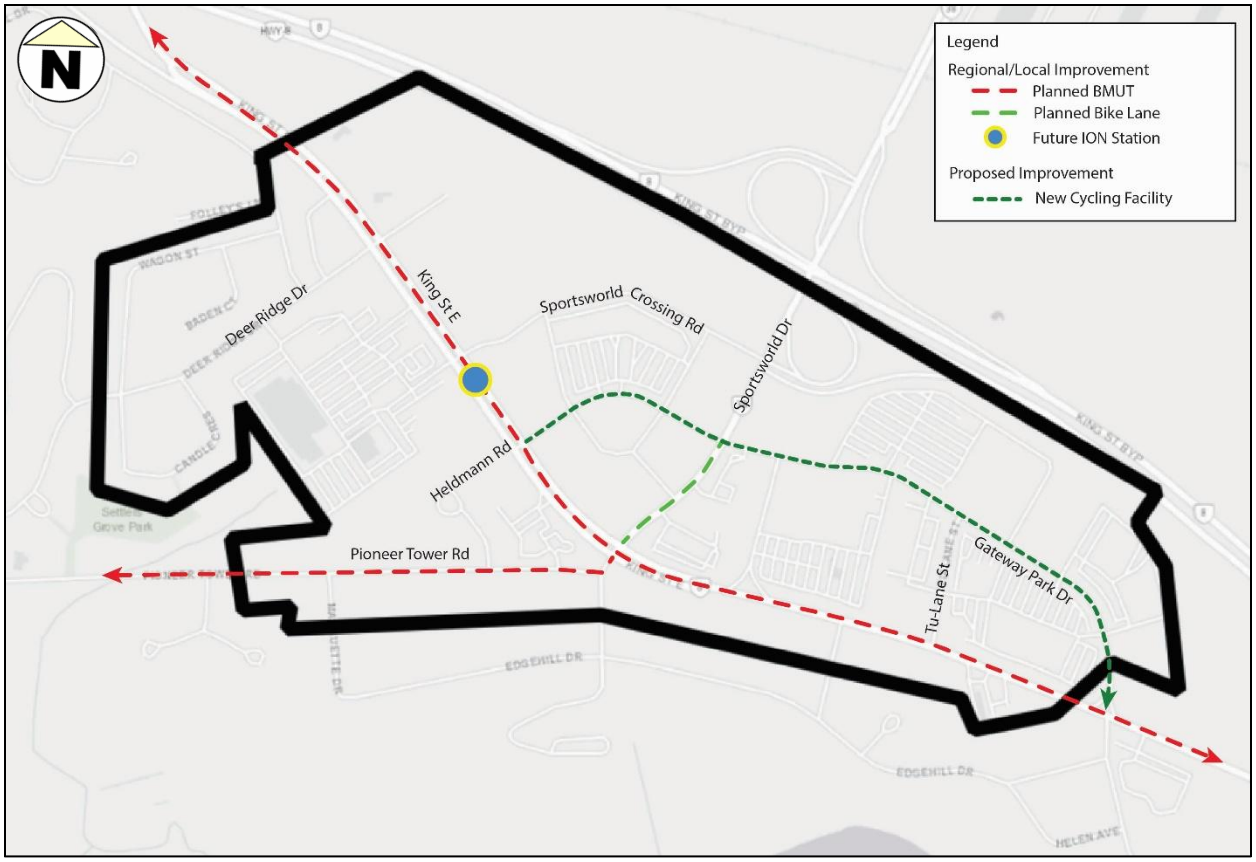


7.3.3 Sportsworld PMTSA Recommended Cycling Network

The recommended cycling network for the Sportsworld PMTSA is illustrated in **Figure 7-9**. As previously mentioned, a BMUT is planned by the Region along King Street E and Pioneer Tower Road to introduce multi-modal travel options within the Sportsworld PMTSA.

Additional cycling improvements include planned bike lanes along Sportsworld Drive, south of Gateway Park Drive to infill existing gaps in the network. As part of the recommended cycling network, cycling facilities are also proposed along Gateway Park Drive to improve east-west cycling connectivity through the PMTSA. All new cycling facilities will meet the minimum width outlined in the City of Kitchener's Complete Streets Guideline.

Figure 7-9: Sportsworld PMTSA Recommended Cycling Network



7.4 CONCEPTUAL ACTIVE TRANSPORTATION CONSIDERATIONS

Both the Block Line and Fairway PMTSAs face a distinct challenge due to the ION LRT and freight rail corridor running through or adjacent to their boundaries. These rail lines act as a barrier, limiting pedestrian connectivity and complicates access to the commercial and institutional destinations within each PMTSA. In addition to the active transportation network initiatives noted in **Section 7.2** and **Section 7.3**, there is a need to improve the overall pedestrian accessibility in both PMTSAs to bridge the physical gaps created by the LRT and freight rail corridor. The following section highlights the challenges posed by the rail corridor and proposes improvements aimed at enhancing the active transportation environment. It should be noted that the following initiatives are conceptual and are subject to further evaluation of feasibility.

7.4.1 Block Line Conceptual Considerations

The Block Line PMTSA faces several challenges related to the freight rail corridor. The 230m “dead space” created by the rail overpass on Block Line Road is uncomfortable for pedestrians, making the transit station feel farther away and limiting its potential use. Pedestrian access to major parks, institutions, and high-density residential areas are also hindered by the single rail overpass as it increases the distance between destinations. For example, the walking distance to the Peter Hallman Ball Yard is 770m which could be reduced to 300m with a direct connection over the rail corridor. Additionally, several nearby trail and bike routes (existing and planned as per the CTMP) do not connect to each other or to the transit station due to barriers caused by grade differences, the ION and freight rail lines, and major roads with limited crossing opportunities.

In light of these challenges, there is an opportunity to create a signature overpass and pedestrian square between Block Line, Lennox Lewis Way and Courtland Avenue E to create a more accessible and direct active transportation connection to the LRT station. **Figure 7-10** highlights conceptual initiatives that could be considered to improve the active transportation environment around the rail corridor.

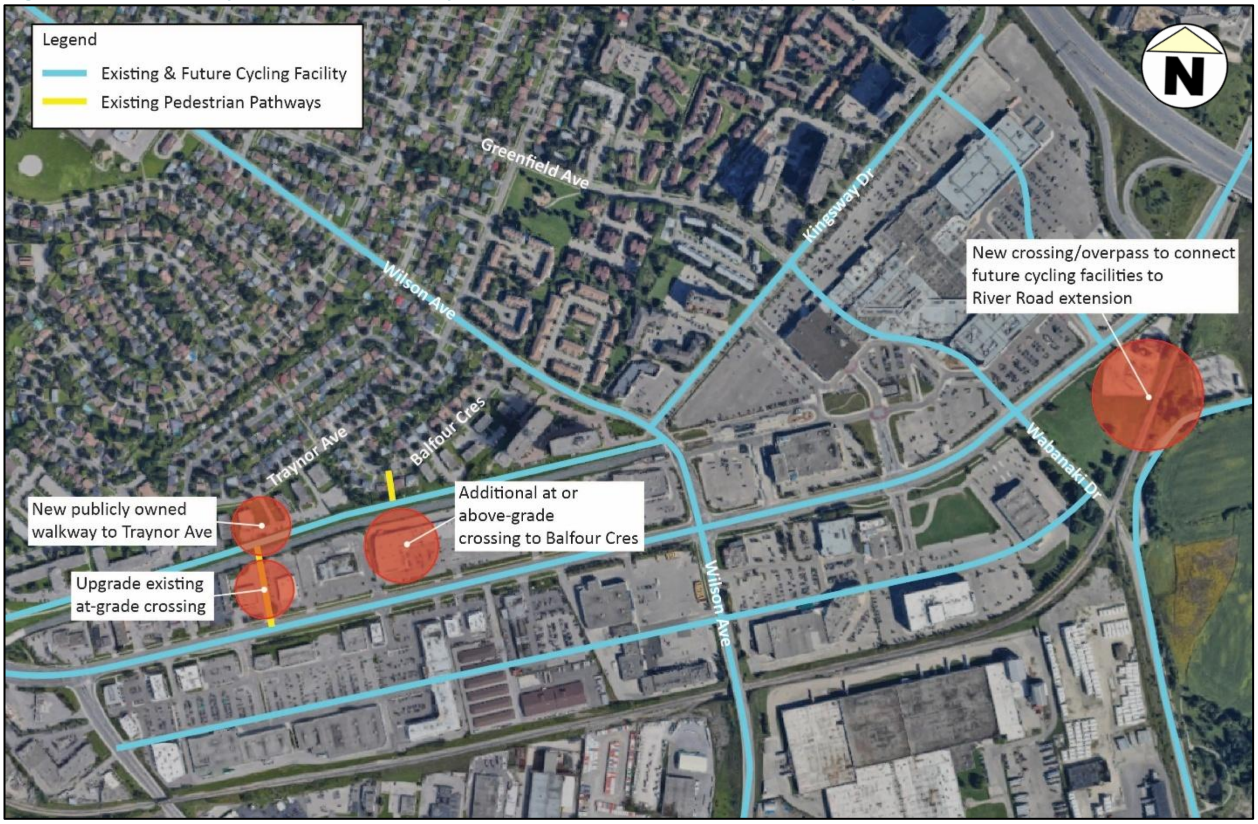
Figure 7-10: Conceptual Active Transportation Considerations (Block Line PMTSA)

7.4.2 Fairway Conceptual Considerations

The ION LRT corridor presents several challenges in the Fairway PMTSA as it increases the travel distance between the surrounding neighbourhood and commercial destinations, making access less convenient. Additionally, park access is limited for future residential areas on Fairway Road due to the ION LRT line, and active transportation access to Hidden Valley and Centreville is restricted because of limited crossing points along Fairway Road.

In light of these challenges, there is an opportunity to upgrade existing crossings and add new rail overpasses to reduce pedestrian distances. For example, the existing mid-block at-grade crossing between Fairway Road S and the Traynor Trail could be upgraded to an overpass and extended to Traynor Avenue. A new public walkway could also be implemented between Balfour Cresent and Fairway Road to increase pedestrian access over the ION LRT corridor. Furthermore, a new crossing or overpass could be implemented to better connect Hidden Valley to the surrounding areas. **Figure 7-11** highlights conceptual initiatives that could be considered to improve the active transportation environment.

Figure 7-11: Conceptual Active Transportation Considerations (Fairway PMTSA)



7.5 RECOMMENDED TRANSIT NETWORK

While specific alternative solutions for transit service and infrastructure were not considered as part of this Study, major transit investments are proposed by Grand River Transit (GRT) including Stage 2 of the ION initiative to extend service from Fairway Station in Kitchener to Downtown Cambridge with seven (7) new stations. Additional transit investments are being explored, including expanding existing service to priority areas, increasing transit frequency, and introducing highway express service throughout the Waterloo Region.

To support the Region's growing transit network and GRT's potential investments, additional transit stops could be implemented to expand transit coverage as listed below:

Block Line PMTSA:

- Along Lennox Lewis Way, between Block Line Road and Hayward Avenue
- Along Courtland Road E, between Shelley Drive and Manitou Drive

Fairway PMTSA:

- Along conceptual Minor Collector C and/or D

Sportsworld PMTSA:

- At the intersection of King Street E & Sportsworld Drive
- At the intersection of King Street E & Gateway Park Drive
- Along King Street E, between Sportsworld Drive and Gateway Park Drive

Furthermore, it is recommended that the City consider transit priority measures to ensure smooth and efficient movement for transit vehicles. Key strategies include establishing dedicated transit-only lanes, implementing queue jump lanes at key intersections, and using transit signal priority to reduce delays and improve schedule adherence. These actions will help ensure that surface transit is fast, reliable, and an attractive alternative to private car use while encouraging greater ridership and improving overall network efficiency.

Based on the TLOS results for the 2041 scenario, the following intersections should be prioritized for transit improvements to minimize intersection delay to surface transit users:

Block Line PMTSA:

- Courtland Avenue East & Block Line Road

Fairway PMTSA:

- Courtland Avenue East & Fairway Road South & Manitou Drive
- Wilson Avenue & Fairway Road South
- Fairway Road South & Fairview Mall Driveway – West
- Fairway Road South & Highway 8 On/Off-Ramp

In addition, it is recommended that the Region and GRT evaluate the potential for a dedicated bus signal to facilitate egress from the Fairway Station bus loop at the intersection with Wilson Avenue. Due to the close proximity to adjacent traffic signals and the at-grade ION LRT crossing, signal coordination will be required.

Sportsworld PMTSA:

- King Street & Sportsworld Crossing Road
- Sportsworld Drive & Sportsworld Crossing Road / Highway 8 On/Off-Ramp
- Sportsworld Drive & Gateway Park Drive / Heldmann Road
- King Street East & Tu-Lane Street

7.6 TRAFFIC CALMING AND SAFETY STRATEGIES

A collision analysis was conducted as part of Phase 1 to evaluate vehicle collision history and identify intersections with the highest density of collisions. The Phase 1 review also identified several locations to improve active transportation safety and create a pedestrian-friendly network. The following provides a summary of the intersections/locations identified for improvement as part of Phase 1.

Block Line PMTSA

- Block Line Road & Fallowfield Drive (Unsignalized Roundabout)
- Block Line Road & Lennox Lewis Way (Signalized 3-Way Intersection)

- Vanier Drive & Siebert Avenue (Unsignalized 4-Way Intersection)
- Balzer Road & At-Grade Freight Rail Crossing

Fairway PMTSA

- Wilson Avenue & Traynor Avenue (Signalized 4-Way Intersection)
- Wilson Avenue & Kingsway Drive (Signalized 4-Way Intersection)
- Wilson Avenue, North of Fairway Road (Roadway Segment with Private Driveways)
- Wilson Avenue & Fairway Road (Signalized 4-Way Intersection)
- Wilson Avenue, South of Fairway Road (Roadway Segment with Private Driveways)
- Kingsway Drive & Cedarwood Cresent (Unsignalized 3-Way Intersection with One Stop Control)
- Wabanaki Drive & At-Grade Freight Rail Crossing

Sportsworld PMTSA

- Sportsworld Drive & Heldmann Road (Signalized 4-Way Intersection)
- Gateway Park Drive, east of Sportsworld Drive (Roadway Segment with Private Driveways)
- Gateway Park Drive & Tu-lane Street (Unsignalized 3-Way Intersection with One Stop Control)
- King Street & Tu-Lane Street (Signalized 3-Way Intersection)

Traffic calming refers to a set of design strategies aimed at reducing traffic speed and enhancing the safety of all road users, including pedestrians, cyclists, and motorists. These strategies often involve physical measures such as speed bumps, curb extensions, and raised crosswalks to slow down vehicles and encourage safer driving behaviour. The above-mentioned intersections could benefit from implementing safety strategies to reduce the risk of future accidents, lower traffic-related injuries, and create a safer, more accessible PMTSA. Examples of traffic calming and safety measures that could be implemented are outlined below:

- **Access Consolidation:** Reducing the number of private driveways and aligning opposing streets can reduce the number of conflict opportunities along roadway segments and create a safer environment for pedestrians by reducing the number of crossings required where they interface with turning vehicles.
- **Reduced Speed Limits:** Lower speed limits in high-risk areas, particularly in zones near commercial districts or parks where pedestrian activity is high.
- **Speed Bumps and Raised Crosswalks:** Implement speed bumps or raised crossways to physically slow down vehicles and give pedestrians a more visible and safer crossing.
- **Curb Extensions:** Extend curbs at intersections to reduce crossing distances for pedestrians and slow turning vehicles. Other measures include chicanes and traffic island on alternating or one side of streets to narrow the street and force drivers to slow down.

- **Reduce Curb Radii:** Reducing the curb radii at intersections can help slow down right-turning vehicles, improve intersection visibility for drivers and reduce crossing distances for pedestrians.
- **Turn-Prohibitions:** Implement turn-prohibitions and through-restrictions for certain peak hours at high-rise intersections to reduce conflicts and improve overall safety at critical points.
- **Pedestrian Gates and Warning Light:** Install automated gates and flashing lights at rail crossings to prevent pedestrians from crossing when a train in approaching.
- **Dedicated Pedestrian Paths:** Create clearly marked pedestrian pathways that lead safely to and from rail stations or crossings, minimizing pedestrian exposure to train traffic.
- **Enhanced Visibility:** Increase signage, add reflective markings, and install better street lighting to improve driver and pedestrian visibility, especially during low-visibility conditions (i.e., night, rain, and snow).
- **Roundabouts:** Consider implementing roundabouts at appropriate locations to slow down vehicles as they approach and navigate intersections while allowing continuous traffic flow.
- **Protected Cycling Intersections:** Create a dedicated space at the intersection for cyclists. A physical separation between cyclists and motor vehicles increases visibility and reduces the risk of accidents.

By prioritizing safety and improving traffic flow, these traffic calming initiatives can help prevent accidents, reduce congestion, and encourage alternative transportation options like walking and cycling. Adoption of these strategies at the high-risk locations identified above will be essential in shaping a safer community for each PMTSA.

7.7 PARKING MANAGEMENT STRATEGIES

As the Block Line, Fairway, and Sportsworld PMTSAs respond to growth and intensification, there is an opportunity to evolve in a manner that accommodates all travel modes, provides a transit-supportive, compact, mixed-use community, and supports the targeted mode split of 58% as per the Region's Transportation Master Plan (TMP). A parking management strategy is vital to support a shift away from the automobile imperative and accommodate increased density without the need for increased automobile use and ownership. The following sections will summarize the existing parking requirements, review existing parking policy direction, and recommend a parking management strategy for the three (3) PMTSAs.

7.7.1 Existing Parking Requirements

The existing policy structure dictating parking requirements in the City of Kitchener include Zoning By-law 85-1 and Zoning By-law 2019-051. It is understood that By-law 2019-051 is the newer of two by-laws and is gradually replacing the older zoning by-law as part of the City's comprehensive review of the zoning by-law. However, the Block Line, Fairway, and portions of the Sportsworld PMTSA are currently governed by Zoning By-law 85-1. The remaining portions of the Sportsworld PMTSA are governed by Zoning By-law 2019-051.

7.7.1.1 Vehicular Parking Requirements

The existing vehicular parking requirements for various residential and non-residential developments are shown in **Table 7-7**. An exhaustive list of parking standards is provided in Section 6.1.2 of By-law 85-1 and Section 5.6 of By-law 2019-051.

Table 7-7: Existing Zoning By-law Vehicular Parking Requirements

Land Use	Zoning By-law 85-1 (All Other Zones)	Zoning By-law 2019-051 (All Other Zones)
Multiple Dwellings	• Dwellings totaling 3 to 5 units: 1 sp./unit • Dwellings totaling 6 to 12 units: 1.5 sp./unit • Dwellings totaling 13 to 60 units: 1.75 sp./unit • Dwelling totaling 61 or more units: 1.5 sp./unit	• Minimum: 1 sp./unit • Maximum: 1.40 sp./unit (1)
Residential Visitors	• Dwellings totaling 6 to 60 units: 15% of the required parking • Dwellings totaling more than 60 units: 20% of the required parking	• Minimum dwellings totaling 5-80 units: 0.15 sp./unit • Minimum dwellings totaling more than 81 units: 0.10 sp./unit • Maximum: 1.40 sp./unit (1)
Retail	• 5 sp./100m^2 GFA	• Minimum: 3 sp./100m^2 GFA • Maximum: 4 sp./100m^2 GFA
Restaurant	• 13 sp./100m^2 GFA	• Minimum: 13 sp./100m^2 GFA • Maximum: 20 sp./100m^2 GFA
Office	• 3.6 sp./100m^2 GFA	• Minimum: 3 sp./100m^2 GFA • Maximum: 4 sp./100m^2 GFA

Note: (1) – Rate includes residential and visitor requirement

Shared Parking

Shared parking is currently supported by both Zoning By-laws. Section 6.1.2.b.ii of Zoning By-law 85-1 includes details on shared parking for buildings containing both office and residential uses located in a Commercial Residential (CR) or Downtown (D) Zone. The number of parking spaces provided may be reduced for either the office or residential component.

Section 5.7 of Zoning By-law 2019-051 includes details on shared parking for mixed-use buildings and developments where the residential visitor parking requirement can be removed, and all parking spaces can be shared between uses unassigned.

7.7.1.2 Bicycle Parking Requirements

The existing bicycle parking requirements for various residential and non-residential developments are shown in **Table 7-8**. An exhaustive list of parking standards is provided in Section 5.6 of By-law 2019-051. Of note, no bicycle parking requirements are provided in By-law 85-1.

Table 7-8: Existing Zoning By-law Bicycle Parking Requirements

Land Use	Zoning By-law 2019-051 (All Other Zones)
Multiple Dwellings	• Class A: 2 or 6 where more than 20 units are on a lot • Class B: 0.5 sp./unit
Retail	• Class A: 1 sp./333m^2 • Class B: 1 sp./1,000m^2
Restaurant	• Class A: 2 per restaurant • Class B: 1 sp./250m^2
Office	• Class A: 1 sp./750m^2 • Class B: 1 sp./500m^2

7.7.2 Planning and Policy Review

The following plans have been reviewed to provide a greater understanding of the City of Kitchener's parking goals and objectives. The policy review was used to identify deficiencies in parking policies and opportunities to enhance parking management within the PMTSAs.

Kitchener Official Plan

The Kitchener Official Plan contains several policies that promote active transportation and transit, especially in intensification areas, through parking management initiatives. These policies include, but are not limited to the following:

- **13.C.8.1** ….Minimum and maximum parking standards may be defined, as appropriate, to maximize the efficient use of land, and promote active transportation and the use of public transit.
- **13.C.8.2** The City may consider adjustments to parking requirements for properties within an area or areas, where the City is satisfied that adequate parking facilities are available, where developments adopt transportation demand management measures of where sufficient transit exists or is to be provided.
- **13.C.8.3** The City will periodically review its policies and parking standards for various land uses to establish parking standards which encourage the use of alternative means of transportation.
- **13.C.8.6** The City will develop a parking reduction strategy for lands located within the Urban Growth Centre (Downtown) and Protected Major Transit Station Areas to recognize the availability of and encourage the use of rapid and public transit.

As noted in the Kitchener Official Plan, there are several policies that seek to guide supply with Protected Major Transit Station Areas in a manner that supports sustainable intensification while optimizing existing and future transit investment.

Bill 185: Changes to the Ontario Planning Act (1990)

The Planning Act (PA) is provincial legislation that outlines the rules and regulations for land use planning within the Province of Ontario. The purpose of the PA is to ensure that the planning process is equitable and accessible and can be done in a timely manner as well as promote sustainable economic development, provide a planning system based on provincial policy, integrate provincial interests in order to be consistent and conform with the Provincial Policy Statement, promote inter-disciplinary co-operation and coordination, and to recognize the decision making authority and accountability of the municipality planning.

On June 6, 2024, Bill 185 received royal assent to amend the Ontario Planning Act to add Section 16 and to further amend Section 34 of the PA to remove a municipality's ability to require minimum vehicular parking (except for bicycle parking) in protected Major Transit Station Area's (MTSA). The amended sections are as follows:

- **Section 16(22)** No official plan may contain any policy that has the effect of requiring an owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles, on land that is not part of a highway and that is located within,
  - (a) a protected major transit station area identified in accordance with subsection (15) or (16);
  - (b) an area delineated in the official plan of the municipality surrounding and including an existing or planned higher order transit station or stop, within which area the official plan policies identify the minimum number of residents and jobs, collectively, per hectare that are planned to be accommodated, but only if those policies are required to be included in the official plan to conform with a provincial plan or be consistent with a policy statement issued under subsection 3 (1); or
  - (c) any other area prescribed for the purposes of this clause. 2024, c. 16, Sched. 12, s. 2.
- **Section 16(23)** A policy in an official plan is of no effect to the extent that it contravenes subsection (22). 2024, c. 16, Sched. 12, s. 2.
- **Section (16)24** No official plan may contain any policy that has the effect of requiring an owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles, containing more than the prescribed number of parking spaces on land that is not part of a highway and that is located within an area prescribed for the purposes of this subsection, and if a policy does so, the official plan is deemed to be amended to be consistent with this subsection. 2024, c. 16, Sched. 12, s. 2.
- **Section 34(1.1)** Despite paragraph 6 of subsection (1), a zoning by-law may not require an owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles, on land that is not part of a highway and that is located within, (a) a protected major transit station identified in accordance with subsection 16 (15) or (16);
  - (b) an area delineated in the official plan of the municipality surrounding and including an existing or planned higher order transit station or stop, within which area the official plan policies identify the minimum number of residents and jobs, collectively, per hectare that are planned to be accommodated, but only if those policies are required to be included in the official plan to conform with a provincial plan or be consistent with a policy statement issued under subsection 3 (1); or
  - (c) any other area prescribed for the purposes of clause 16 (22) (c). 2024, c. 16, Sched. 12, s. 5 (2).
- **Section 34(1.3)** Despite paragraph 6 of subsection (1), a zoning by-law may not require an owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles, containing more than the number of parking spaces prescribed for the purposes of subsection 16 (24) on land that is not part of a highway and that is located within an

area prescribed for the purposes of that subsection, and if a by-law does so, the by-law is deemed to be amended to be consistent with this subsection. 2024, c. 16, Sched. 12, s. 5 (2).

Changes to Bill 185 are reflective of the province's goal to promote sustainable intensification and maximize the value of existing and future transit investments. To support these provincial objectives, zoning requirements for the Block Line, Fairway, and Sportsworld PMTSAs should be updated to encourage transit-oriented development. The current zoning regulations are outdated and require an update to better facilitate growth around transit hubs.

Growing Together West – Strategic Growth Area Standards

On March 19, 2024, Kitchener City Council unanimously approved the Growing Together West plan which included Official Plan Amendments and Zoning By-law Amendments to introduce new Strategic Growth Area (SGA) land uses. The Council approved Zoning By-law Amendment includes a new Section to Zoning By-law 2019-051 to outline zoning regulations for Strategic Growth Areas and proposed several changes to Section 5 – Parking, Loading, and Stacking standards to include parking standards for SGA zones. It is understood that the new SGA parking rates will apply within PMTSAs.

Table 7-9 details the proposed SGA vehicular requirements for various residential and non-residential uses. Notably, no minimum parking requirements are proposed for all uses within a SGA zone. An exhaustive list of parking standards is provided in Section 5.6 of the Zoning By-law Amendment.

Table 7-9: Existing Zoning By-law Parking Requirements

Land Use	Proposed Zoning By-law 2019-051 Amendment (SGA Zones)
Multiple Dwellings	• No minimum • Maximum: 1.30 sp./unit (1)
Residential Visitors	• Minimum: 10% of provided parking spaces only where 11 or more dwelling units are on a lot • Maximum: 1.30 sp./unit (1)
Retail	• No minimum • Maximum: 1.40 sp./100m^2 GFA
Restaurant	• No minimum • Maximum: 7 sp./100m^2 GFA
Office	• No minimum • Maximum: 2.60 sp./100m^2 GFA

Note: (1) – Rate includes residential and visitor requirement

Limited changes to the bicycle parking regulations from Zoning By-law 2019-051 were proposed through the amendments to introduce new Strategic Growth Area (SGA) land uses. A few site-specific amendments were proposed to increase the minimum Class A bicycle parking rate for multiple dwelling units to 0.6 spaces per unit and increase the minimum Class A bicycle parking rate for non-residential uses to 1 space per 500m^2.

7.7.3 Literature Review

The following section provides an overview of the academic and professional literature pertaining to parking supply and travel behaviour.

Parking As a Sunk Cost

From the perspective of residents, a purchased parking space, either separately or as part of the unit cost, represents a fixed cost. Consequently, value would be attributed to whether the space is being used or not. The perception that their parking space should be used could influence an individual to either purchase a car they otherwise would not have, keep a car that they would otherwise no longer need, or lease their space to someone else who otherwise would not have had access to one.

From the perspective of developers, parking facilities typically represent sunk costs. As a result, there are minimal perceived benefits to reducing parking demand after the parking facilities have already been constructed, as the cost has already been realized.[1]

Therefore, limiting the amount of parking that will ultimately be constructed is critical and will allow site-generated travel behaviour to be influenced from the onset of development. By limiting the supply of vehicle parking available to future residents, visitors, and employees of a proposed development, travel behaviour will be influenced towards non-driver modes.

Parking's Influence on Travel Mode Choice

While it is generally understood that more dense, urban environments support walking and cycling, it is also understood that travel behaviour and mode choice can be influenced by a number of factors. Using a randomized sample of human behaviour, four California-based researchers published a paper that sought to identify the link between elements of the built environment, such as the presence of on-site parking and proximity to transit, to travel behaviour[2].

The paper, "What Do Residential Lotteries Show Us About Transportation Choices?", authored by Adam Millard-Ball, Jeremy West, Nazanin Rezaei, and Garima Desai, explored how various aspects of the built environment influence travel behaviour by leveraging the affordable housing lotteries conducted in the City of San Francisco. These lotteries began in 2002 and involve randomly selecting households to live in price-regulated homes located in new apartment and condo buildings. Given the high cost of housing in San Francisco, two-person households with incomes up to $118,200 could generally qualify for this lottery[3]. The study therefore captures households who could theoretically afford a car, in addition to those for which cost of car ownership would be a barrier.

The units included in the lottery program range in location, size, and in the amount of on-site parking provided, with older developments built towards the beginning of the lottery system typically having a 1:1 parking space per unit ratio (as was required until 2010), to newer developments having reduced or even zero parking spaces available.[4] The researchers surveyed the residents of 2,654 total households across 197 projects constructed from 2002 onwards.

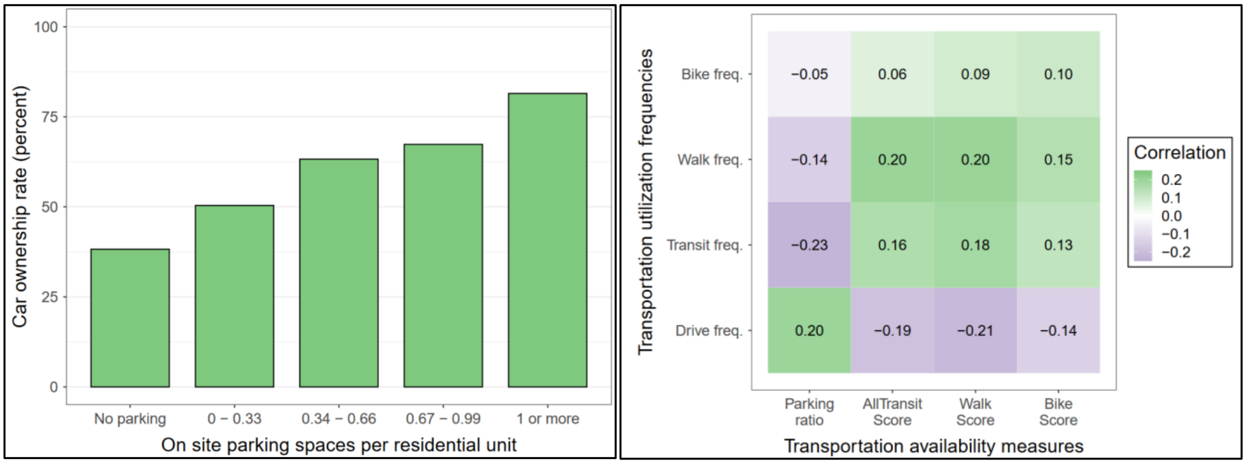
While no correlation between parking availability and employment was found, the presence of parking was found to both induce car ownership (**Figure 7-12**) and lead to more driving compared to other modes (**Figure 7-12**)[5]. On the other hand, developments located in areas with higher bike, walk, and transit scores exhibited a higher frequency of travel by bike, walk, and transit modes and a lower frequency of driving[6].

The results of the study, published in 2021, support the notion that providing on-site vehicle parking can induce parking demand, and confirms that higher on-site parking ratios can lead to increases in driving as a mode choice compared to other modes. Additionally, high walkability, bikeability, and transit

[1] https://www.vtpi.org/tca/tca0504.pdf
[2] https://www.sightline.org/2021/01/28/more-parking-isnt-harmless-it-actually-makes-us-drive-more/
[3] https://people.ucsc.edu/~jwest1/articles/MillardBall_West_Rezaei_Desai_SFBMR_UrbanStudies.pdf
[4] https://people.ucsc.edu/~jwest1/articles/MillardBall_West_Rezaei_Desai_SFBMR_UrbanStudies.pdf
[5] https://people.ucsc.edu/~jwest1/articles/MillardBall_West_Rezaei_Desai_SFBMR_UrbanStudies.pdf
[6] https://people.ucsc.edu/~jwest1/articles/MillardBall_West_Rezaei_Desai_SFBMR_UrbanStudies.pdf

accessibility support increases in the frequency of these modes over driving. Therefore, on-site parking management is key to supporting a walkable, transit-accessible urban development.

Figure 7-12: On-Site Parking vs. Car Ownership and Correlation Between Transportation Factors and Frequency of Mode



7.7.4 Recommendations

In light of the City's goal to support sustainable intensification and recent changes to provincial legislation to remove a municipality's ability to require minimum vehicular parking (except for bicycle parking) in protected Major Transit Station Areas, it is recommended that the Block Line, Fairway, and Sportsworld PMTSAs follow the proposed vehicular parking rates for Strategic Growth Areas; however, consider reducing the maximum parking requirement to better align with current policies and support the broader objective of reducing reliance on cars. Bicycle parking should also be provided in accordance with the rates set out in Zoning By-law 2019-051 and adjusted on a site-by-site basis to support cycling as a travel mode.

Based on the literature review in **Section 7.7.3**, providing less parking has been shown to encourage a reduction in driving behaviour, as individuals are less likely own vehicles when parking is limited. This approach not only aligns with sustainability goals but also supports the City's target of achieving 58% of trips made by auto. By reducing excessive parking provisions, the City can further encourage the use of alternative modes of transportation, such as walking, cycling, and transit, ultimately fostering a more sustainable and vibrant urban environment.

7.8 CURBSIDE MANAGEMENT STRATEGIES

Curbside management is the strategic allocation of curb space. As the need to balance the requirements of all roadway users continues to grow, so does the demand for curbside space. This is fueled by the rise in ride hailing companies such as Uber and Lyft, the increase in online shopping and freight-related deliveries, the need for curbside pick-up and drop-off, and the rising demand for transit access and vehicle storage. A curbside management strategy is therefore crucial to support growth in major transit station areas to ensure smooth, orderly operations of curbside activity while promoting safety for both pedestrians and vehicles.

7.8.1 Shared Mobility

Shared mobility refers to a range of transportation services and operations that are shared amongst users. Relevant to the City of Kitchener, this includes but is not limited to carshare, bikeshare, electric vehicle charging stations, and ridesharing. To support shared mobility and optimize the use of curb space, the following strategies should be considered:

- **Designated Pick-Up and Drop-off Laybys:** Establish dedicated areas for rideshare vehicles (e.g., Uber, Lyft) to pick-up and drop-off passengers. This would minimize disruptions to traffic flow and ensure that passengers are safely loaded and unloaded.
- **Curbside Allocations for Multi-Modal Use:** Create flexible curb spaces that can accommodate different transportation modes such as Neuron Mobility bikesharing stations or e-scooter parking, as well as space for delivery services.
- **Integrated Mobility:** Encourage the integration of shared mobility services into public transit networks by ensuring curbside areas are accessible to services like carsharing, bikesharing, and other micro-transit options to improve overall system connectivity.
- **Loading Zones for Freight Deliveries:** Designate specific curbside areas for freight delivery vehicles, especially for last-mile deliveries to help reduce conflict with passenger vehicles and improve overall logistics efficiency.
- **Transit Priority Zones:** Create space near the ION LRT station or other transit hubs to prioritize safe loading and unloading of shared mobility services. This can help streamline connections between different modes of transportation.
- **Clear Signage and Enforcement:** Clear, visible signage and effective enforcement can help guide curbside users, reduce unauthorized parking, and ensure overall compliance with regulations designed to maximize curb efficiency.

By adopting these strategies, the City can better manage curbside space within each PMTSA while improving safety, enhancing mobility, and promoting a more sustainable and efficient urban transportation system

7.8.2 Road Hierarchy

Curbside management strategies should be tailored to the specific needs and functions of different road hierarchies to maximize efficiency and enhance mobility. For example, the proposed new collector streets, local road, and laneways should be designed to improve curbside management by shifting traffic parking activities away from congested major hotspot roads such as Courtland Avenue E, Fairway Road S, Wilson Avenue, King Street E, and Sportsworld Drive. On-street parking should be prioritized on local roads as these areas typically serve residential and small commercial needs, where parking turnover is important for the local business and residents. Designated PUDO zones should be provided within private developments to support rideshare services and delivery vehicles and ensure that traffic congestion is minimized on main roads while maintaining safe access to properties.

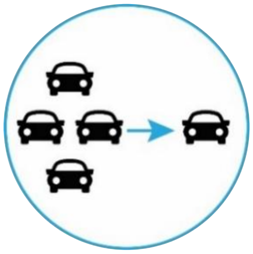
Main streets, which serve as primary corridors for traffic and public transportation, should accommodate the integration of shared mobility services such as bikesharing and e-scooters by offering dedicated curb spaces to support these modes. These areas should also be equipped with transit priority zones to support bus operations, ensuring that public transport can run efficiently alongside shared mobility options.

8 TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

A Transportation Demand Management (TDM) Strategy is necessary to ensure the successful implementation of initiatives that act to reduce automobile use and increase the use of active and sustainable modes of transportation. The following section provides an overview of what Transportation Demand Management is and how it can be applied to reduce dependency on single occupancy vehicles (SOV) and encourage other methods of travel throughout the study area.

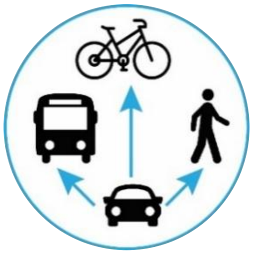
8.1 WHAT IS TDM?

Transportation Demand Management seeks to apply behaviour change tools and incentives to align transport demand with supply. TDM is a toolkit of strategies that facilitates a more efficient transportation network by influencing travel behaviour. Effective implementation of TDM strategies may improve the supply or reduce the demand on a transportation network, resulting in reduced congestion. These strategies provide methods to reduce, re-mode, re-time, and/or re-route trips, also known as the 4 R's of TDM. Some examples of the issues and associated strategies of the 4 R's of TDM are shown below.



Reduce

Segregated land uses and poor network connectivity increase the distance required to make a trip. This adds pressure to the transportation network by increasing the amount of time a trip takes in the network. TDM strategies aim to reduce or eliminate trips through improved land-use integration, compressed work weeks, improved network connectivity, or tele-working.



Re-mode

Some transportation modes are inherently more efficient at moving people in a limited right-of-way than others. Applying the concept of person capacity on a corridor as opposed to vehicle capacity provides an alternative perspective to transportation within a corridor. Providing for modes that are more efficient at moving people improves the performance of a network. These modes may include walking, cycling, ridesharing, and transit.

Re-time

Travel demand during typical weekdays generally exhibits significant peaks in demand corresponding with the 9:00 a.m. to 5:00 p.m. workday. The transportation network may have residual capacity during the "shoulder" periods immediately prior to or following the peak. Thus, re-time TDM strategies aim to shift the travel demand during peak periods to shoulder periods to reduce delay and congestion during the peaks.

Re-route

A well-connected network with parallel corridors is assumed to have evenly distributed demand, where trips are organically re-routed as drivers search for the fastest route. However, demand is not evenly distributed throughout the network and some streets experience more traffic congestion than others. Re-route TDM strategies aim to influence an individual's routing decision to make use of the residual capacity of alternative routes.

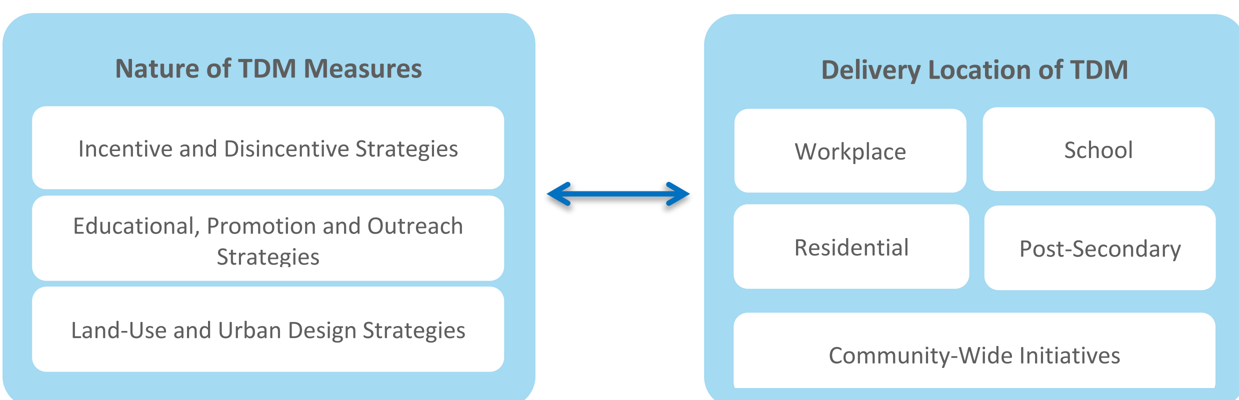
8.2 HOW ARE TDM GOALS ACHIEVED?

TDM strategies generally fall into three categories:

1. **Land Use and Urban Design Strategies:** Utilizing the streetscape and land use development to support a more efficient transport network by prioritizing efficient modes such as walking, cycling, transit, or carpooling.
2. **Incentive and Disincentive Strategies:** A "carrot and stick" approach to TDM that influences travel choices by making a particular mode or travel choice more attractive (incentive) and/or another mode less attractive (disincentive).
3. **Educational, Promotional, and Outreach Strategies:** Utilizing information and events to improve understanding, raise awareness, and raise positive sentiment to sustainable travel.

The most effective TDM strategy is well-planned, customized, and coordinated, utilizing a comprehensive suite of TDM strategies to target the workplace, households, and schools within the study area. **Figure 8-1** illustrates the nature of TDM measures and potential delivery locations.

Figure 8-1: TDM Summary



Source: Transport Canada

8.3 TDM BENEFITS

Transportation studies generally have an overall vision for their transportation network in which certain TDM benefits are prioritized and TDM strategies are selected to complement the area vision to the greatest extent possible. Some TDM benefits are as follows:

- Congestion reduction for all users by managing travel demand thus improving the experience for all modes;
- Energy/emission reduction through fewer or more efficient vehicle trips;
- Improving health and fitness by increasing active transportation trips and improving air quality;
- Improving the livability of an area by providing more attractive streetscaping, encouraging livable urban design, and increasing street animation;
- Parking management solutions that reduce the overall developable space dedicated to parking; and,
- Improving safety for all users through the design and prioritization of alternative modes.

8.4 TDM GOALS

Potential TDM goals for the Kitchener GTE PMTSAs are as follows:

- Establish a complete community that has a variety of reliable and connected transportation options.
- Ensuring that development phasing maintains multi-modal connectivity through all stages of construction.
- Encourage mixed-use transit-oriented development.
- Support active modes of transportation.
- Develop TDM programs (programming/marketing).
- Enhance the safety, comfort, and accessibility for pedestrians and cyclists.

8.5 PROPOSED TDM STRATEGIES

It is recommended that future developments be required to submit and implement a comprehensive Transportation Demand Management Strategy and shared mobility initiatives that demonstrate how the proposed development will support a shift to more sustainable travel modes. The following strategies can work collectively to promote a high proportion of site trips using transit and active transportation within the Kitchener GTE study area.

Land Use & Development Strategies

Built form and land use strategy are crucial elements that directly affect the amount of travel, the length of trips, and the choice of travel mode. Providing a mix of land uses can encourage walking trips between various uses that residents/visitors may otherwise drive to. Having varying land uses is expected to attract a number of internal trips, thereby encouraging active transportation and reducing vehicular traffic on the road network. It should be noted that the land use strategy being highlighted will be achieved through the implementation of SGA land uses and zones. Additional strategies to complement SGAs include:

- Locate higher-density buildings close to transit stops to increase pedestrian activity and transit ridership;
- Avoid long stretches of blank walls, berms, or high fences adjacent to the street;

- Encourage mixed-use developments to facilitate walking trips; and
- Provide shared loading spaces to minimize loading point accesses along the road network and make active transportation travel easier and more comfortable.

Pedestrian-Based Strategies

Development within the Kitchener GTE PMTSAs should ensure safe, comfortable, and convenient pedestrian connections to key destinations within the surrounding area. Pedestrian strategies to encourage walking as a mode of travel include:

- Orient building entrances close to the street with direction connections to pedestrian pathways;
- Provide landscaping and pedestrian amenities such as trees, sidewalks, benches, and marked crossings to create an attractive public realm and encourage walking; and
- Provide park space and outdoor amenities that are within convenient walking distance.

Cycling-Based Strategies

Development within the Kitchener GTE PMTSAs should promote cycling as a convenient travel option. Cycling strategies to encourage biking as a mode of travel include:

- Avoid barriers to cyclists such as curbs or stairs, where possible. Where they exist, stairways leading to and from station areas should be outfitted with bike ramps or elevators;
- Provide cycling infrastructure and end-of-trip infrastructure such as secure bicycle racks, bicycle storage, and shower and change room facilities;
- Provide bike rental or bike share facilities within future mobility hubs or key transit locations; and
- Provide cyclists with sheltered and secure bicycle storage facilities.

Transit-Based Strategies

Development within the Kitchener GTE PMTSAs should prioritize connections and access to transit while encouraging transit as a desirable mode choice. Transit strategies to encourage transit trips include:

- Prioritize bus traffic over motorized vehicles in the vicinity of ION LRT stations and major bus stops;
- Provide weather-protected transit stops and wider pedestrian clearways near ION LRT stations and major bus stops;
- Provide publicly accessible mid-block connections near transit facilities to reduce pedestrian travel time and roundabout routing;
- Provide real-time information displays at major transfer points or within building lobbies to minimize waiting uncertainty;
- Subsidize transit passes or pre-loaded transit cards for new residents and/or employees; and
- Enhance the comfort of outdoor pedestrian waiting areas by using year-round planting that provide shelter from the wind in the winter months and shade during the summer months.

Travel and Parking Management Strategies

Development within the Kitchener GTE PMTSAs should increase awareness of sustainable transportation opportunities and avoid an oversupply of parking. Travel and parking strategies to reduce private vehicle trips include:

- Introduce more restrictive maximum parking requirements to limit vehicle traffic generated by large redevelopment projects;
- Reduce or eliminate minimum parking standards for small-scale retail uses and ground-floor commercial uses near transit routes;
- Unbundle parking from the cost of a residential unit; and
- Provide dedicated and/or preferential, publicly accessible car-share or carpooling parking spaces;
- Encourage shared parking arrangements between uses to reduce the need for parking spaces within a development;
- Locate wayfinding maps at all major entrances indicating where the user is within the station area and the location of major station destinations. Supplement these signs with a wider context directing pedestrians to important local destinations; and
- Encourage participation in Smart Commute Workplace programs to expand travel opportunities for employees in sustainable ways.

9 POLICY DIRECTION

Detailed below are recommended policy directions for incorporation as part of the City Official Plan and/or planned update to the Transportation Master Plan (TMP). OPA or TMP policies provide the mechanism for requiring associated transportation improvements and development principles as part of future development within the PMTSAs.

Summary

Development within the Growing Together East PMTSAs will leverage the planned rapid transit network to provide a transit-supportive built form and structure that prioritizes the use of sustainable mobility modes such as public transit, walking, and cycling. The future transportation network will be implemented to consolidate vehicular access and provide appropriate circulation for both vehicular and active modes. Supporting mobility infrastructure will be implemented to reduce reliance on private vehicles and provide convenient travel alternatives for both short- and long-distance trips. Walking and cycling travel within and between neighbourhoods will be enhanced to support access to commercial uses, community facilities, and transit stations. Traffic calming and design interventions will be implemented to improve road safety for all users and minimize traffic infiltration within adjacent neighbourhoods. These policies will be supported by curbside management and parking strategies to achieve sustainable growth and the efficient use of public streets and infrastructure.

Development Principles

- Future development will include a mix of land uses that facilitate the daily needs of residents, reducing the need for external trips outside of the neighbourhood.
- Future development will support the creation of a walkable community through the provision of a fine-grained street network, typical block sizes of 150m or less, and mid-block pedestrian connections where appropriate.
- Future development will support access management by consolidating the number of vehicle access connections and aligning opposing driveways where feasible. Private driveways on regional and municipal collector roadways will be discouraged and only permitted if no alternative means of access is available.
- Transportation demand management measures will be utilized to reduce vehicle trip generation associated with future development. Developments will include an appropriate supply of vehicle parking to align with a sustainable mode share and support the use of walking, cycling, and transit.

Street Network

- The planned street network identified in **Table 7-1**, **Table 7-3**, and **Table 7-5** for the Block Line, Fairway, and Sportsworld PMTSA, respectively, will provide a fine-grained transportation network to support vehicular and active travel, facilitate efficient access management and orderly development, and develop a transit-supportive block structure that increases permeability and pedestrian connectivity. All locations are approximate and subject to refinement through the development approval process.

- The planned streets identified in **Table 7-1**, **Table 7-3**, and **Table 7-5** for the Block Line, Fairway, and Sportsworld PMTSA, respectively, will improve connectivity within each PMTSA and facilitate access to development sites, including parking and loading facilities. Minor collector roadways will be publicly owned. Local roads and laneway will be publicly owned where appropriate, or publicly accessible and connected via the surrounding public street network.
- Lands required for the proposed road network identified in **Table 7-1**, **Table 7-3**, and **Table 7-5** for the Block Line, Fairway, and Sportsworld PMTSA, respectively will be secured through conveyance or easement as part of the development approval process. Right-of-way widths have been identified in accordance with City standards.
- New public and private streets will be designed with an attractive streetscape, public realm features, and wide pedestrian sidewalks. Minor collector roadways will include protected cycling facilities that are separated from general vehicle traffic.
- Planned signalized intersections will be secured and implemented through the development approval process, as identified in **Table 7-2**, **Table 7-4**, **Table 7-6,** for the Block Line, Fairway, and Sportsworld PMTSA, respectively. Intersection signalization may not be required if deemed infeasible based on technical considerations.

Transit Network

- Future development in the vicinity of existing or planned ION rapid transit stations will be designed to facilitate appropriate pedestrian and cyclist access to station facilities through publicly accessible streets and mid-block connections.
- Future development will protect for future transit system infrastructure in accordance with the planned regional transit network.

Pedestrian and Cycling Network

- Future development will address deficiencies and gaps in the existing active transportation network through the provision of new or widened sidewalks, cycling facilities, and an improved public realm along adjacent public streets.
- Publicly accessible mid-block connections will be implemented through future development to support active travel and minimize circuitous routing.
- Future development will include on-site cycling infrastructure such as bicycle parking and maintenance facilities that are easily accessible from surrounding streets.

TDM, Parking and Curbside Management

- Future development will be managed within the multi-modal capacity of the planned transportation system.
- A supporting Transportation Demand Management (TDM) Plan will be required as part of the development application process detailing how a sustainable mode share will be achieved through physical and/or financial measures.

- The provision of on-site vehicle parking will be in alignment with the sustainable mode share target established for each development. An excessive vehicle parking supply will be discouraged to avoid perpetuating auto-dependency and vehicle-based trips.
- Surface parking will be minimized and generally limited to visitor and pick-up/drop-off facilities.
- Future development will typically include the provision of on-site pick-up/drop-off facilities to accommodate demand associated with ridehailing/taxi services and deliveries.

10 IMPLEMENTATION PLAN

The transportation network improvements identified through this study will generally be implemented gradually through the development approval process as individual or consolidated land parcels undergo redevelopment and intensification. Planned road and transit improvements to the regional network will be implemented in accordance with the Region TMP and other strategic planning documents. Similarly, it is anticipated that Region and City active transportation infrastructure will be implemented as per their respective planning policy documents based on funding availability and project prioritization.

The recommended street network should be included and validated as part of the planned update to the City's TMP. Identified new streets should form part of the TMP's future network evaluation and subsequent study recommendations. Inclusion of the recommended street network as part of the TMP will allow the City to secure land through the development process. Alternatively, recommended streets can be secured through a standalone OPA.

As a result, it is not feasible to ascertain specific phasing requirements for transportation infrastructure at this stage. It is anticipated that the planned transportation network will align with the overall sequence and timing of new development within the PMTSAs, providing localized road improvements to serve new residents and employees while gradually filling in gaps and strengthening the active transportation network to support trips to/from transit and major destinations. New development will also support the ION and bus network by providing new transit users, thereby supporting planned service frequency increases and new routes as per the GRT business plan.

10.1 RESPONSIBILITY AND IMPLEMENTATION

Detailed below in **Table 10-1** is a categorization of the planned transportation network improvements by responsibility and implementation mechanism.

Table 10-1: Transportation Recommendations – Responsibility and Implementation Mechanism

Category	Network Improvement Type	Primary Responsibility	Implementation Mechanism
Recommended Street Network	Local Roadways/Laneways (Planned or Extensions)	Private Development	OPA/TMP requirement for new development applications: • Private Ownership: secured through SPA approval condition and public access easement • Public Ownership: implemented through draft plan of subdivision (DPOS)
	Minor Collectors (Planned)	Private Development / City	OPA/TMP requirement for new development applications Implemented through DPOS or environmental assessment (EA) process (if applicable)

Category	Network Improvement Type	Primary Responsibility	Implementation Mechanism
	Intersection Signalization	Private Development or City/Region	Secured through development approvals when triggered by large redevelopment applications Implemented by City/Region if warranted by pedestrian demand or observed traffic volumes
	Turn Lane Storage Extensions	Private Development or City/Region	Secured through development approvals when triggered by large redevelopment applications Implemented by City/Region if warranted by observed traffic volumes
Recommended Pedestrian / Cycling Network	Sidewalk Twinning and Widening	Private Development	Implemented by adjacent development as an SPA approval condition
	Pedestrian & Cycling Facilities (Existing Roadways)	City/Region	Planned improvements based on funding availability / project prioritization The City may require incremental implementation of cycling facilities on adjacent roadways through development approval process
	Pedestrian & Cycling Facilities (Proposed Roadways)	Private Development	Implemented with new roadway construction as part of development approval process
	Private Mid-Block Connections	Private Development	Implemented by private development as an SPA approval condition and public easement
Recommended Transit Network	Transit Priority Measures	GRT	Implemented through GRT business plan. The Region may need to secure additional land at intersections to implement transit priority measures such as queue jump lanes.
Traffic Calming and Safety Strategies	Intersection and Road Segment Speed and Safety Improvements	City / Region	Planned improvements based on funding availability / project prioritization The City may require incremental implementation of road speed or safety measures on adjacent roadways through development approval process
Parking, Curbside Management, and TDM Strategies	Various	City / Private Development	City ZBA (Parking Requirements) Implemented by private development as a development approval condition (ZBA/SPA)

Implementation of the recommended street network will necessitate coordination between the City and private landowners to secure new public and private roadways and facilitate orderly development.

For local roadways and laneways, it is anticipated that construction will occur in a phased manner as road segments are secured through the development approval process. Road alignments should consider construction feasibility across development parcels and align with existing driveway locations where feasible. Temporary cul-de-sacs may be required if the full extent of a planned roadway is not secured through the initial development phase.

The Province of Ontario has published draft regulations (ERO 019-7891) to streamline the environmental assessment (EA) process and eliminate the need for associated study documentation for lower-impact projects. It is anticipated that the proposed minor collector roadways will not require an EA if the draft regulations are implemented. If the EA requirements continue to apply, it is anticipated that this process would be initiated either by the City or as a co-proponent with affected landowners to determine the appropriate alignment and cross-section of planned minor collector roadways.

In the event that a development application depends upon a planned roadway connection from an adjacent property not owned by the applicant, a temporary vehicular access condition may be necessary such as a private driveway. Temporary driveways should be converted to pedestrian walkways or public realm features after completion of the planned roadway connection. The City should require private developments to demonstrate functionality under both a temporary and permanent access arrangement as part of a Transportation Impact Study or related documentation. In addition, the City should secure the removal of temporary driveways once they are no longer required.

10.2 MONITORING

It is recommended that the City monitor the implementation of the GTE study recommendations and transportation network operations through the development approval process and the individual transportation impact studies (TIS) submitted in support of redevelopment projects. Individual development applications will need to demonstrate that there is sufficient transportation network capacity to support associated trips and provide a comprehensive TDM strategy to encourage sustainable mobility choices and align with (or exceed) the target mode share.

The study findings should be incorporated and validated as part of the ongoing City and Region TMP updates. The City should also undertake a supporting transportation analysis for the study area every 5-10 years to confirm the applicability and validity of the study findings and recommendations as redevelopment gradually occurs within each PMTSA.

LEA

KITCHENER

The Corporation of the
City of Kitchener

GROWING TOGETHER EAST

Transportation Analysis Study

Phase 1: Background & Methodology Memo

January 2025

Version 2.0

25175

Disclaimer

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APPENDICES

APPENDIX A **TMCS AND STPS**

APPENDIX B **INTERSECTION CAPACITY ANALYSIS EXISTING SYNCHRO RESULTS**

1 INTRODUCTION

The City of Kitchener initiated the Growing Together project to introduce new Strategic Growth Area (SGA) land uses and apply them to Kitchener's ten (10) Protected Major Transit Station Areas (PMTSAs). Kitchener City Council approved Official Plan Amendments and Zoning By-law Amendments related to the first phase, Growing Together West, on March 18, 2024. The initial phase covered seven (7) PMTSAs.

LEA Consulting Ltd. (LEA) has been retained by the City of Kitchener to undertake a Transportation and Noise Analysis Study as part of the final phase, Growing Together East, to support the implementation of an updated planning framework for the three (3) remaining PMTSAs – Block Line, Fairway, and Sportsworld, which have been defined by the Regional Official Plan and centered around existing and planned ION LRT stations. This report focuses on the transportation elements by reviewing the existing conditions from a multi-modal perspective and assessing the compatibility of the proposed land use plans with future transportation conditions. Recommendations from the study aim to inform policy updates and guide implementation of the land use plan as it relates to road, transit, pedestrian, cycling, and other mobility infrastructure improvements to meet future demand.

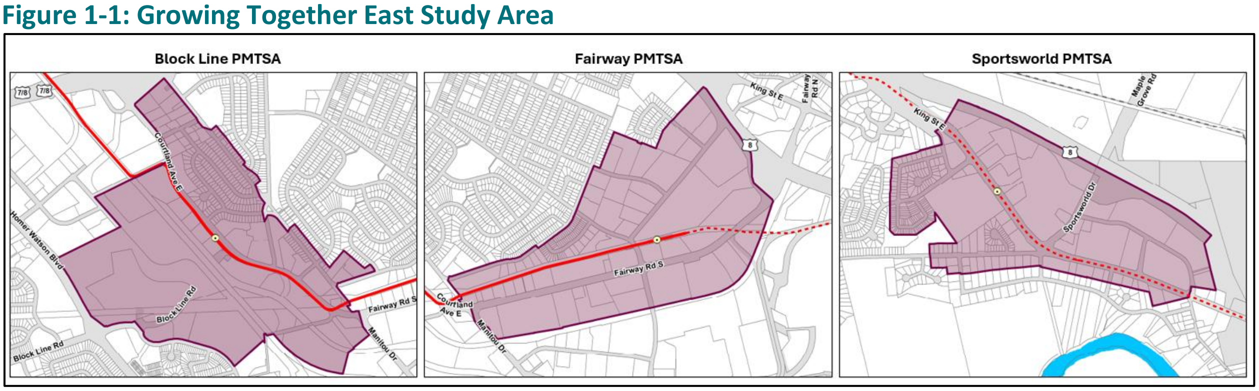
1.1 STUDY AREA

The Growing Together East study area consists of the Block Line, Fairway, and Sportsworld PMTSAs. The PMTSA boundaries contain lands within a 500-800m radius of each existing or planned ION LRT station:

- **Block Line PMTSA:** Centered around the existing Block Line ION station along Courtland Avenue E, bounded by Highway 8 to the north, an existing freight rail corridor to the south, Homer Watson Boulevard to the west, and Vanier Drive to the east.
- **Fairway PMTSA:** Centered around the existing Fairway ION station along Fairway Road S, bounded by Traynor Avenue to the north, the freight rail corridor to the south, Courtland Avenue E/Manitou Drive to the west, and Highway 8 to the east.
- **Sportsworld PMTSA:** Centered around the planned Sportsworld ION station along King Street E, bounded by Folleys Lane to the north, Pioneer Tower Road to the south, Wagon Street to the west, and Highway 8 to the east.

The Block Line, Fairway, and Sportsworld PMTSA's are illustrated in **Figure 1-1.**

Figure 1-1: Growing Together East Study Area



1.2 KITCHENER GROWING TOGETHER (2024)

The Growing Together project updates Kitchener's planning framework for ten (10) PMTSAs by revising land use policies and zoning regulations. The purpose of the Growing Together project is to better plan for growth within major transit areas and gives an opportunity for the City to modernize the existing land use framework. The project completes the work begun by Growing Together West for Kitchener's PMTSAs, and responds to provincial directions and implements the updated Regional Official Plan, while addressing new and emerging city priorities. Kitchener's PMTSAs, which are delineated in the Regional Official Plan, are subject to policies at both the provincial and regional levels. The Growing Together project aims to implement this direction through the preparation of a land use framework and supporting guidance such as transportation and noise policies to support the successful development of complete communities.

1.2.1 Kitchener Growing Together West (2024)

The Growing Together West project focused on the land use and zoning framework for seven (7) of Kitchener's ten (10) PMTSAs, which included the Urban Growth Centre and Downtown Kitchener. The seven (7) PMTSAs included:

1. Grand River Hospital
2. Central Station Innovation District
3. Victoria Park & Kitchener City Hall
4. Frederick & Queen
5. Kitchener Market
6. Borden
7. Mill

Throughout 2023, the City hosted a series of interactive workshops to collect feedback from the community. This included using 3D printed models to visualize the City's potential landscape and built form. On March 19, 2024, Kitchener City Council unanimously approved the Growing Together West plan which included Official Plan Amendments and Zoning By-law Amendments to introduce new Strategic Growth Areas (SGA) lands uses. On June 19, 2024, Regional Council approved the Growing Together Official Plan Amendments. At the time of preparing this report, the Growing Together West project is complete, and the Official Plan Amendment is in effect; however, the Zoning By-law Amendment remains under appeal.

2 BACKGROUND POLICY REVIEW

The City of Kitchener is experiencing significant growth, particularly in areas surrounding the ION LRT system. The following section highlights the key provincial, regional, and local policy documents influencing the study area.

2.1 PLANNING ACT, R.S.O. 1990, C. P.13

The Planning Act (the Act) is a provincial legislation that determines the ground rules for land use planning in Ontario. The purpose of the Act is to provide fair planning processes and a regulated land use planning system for the province. The Act also promotes provincial interests such as providing for adequate housing and employment opportunities, protecting farmland, natural resources and the environment, and promoting development that is designed to be sustainable, supportive of public transit and designed for the needs of pedestrians.

In relation to parking and transit matters, *Section 16 (15)* and *Section 16 (16)* of the Act allow single-tier and same, upper-tier municipalities to set residential and employment targets for delineated protected major transit station areas that surround existing, or planner higher order transit stations or stops. The Act also offers municipalities the flexibility to regulate parking in major transit station areas to align with provincial goals of reducing car dependency and promoting sustainable, transit-oriented development. Notably, *Section 16 (22)* of the Act removes a municipality's ability to provide and maintain parking facilities, other than parking facilities for bicycles on land that is located within a protected major transit station area or an area delineated in the official plan surrounding and including an existing or planner higher order transit station or stop. Ultimately, the Planning Act aims to empower municipalities to design more livable, walkable communities, contributing to a more sustainable and efficient urban environment.

2.2 PROVINCIAL PLANNING STATEMENT (2024)

The Provincial Planning Statement (PPS) is a streamlined province-wide land use planning policy framework that replaced both the Provincial Policy Statement 2020 and A Place to Grow: Growth Plan for the Greater Golden Horseshoe 2019 while building upon housing-supportive policies from both documents. The PPS outlines the strategic vision for land use and development within Ontario. It represents the minimum standards that will guide planning authorities and decision-makers in developing and implementing specific initiatives, including transportation facilities to support the long-term prosperity and social well-being of Ontario.

Section 2.4.2 of the PPS requires planning authorities to delineate boundaries of major transit station areas along higher order transit corridors. These major transit station areas (generally 500-800m surrounding higher order transit stations) are to include land uses and built form that supports the minimum density targets outlined by the PPS. All major transit station areas should also be planned to be transit-supportive and to achieve multi-modal access to stations. Furthermore, Section 3.2 of the PPS includes policies on creating safe and efficient movement of people and goods through a multi-modal transportation system and land use pattern that supports transit and active transportation. Proposed policies also recognize that new developments should be compatible with existing or planned corridors and transportation facilities.

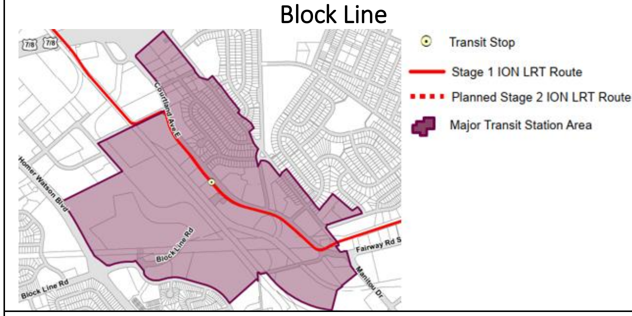
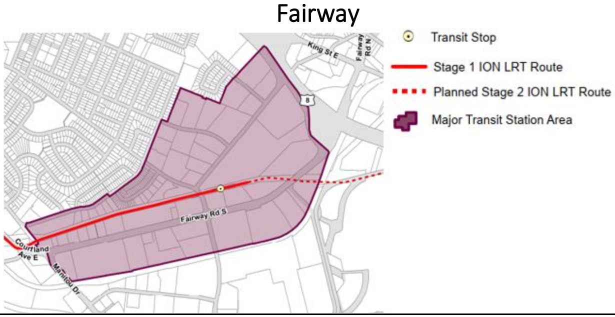
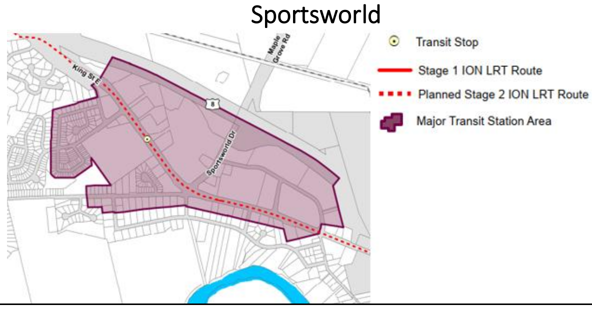
The Kitchener Growing Together East project will ensure that land use planning decisions for the study area will conform with the policies and planning directions of the PPS 2024 for MTSAs.

2.3 REGION OF WATERLOO OFFICIAL PLAN AMENDMENT 6 (2022)

The Regional Official Plan (ROP) is a long-term plan to guide growth and development across the seven (7) municipalities in the Region of Waterloo. The ROP is the principal planning document for shaping where and how the Waterloo Region will grow and develop in the future. In 2019, the Region initiated a process to review the ROP and update it to plan for growth to 2051. The vision for 2051 is for "the Waterloo Region to be an equitable, thriving, and sustainable region of connected urban and rural communities with global reach, fostering opportunities for current and future generations."

On April 11, 2023, the Minister of Municipal Affairs and Housing (MMAH) made a decision to approve the Region of Waterloo's OPA No. 6 with modifications, to accommodate forecasted population and employment growth to the year 2051. As part of the ROP review and OPA No. 6, boundaries and minimum density targets were identified for the Region's MTSAs. Specifically, Section 2.D.2 of the OPA includes MTSA policies for creating transit-supportive development standards to reduce automobile travel and support mobility networks for walking and cycling. The identified minimum density targets for the Block Line, Fairway, and Sportsworld PMTSAs within OPA No. 6 are outlined in **Table 2-1**.

Table 2-1: Region of Waterloo OPA No. 6 PMTSA Density Targets

PMTSA	Minimum Density Targets (1)
Block Line 	80
Fairway 	160
Sportsworld 	160

Note: (1) – Minimum density targets are calculated in terms of people and jobs combined per gross hectare measured over the entire station area.

2.4 REGION OF WATERLOO TRANSPORTATION MASTER PLAN – MOVING FORWARD (2018)

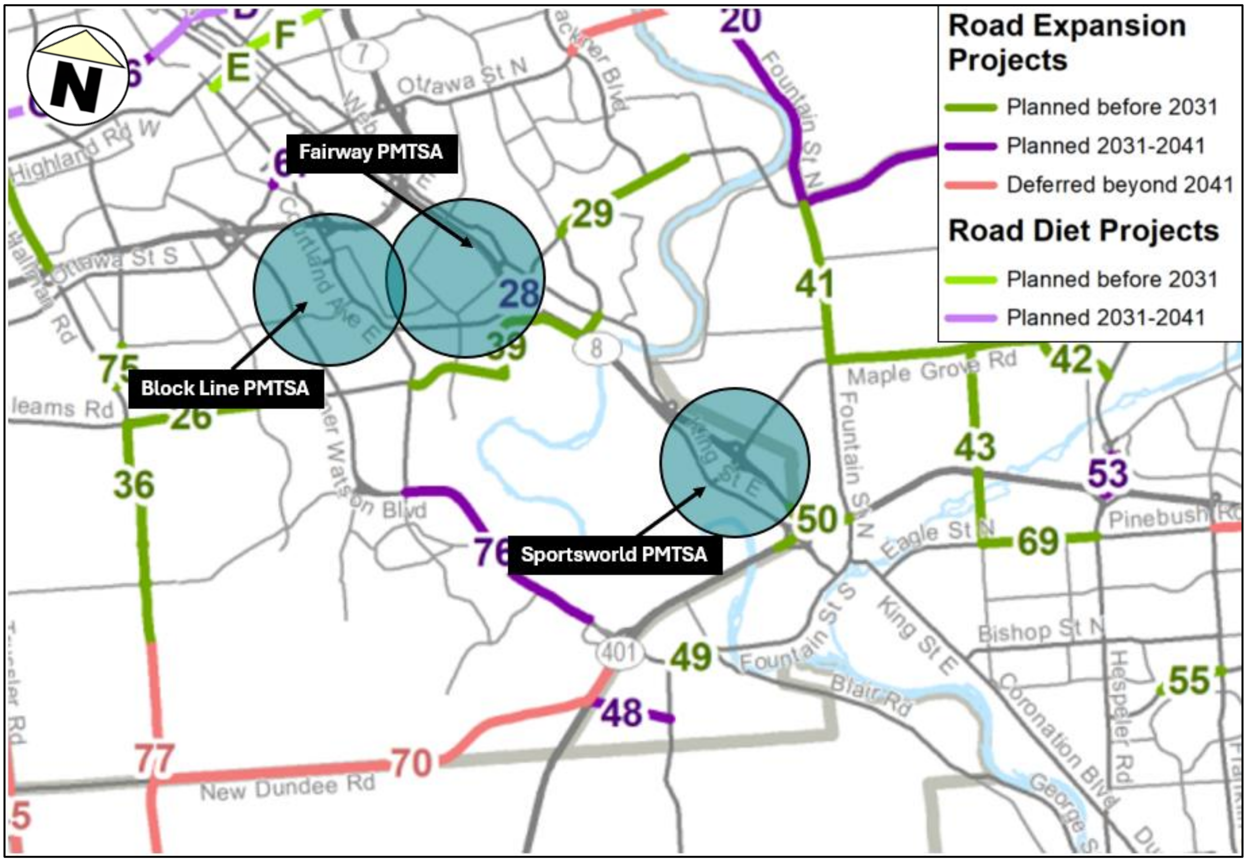
The Region of Waterloo Transportation Master Plan (TMP), *Moving Forward*, was approved by Regional Council in June 2018 as a strategic plan to guide long and short-term transportation needs over the next 25 years. This encompasses strategies for investing in regional road improvements, traffic management, public transit services, and facilities for cycling and walking. It also outlines approaches to address ongoing travel demands and the adaptations needed for advancing transportation technologies. The TMP includes five (5) broad strategies to achieve the Region's transportation goals:

- **Strategy 1:** Build a Transportation Network that Supports all Modes of Travel
- **Strategy 2:** Promote a Healthy Community
- **Strategy 3:** Develop a Frequent Transit Network
- **Strategy 4:** Enhance Inter-Regional Connections
- **Strategy 5:** Position the Region for New Mobility

Recommendations as part of Strategy 1 include building a transportation network that supports all modes of travel while responding to allocated growth and development areas. As illustrated in **Figure 2-1**, there are several road improvements near or within the PMTSA boundaries including:

- Widening of Fairway Road N between River Road and Pebblecreek Drive by 2031 (#29);
- Extension of River Road from King Street E to Bleams Road/Manitou Drive by 2031 (#39); and
- Widening of Fairway Road S between King Street E and Wilson Avenue by 2041 (#28).

Figure 2-1: Region of Waterloo TMP Recommended Road Network Improvements

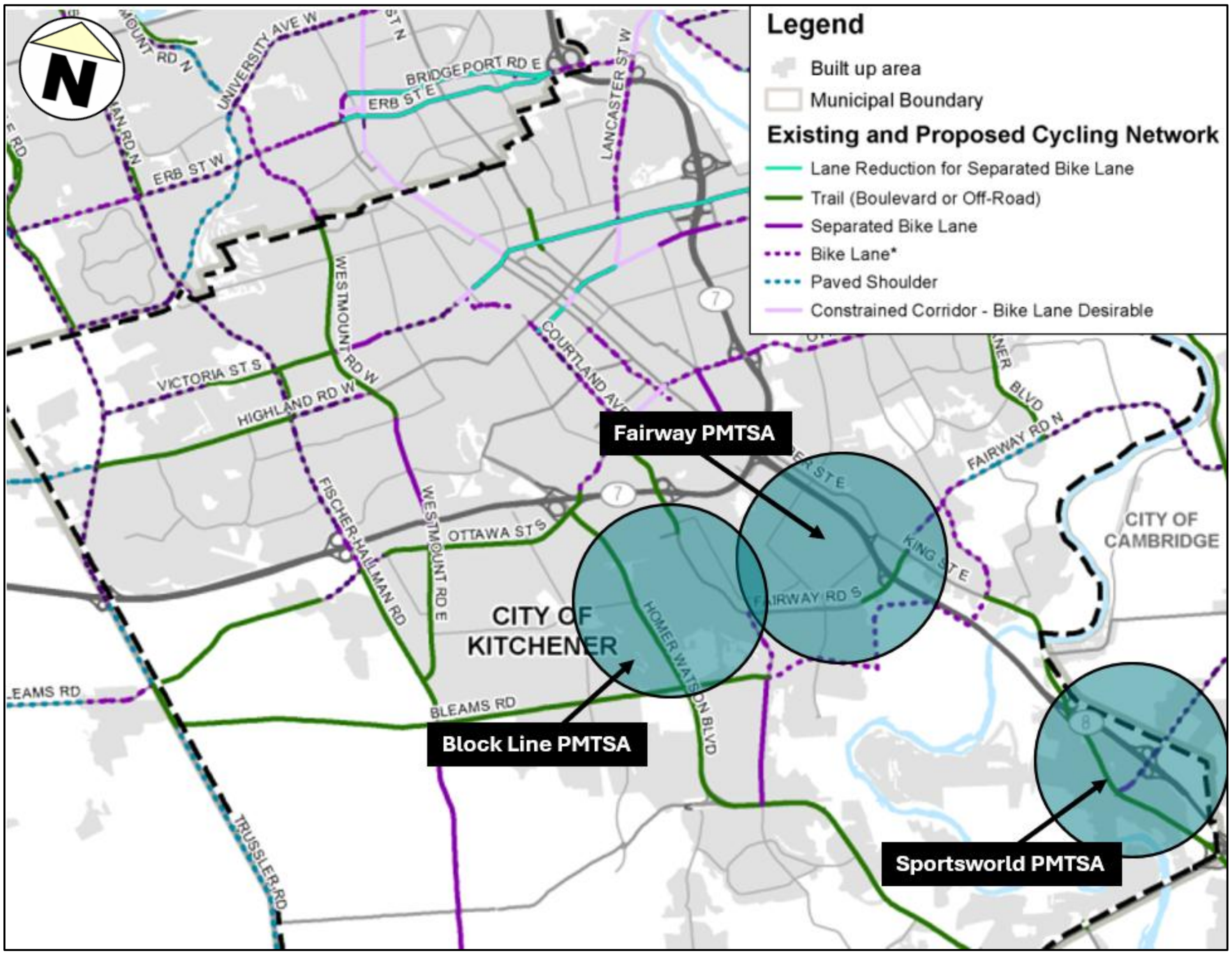


Source: Moving Forward – Transportation Master Plan, Exhibit 5.4: Waterloo Regional Roads Expansion Program, 2019 to Beyond 2041 (Region of Waterloo, 2018)

Recommendations as part of Strategy 2 include supporting healthy lifestyles and a healthy community with a focus on enhancing walking and cycling access to transit to improve first- and last-mile connections. As illustrated in **Figure 2-2**, there are several active improvements near or within the PMTSA boundaries including:

- A trail (boulevard or off-road) proposed along Fairway Road S between King Street E and Wilson Avenue;
- Bike lanes proposed along Fairway Road S between King Street E and River Road;
- Bike lanes proposed along the future River Road extension;
- Bike lanes proposed along Sportsworld Drive; and
- A trail (boulevard or off-road) proposed along King Street E to connect to future facilities within the City of Cambridge.

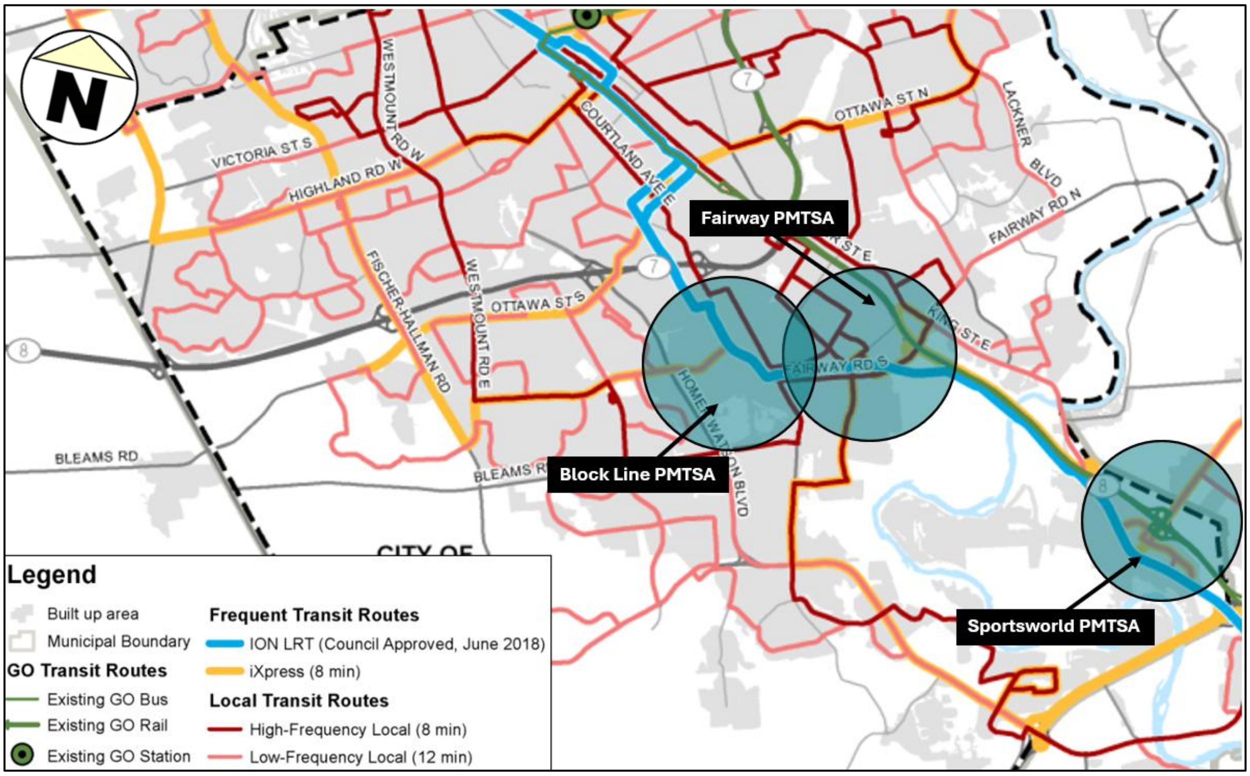
Figure 2-2: Region of Waterloo TMP Recommended Active Transportation Network Improvements



*Opportunities to update proposed bike lanes to protected facilities
Source: Moving Forward – Transportation Master Plan, Exhibit 5.8: Waterloo Region Active Transportation Network (Kitchener), (Region of Waterloo, 2018)

Recommendations as part of Strategy 3 include building on the existing transit network and services provided by GRT with a focus on completing both stages of the ION rapid transit project to provide a seamless light rail connection between Waterloo, Kitchener, and Cambridge. As illustrated in **Figure 2-4**, strategies include new iXpress routes and increasing local bus frequencies to 8-12 minutes. By 2041, iexpress routes are to be provided along Fairway Road S, Wilson Avenue, Highway 8, and Sportsworld Drive with high-frequency transit services along Fairway Road S, Wilson Avenue, Courtland Avenue E, and King Street E. By 2031, the Region also plans to implement transit signal priority at more than 50 intersections, predominately along the ION corridor.

Figure 2-3: Region of Waterloo TMP Recommended GRT and ION Network (Kitchener)



Source: Moving Forward – Transportation Master Plan, Exhibit 5.13: Waterloo Region GRT and ION Network (Kitchener), (Region of Waterloo, 2018)

Recommendations as part of Strategy 4 and 5 include increasing the amount of travel to and from the Region and positioning the Region for new mobility options including autonomous vehicles, auxiliary taxis, and demand-responsive transit.

2.5 REGION OF WATERLOO COMMUNITY BUILDING STRATEGY (2013) & PLACE-MAKING STRATEGY (2019)

The Community Building Strategy (CBS) was undertaken by the Region in collaboration with staff from the Cities of Kitchener, Cambridge and Waterloo and completed in 2013 in advance of Stage 1 ION. While station area boundaries and the development context in each of these areas have changed over the intervening decade, this document provides station area planning principles and area-specific recommendations that remain relevant to Growing Together East.

In addition, and building on station area planning work undertaken throughout the Region in advance of ION Stage 1 – including the City of Kitchener's Planning Around Rapid Transit Stations (PARTS) initiative, a project was jointly undertaken between Regional and City staff (completed in 2019) to identify place-making opportunities throughout MTSAs in Kitchener, including the identification of "green connections and corridors" throughout station areas. This culminated in the report entitled Public Art and Green Connections: Place Making in a Regional Context (the Place-Making Study or PMS), dated April, 2019.

Relevant findings from the CBS are outlined below:

Block Line Station:

- Lands immediately west of Courtland Avenue are identified as appropriate for high-density development, stepping down to mid-rise to interface with the Vanier neighbourhood.
- Access to Lennox Lewis Way from Courtland Avenue East is identified as a critical missing connection between Block Line Station and the existing high school and recreational facilities in the area. Partnerships and planning efforts to overcome this elevation/topographical challenge and the obstacle presented by the rail corridor are recommended in the CBS.

Fairway Station:

- Fairway Station is a critical hub in the network, representing the interface of ION Stages 1 and 2. Lands in proximity to the existing light rail platform are critical to the functioning and attractiveness of ION over the long term – ensuring any redesign of the Fairview Park Mall lands accounts for ION and GRT bus integration in a fashion that prioritizes access and circulation of pedestrians, transit users and cyclists is a key principle to consider in the development of area-specific policies for lands bounded by Wilson Avenue, Fairway Road South, Kingsway Drive, and Highway 8 (as well those east of Fairway Road South and he mall, wherein the future LRT corridor is identified).
- Large and underutilized parking lots offer significant opportunities for redevelopment, public amenity space, and low-speed roadway/active transportation connections.
- Consolidation of driveway access along both Regional and City roads and reconfiguration of parking lots to introduce new pedestrian and vehicle connections will assist in contributing to improving connectivity in Fairway MTSA as well.
- Reimagination of large-format retail west of Wilson Avenue on both sides of Fairway Road South presents an opportunity for mixed uses to address the street, while development at the intersection of Wilson and Fairway should be designed to account for larger future volumes of pedestrians travelling to and from Fairway Station.
- South of Fairway Road South and through the redevelopment of large-format commercial blocks, a new east-west collector road may be considered (in locations currently dominated by large parking lots) to provide new pedestrian connections and relieve congestion and pressure from Fairway Road South (e.g. from Manitou Drive to 225 Fairway Road South).
- Identifying opportunities for open space and connectivity between the existing ION platform/bus terminal and Fairway Road South should be explored.
- The Region and City should work to identify appropriate and strategic crossings of Fairway Road South as lands come in for redevelopment and road projects advance.
- Providing enhanced trail connections into the residential neighbourhood north of Fairway Station (on City roads and lands to be redeveloped) represent key opportunities for enhanced connections in the MTSA.

Sportsworld Station:

- Opportunities exist to improve pedestrian access and safety in the MTSA through the provision of sidewalks and designated crossing points along Sportsworld Drive, Gateway Park Drive/Limerick Drive, Sportsworld Crossing Road, Heldmann Road, etc. Midblock crossings should be considered in locations where intersection spacing exceeds 200 metres.
- Large and underutilized parking lots offer significant opportunities for redevelopment, public amenity space and new connections through large properties, creating a finer-grained transportation network and offering more direct paths of travel.
- The CBS supports the creation of active frontages on King Street East and other focal points – parking should be provided in structured or underground facilities as appropriate on a site-specific basis.
- Developers with sites in and around the eventual station location should be mindful that the Region may be looking for enhanced amenities to support transit operations and the passenger experience – e.g. operator facilities and public washrooms, heated waiting areas.
- A multi-use trail is planned for the north side of King Street East over the long term (along with a new sidewalk recently installed on the south side as part of the 2023-2024 reconstruction project). Connections between future development and this infrastructure should be considered, as well as to existing City facilities in and out of the station area, including existing neighbourhood trails southeast of the station area north of Pioneer Tower Road. Facilitating connections to the Hidden Valley neighbourhood and Environmentally Sensitive Policy Area may also yield public benefits in the form of access to greenspace in an otherwise heavily urbanized station area.

2.6 CITY OF KITCHENER OFFICIAL PLAN (2014)

The City of Kitchener Official Plan (OP) was approved by the Region of Waterloo on November 19, 2014, and sets out the goals and policies to coordinate planning and development in the City. The plan aims to balance the social, economic, and environmental interests of the community to the year 2031. Section 3.C.2 outlines policies for protected major transit station areas as identified on Map 2 and Map 4 of the Official Plan, which include the Block Plan, Fairway, and Sportsworld PMTSAs. As per Section 3.C.2.16 of the Kitchener OP, all PMTSAs are to focus on accommodating growth to support existing and planned transit, provide connectivity of various modes of transportation to the transit system, and achieve a mix of residential, office, institutional, and commercial development wherever appropriate for major intensification. Consistent with the Region of Waterloo Official Plan Amendment No. 06, Block Line, Fairway and Sportworld PMTSAs are to achieve 80, 160, and 160 residents and jobs combined per hectare respectively.

In February 2024, staff were directed to initiate work on a new OP for Kitchener to guide growth and development to the year 2051. The new OP will focus on key themes including but not limited to housing supply, complete walkable communities, sustainable transportation, economic development, and equity. The new OP is currently underway however, it is understood that Kitchener's new OP project will not revisit ROPA No. 6's decisions including the delineation and minimum density targets of PMTSAs.

2.7 CITY OF KITCHENER TRANSPORTATION MASTER PLAN (2013)

The City of Kitchener Transportation Master Plan (TMP) sets the long-term vision for the City's transportation system to year 2031. The overarching goal of the TMP is to "plan a transportation system that reduces dependance on the private automobile in Kitchener by 2031". To achieve this goal, the TMP developed guiding transportation policies to support an integrated transportation system with a specific focus on alternative modes of transportation (walking, cycling, and transit).

Recommendations in the TMP are categorized by travel safety, active transportation, transportation demand management, neighbourhood traffic management, parking supply and management, goods movement, traffic control, and master plan implementation. The TMP also recognizes that rapid transit station areas will be important elements of the city and regional multi-modal transportation system to being pedestrians, cyclists, and rapid transit together. Station area plans are recommended for each major transit station and are expected to include strategies and related guidelines to support rapid transit investment. Of note, the 2013 TMP is currently being updated and will be replaced by the 2026 TMP. The new TMP is expected to be more closely aligned with the new Official Plan and Growing Together objectives.

2.8 CITY OF KITCHENER CYCLING AND TRAILS MASTER PLAN (2020)

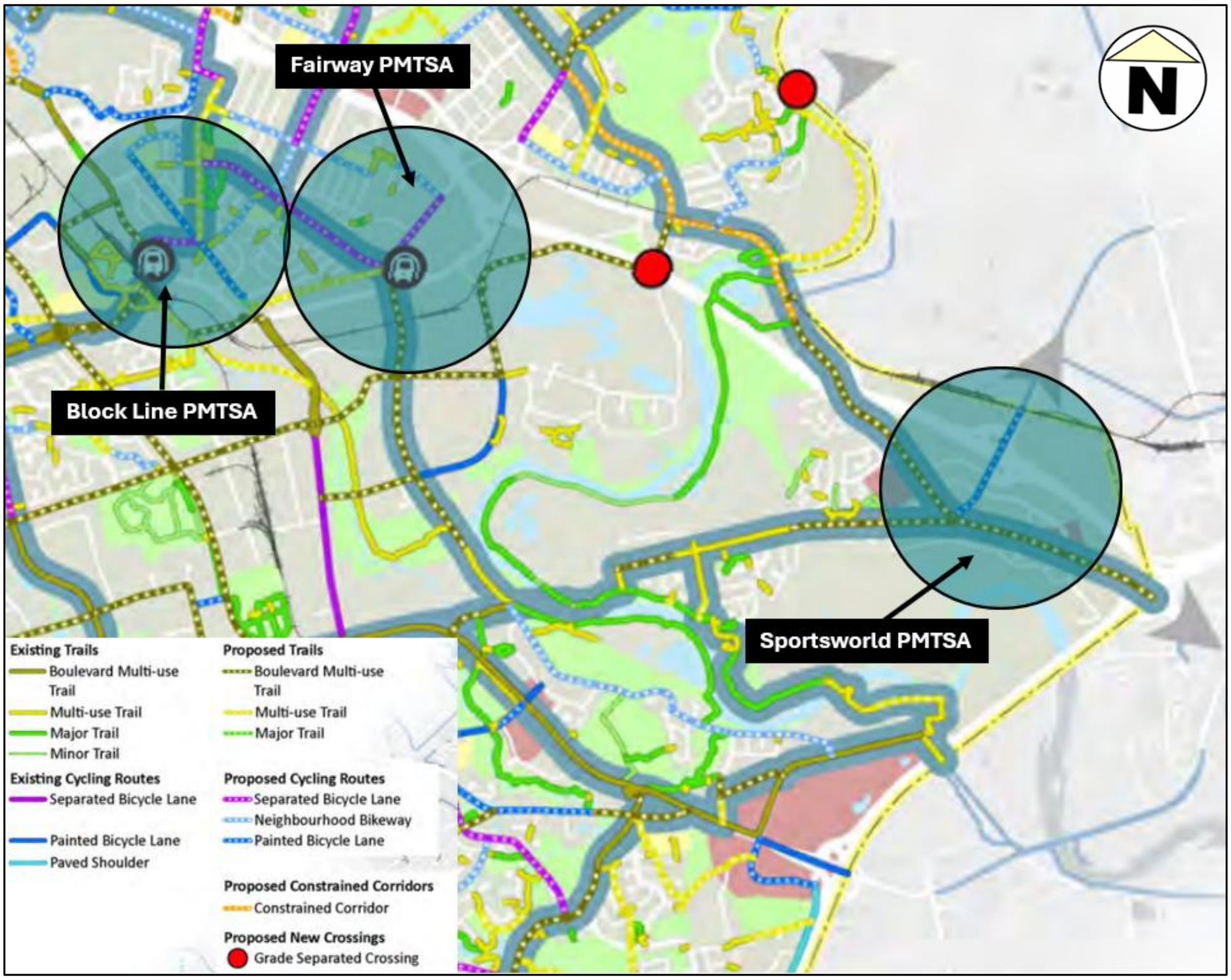
The City of Kitchener Cycling and Trails Master Plan updates and integrates the 2010 Cycling Master Plan and 2012 Multi-Use Pathways and Trails Master Plan to guide the development of safe and convenient active transportation options for all. The vision and goals of the plan serve as the basis for on-street cycling route and off-street trail improvements with a focus on promoting active transportation and reducing automobile dependence and greenhouse gas emissions to improve public health and reduce infrastructure demand.

The Cycling and Trails Master Plan recommends several cycling improvements within and surrounding the study area as illustrated in **Figure 2-4**. Notable improvements include:

- Separated bike lanes proposed along Wilson Avenue, north of Fairway Road S[1];
- Boulevard multi-use trail proposed along Wilson Avenue, south of Fairway Road S;
- Boulevard multi-use trail proposed along future River Road extension;
- Boulevard multi-use trail proposed along King Street E; and
- Separated bike lanes proposed along Kingsway Drive.

Of note, painted bike lanes are currently provided along Wilson Avenue north of Traynor Avenue. It is understood that this segment is being reconstructed to include separated cycling facilities as per the City's Cycling and Trails Master Plan. This work will be completed by 2025.

Figure 2-4: City of Kitchener Cycling and Trails Master Plan Recommended Improvements

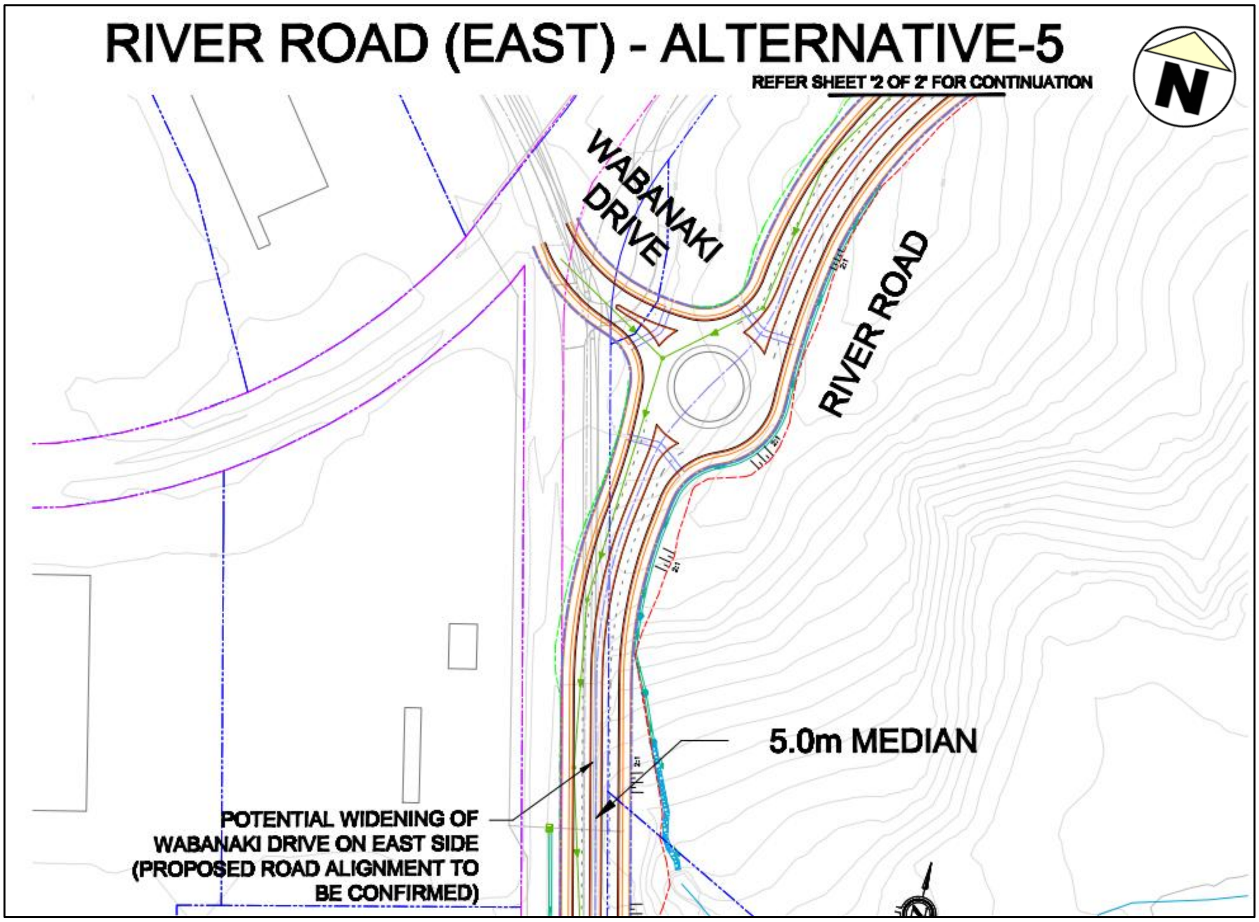


Source: Cycling & Trails Master Plan, Figure ES-1: Cycling and Trails Network Map (City of Kitchener, 2020)

2.9 RIVER ROAD EXTENSION (REGIONAL ROAD #56) EA

In 2006, the Region of Waterloo initiated a Municipal Class Environmental Assessment (MCEA) study for the proposed extension of River Road, from King Street to Manitou Drive in the City of Kitchener. On March 2014, Regional Council approved the Recommended Design Concept which included a 3.6km 4-lane road with a continuous centre median and multi-use trails on both sides between King Street and Manitou Drive. Within the study area, the River Road extension is proposed to intersect with Wabanaki Drive, Wilson Avenue, and Manitou Drive as a roundabout. A realignment of Wabanaki Drive is proposed as part of the River Road extension as illustrated in **Figure 2-5**.

Figure 2-5: River Road Extension – Proposed Roundabout at Wabanaki Drive



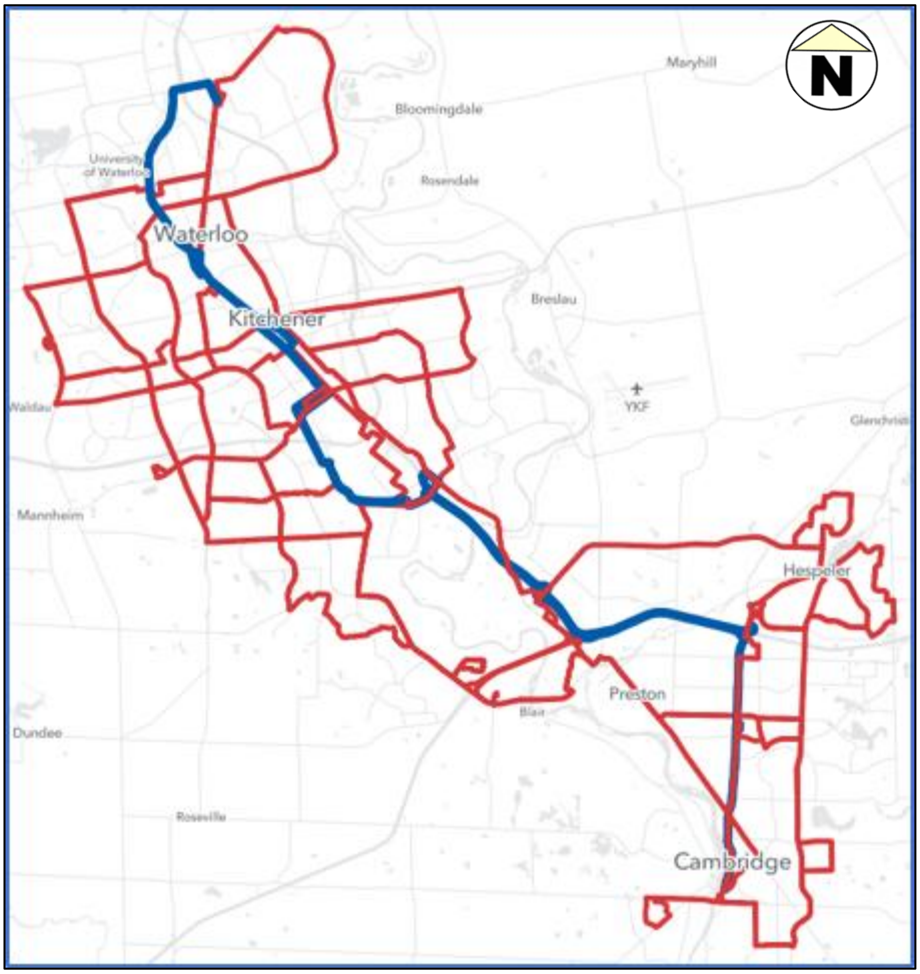
Source: River road Extension EA (Region of Waterloo, 2014)

2.10 GRT BUSINESS PLAN – CONVENTIONAL BUS AND TRAIN BUSINESS PLAN

In June 2024, Grand River Transit (GRT) launched their Business Plan project to guide transit investment priorities to 2030 and beyond. The GRT Business Plan addresses strategic actions to make transit an easy transportation choice for the Waterloo Region. As part of the project, a Conventional Bus and Train Business Plan is being developed to guide the expansion of existing services focusing on strategic priorities including frequency, speed, new coverage, and intuitive transit. The following investments are proposed to help achieve these strategic priorities:

- **Frequent Transit Network:** Service every 10 minutes on weekdays (7AM to 7PM) and every 15 minutes at all other times. **Figure 2-6** illustrates the proposed frequent transit network. Within the Block Line, Fairway, and Sportsworld PMTSAs, Routes 301, 302, 201, 203, 206, 7, 8, and 12 are part of the proposed frequent transit network.

Figure 2-6: Proposed Frequent Transit Network (GRT Business Plan)



Source: GRT Business Plan (2024)

- **Strategic New Coverage:** Strategic expansion focused on new growth and industrial areas with streamlined routes for useful improvements to coverage.
- **Consistent Schedules:** Enhance frequency to make schedules more consistent all day, everyday, so transit trips would be more equitable and intuitive for riders.
- **Highway Express:** Introduce frequent and rapid single-seat service between Cambridge, Kitchener, and Waterloo, giving riders more time back in their day. The proposed 15-minute service line will have stops at Conestoga Station, Sportsworld Station, Pinebush Station, and Cambridge Centre Station
- **Overnight Network:** Introduce 24/7 service on key routes across Cambridge, Kitchener, and Waterloo, with 30-minute overnight frequency supporting shift workers, students, and core areas. Preliminary proposed overnight routes that service the PMTSA areas include 301, 302, 201, 8, and 12. The Fairway and Sportsworld stations will be key hubs for the proposed overnight network.

The final GRT Business Plan is planned to be presented to the public in February/March 2025 followed by Regional Council review and endorsement in March/April 2025. The proposed investments in the GRT business Plan will continue to reinforce transit connectivity within the study area with Sportsworld and Fairway as key mobility hubs.

2.11 SCHNEIDER'S CREEK MULTI-USE TRAIL

The Schneider's Creek Multi-Use Trail extends from Manitou Drive in the north to Huron Road in the south. The Region of Waterloo is currently undertaking a study to extend the trail north, approximately 1.3km. This portion of the trail will complete the missing section of the TransCanada Trail and will be used for walking, cycling, and other recreational modes of transportation. The project will include a pedestrian/cycling bridge over Schneiders Creek, an at-grade crossing of the CN railway, and connections to other exiting adjacent trails. The proposed alignment of the trail extension is illustrated in **Figure 2-7**. Detailed design is planned for 2025 with construction starting in 2026.

Figure 2-7: Proposed Schneider's Creek MUT Alignment

Source: Region of Waterloo

2.12 SUMMARY OF POLICY REVIEW

A summary of the planned transportation improvements is provided in **Table 2-2**.

Table 2-2: Planned Transportation Improvements

Roadway	Network Improvement (Within PMTSA Study Area)	Horizon Year	Network Improvement (Surrounding PMTSA Study Area)	Horizon Year
Fairway Road N	-	-	**Region of Waterloo TMP** • Road widening between River Road and Pebblecreek Drive	2031
Courtland Avenue E	**City of Kitchener Cycling and Trails Master Plan** • Proposed boulevard multi-use trail between Hayward Avenue and Block Line Road	2041	-	-
Hillmount Street	**City of Kitchener Cycling and Trails Master Plan** • Proposed separated bike lanes between Courtland Avenue E and Vanier Drive	2030	-	-
Vanier Drive	**City of Kitchener Cycling and Trails Master Plan** • Proposed painted bike lanes between Boniface Avenue and Traynor Avenue	Beyond 2040	-	-
Fairway Road S	**Region of Waterloo TMP** • Widening from King Street E to Wilson Avenue (four to six travel lanes) • Proposed trail between King Street E and Wilson Avenue • High-frequency local transit (8 min) • ixpress transit (8 min)	2041	**Region of Waterloo TMP** • Proposed bike lanes between King Street E and River Road	2041
River Road	-	-	**Region of Waterloo TMP** Extension from King Street E to Bleams Road/Manitou Drive	2031
	-	-	**Region of Waterloo TMP** • Proposed bike lanes along future River Road extension	2041
	-	-	**City of Kitchener Cycling and Trails Master Plan** • Proposed boulevard multi-use trail along the future River Road extension	2030
Wabanaki Drive	**River Road Extension Class EA**	2031	-	-

Roadway	Network Improvement (Within PMTSA Study Area)	Horizon Year	Network Improvement (Surrounding PMTSA Study Area)	Horizon Year
	• Realignment of Wabanaki Drive as part of the River Road extension			
King Street E	**Region of Waterloo TMP** • Proposed trail between River Road and Fountain Street S • High-frequency local transit (8 min)	2041	-	-
	City of Kitchener Cycling and Trails Master Plan • Proposed boulevard multi-use trail between River Road and Highway 401	2030		
Wilson Avenue	**Region of Waterloo TMP** • High-Frequency Local (8 min) • ixpress (8 min)	2041	-	-
	City of Kitchener Cycling and Trails Master Plan • Separated bike lanes between Kingsdale Community Centre and Fairway Road S • Boulevard Multi-Use Trail between Fairway Road S and Grand Crest place	2030	-	-
Sportsworld Drive	**Region of Waterloo TMP** • Proposed bike lanes along Sportsworld Drive • ixpress (8 min)	2041		
Pioneer Tower Road	**City of Kitchener Cycling and Trails Master Plan** • **Proposed** boulevard multi-use trail between King Street E and Pioneer Ridge Drive	Beyond 2040		

3 EXISTING TRANSPORTATION AND LAND USE CONTEXT

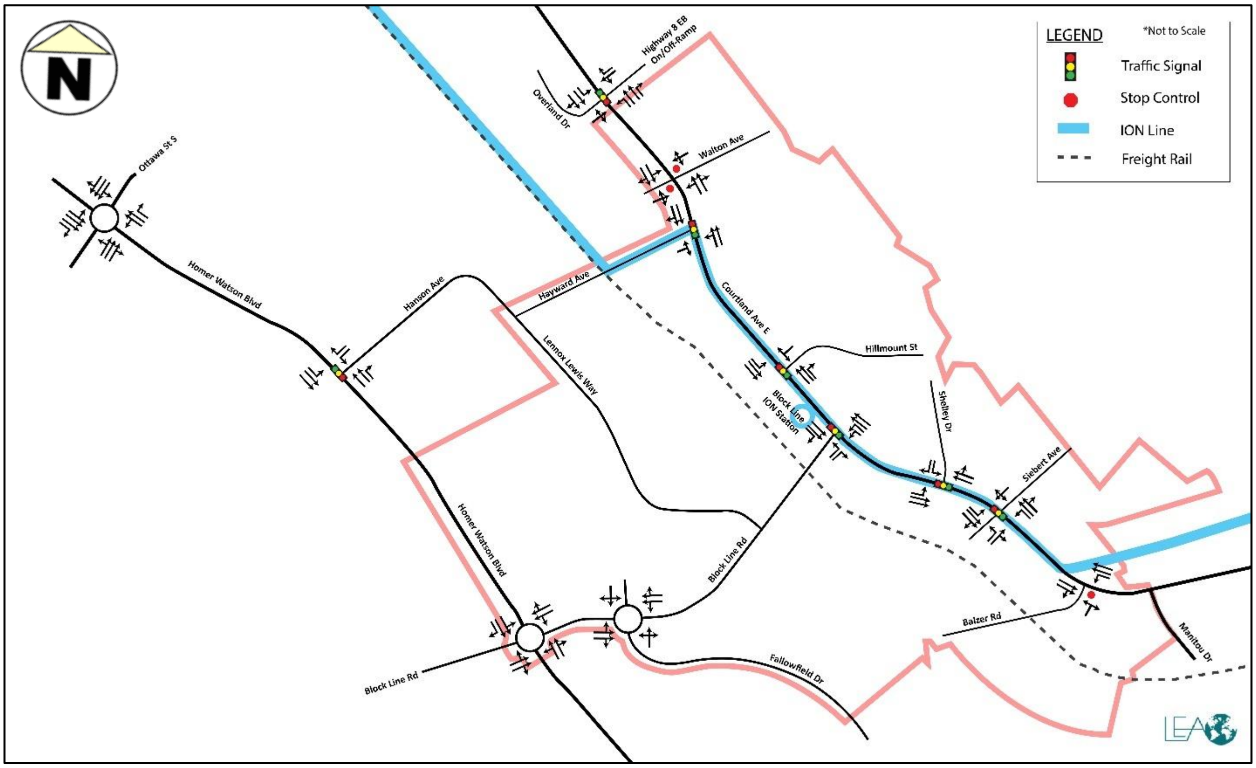
This section identifies and assesses the existing transportation conditions within the study area, including the road, transit, cycling, and pedestrian networks. An overview of the existing transportation conditions within the Block Line, Fairway, and Sportsworld PMTSAs is provided to understand the existing challenges and deficiencies surrounding the area for various transportation modes. Of note, the analysis study area in **Section 6** was determined based on the anticipated traffic impacts associated with intensification within the MTSAs. Several key intersections outside of the MTSA boundary were included in the traffic analysis because of their importance to overall traffic circulation and the regional road network.

3.1 BLOCK LINE PMTSA

The study includes the analysis of the following roads and intersections within the Block Line PMTSA. The analyzed intersections and lane configurations are illustrated in **Figure 3-1**.

- Homer Watson Boulevard & Ottawa Street S (Unsignalized roundabout);
- Homer Watson Boulevard & Hanson Avenue (Signalized);
- Homer Watson Boulevard & Block Line Road (Unsignalized roundabout);
- Block Line Road & Fallowfield Drive (Unsignalized roundabout);
- Courtland Avenue E & Overland Drive / Highway 8 on/off-ramp (Signalized);
- Courtland Avenue E & Walton Avenue (Unsignalized);
- Courtland Avenue E & Hayward Avenue (Signalized);
- Courtland Avenue E & Hillmount Street (Unsignalized);
- Courtland Avenue E & Block Line Road (Signalized);
- Courtland Avenue E & Shelley Drive (Unsignalized);
- Courtland Avenue E & Siebert Avenue (Unsignalized); and
- Blazer Road & Courtland Avenue E (Unsignalized).

Figure 3-1: Existing Road Network and Lane Configuration – Block Line PMTSA

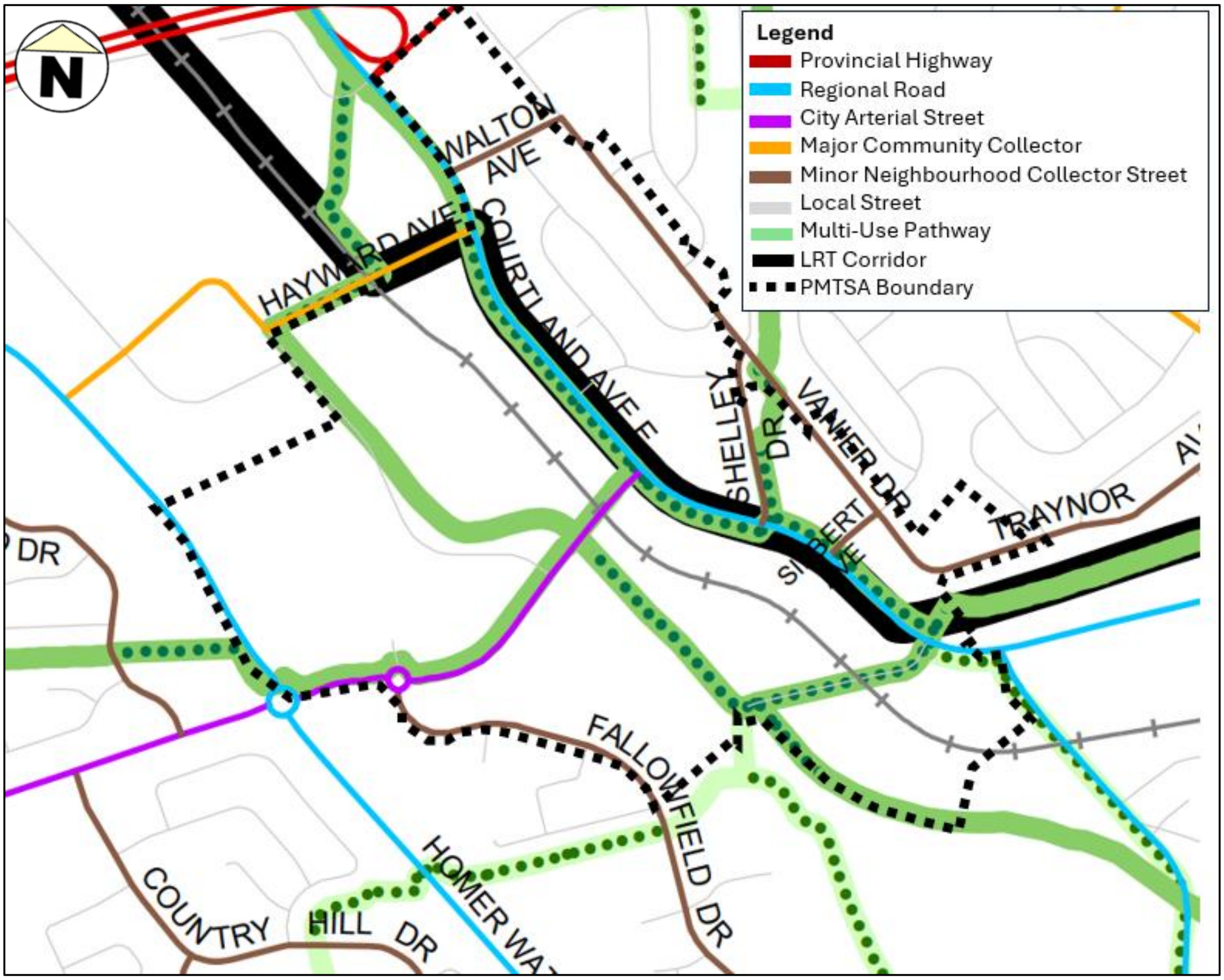


3.1.1 Existing Road Network – Block Line

The Block Line PMTSA study area is currently serviced by an existing network of regional and municipal roads and is generally bounded by Highway 8 to the north, the freight rail corridor to the south, Vanier Drive to the east, and Homer Watson Boulevard to the west. The ION LRT bisects the study area and provides rapid transit service via Block Line Station. The freight rail corridor runs in a north-south direction through the Block Line PMTSA.

Within the overall study area, there are four (4) regional roadways: Homer Watson Boulevard, Ottawa Street S, Courtland Avenue E, and Manitou Drive, which is also the boundary between the Block Line and Fairway PTMSAs. The study area also includes one (1) arterial street: Block Line Road and six (6) collector roadways: Hanson Avenue, Fallowfield Drive, Walton Avenue, Hayward Avenue, Shelley Drive, and Siebert Avenue. Additionally, there are three (3) local roadways: Overland Drive, Hillmount Street, and Balzer Road. The existing road classification is shown in **Figure 3-2,** which is based on the City of Kitchener Official Plan (2014).

Figure 3-2: Existing Road Classification – Block Line PMTSA



Source: City of Kitchener Official Plan (2014)

Table 3-1 includes details on the existing roads within the study area.

Table 3-1: Summary of Study Area Roadways– Block Line PMTSA

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
Homer Watson Boulevard	Homer Watson Boulevard is a north-south regional road extending from Highway 401 in the south to Stirling Avenue South in the north.	Region of Waterloo	Regional Road	70	4
Ottawa Street S	Ottawa Street S is an east-west regional road extending from Trussler Road in the west to King Street E in the east before continuing at Ottawa Street N.	Region of Waterloo	Regional Road	60	4

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
Courtland Avenue E	Courtland Avenue E is a regional road, operating generally in a north-south direction. The roadway extends southward from Queen Street S to Manitou Drive, before continuing as Fairway Road S. The ION runs parallel to this roadway within the study area.	Region of Waterloo	Regional Road	60	4
Manitou Drive	Manitou Drive is a north-south regional road extending from Courtland Avenue E/ Fairway Road S in the north to Homer Watson Boulevard in the south.	Region of Waterloo	Regional Road	60	2
Block Line Road	Block Line Road is an east-west arterial roadway extending from Courtland Avenue E in the east to Westmount Road in the west.	City of Kitchener	Arterial Street	50	4
Hanson Avenue	Hanson Avenue is an east-west collector roadway extending from Homer Watson Boulevard in the west to Hayward Avenue in the east, before continuing as Lennox Lewis Way.	City of Kitchener	Major Community Collector Street	50*	2
Fallowfield Drive	Fallowfield Drive is a north-south collector roadway operating between Beams Road in the south to Block Line Road.	City of Kitchener	Minor Neighbourhood Collector Street	40	2
Walton Avenue	Walton Avenue is an east-west collector roadway operating between Courtland Avenue E in the west to Vanier Drive in the east.	City of Kitchener	Minor Neighbourhood Collector Street	40	2
Hayward Avenue	Hayward Avenue is an east-west collector roadway operating between Hanson Avenue / Lennox Lewis Way in the west to Courtland Avenue E in the east	City of Kitchener	Major Community Collector Street	50*	2
Shelley Drive	Shelley Drive is a north-south collector roadway extending from south of Highway 8 in	City of Kitchener	Minor Neighbourhood Collector Street	40	2

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
	the north to Courtland Avenue E in the south.				
Siebert Avenue	Siebert Avenue is generally an east-west collector roadway extending from Courtland Avenue E in the west to Clark Avenue in the east.	City of Kitchener	Minor Neighbourhood Collector Street	40	2
Overland Drive	Overland Drive is an east-west local roadway extending west from Courtland Avenue E, offering access to private properties.	City of Kitchener	Local Street	50*	2
Hillmount Street	Hillmount Street is an east-west local roadway extending from Courtland Avenue E in the west to Shelley Drive in the west.	City of Kitchener	Local Street	40	2
Balzer Road	Balzer Road is an east-west local roadway extending from Courtland Avenue E in the east to Blazer Creek Trail in the west.	City of Kitchener	Local Street	50*	2

**Assumed speed limit as per the Region of Waterloo 2011 Visum Model*

3.1.2 Existing Transit Network – Block Line

The Block Line PMTSA study area is currently serviced by Grand River Transit (GRT), where ION and iXpress bus stops and services are provided. A total of seven (7) transit routes have been identified in the Block Line PMTSA study area.

The existing GRT network within the study area is illustrated in **Figure 3-3**. **Table 3-2** detail the available services in the area.

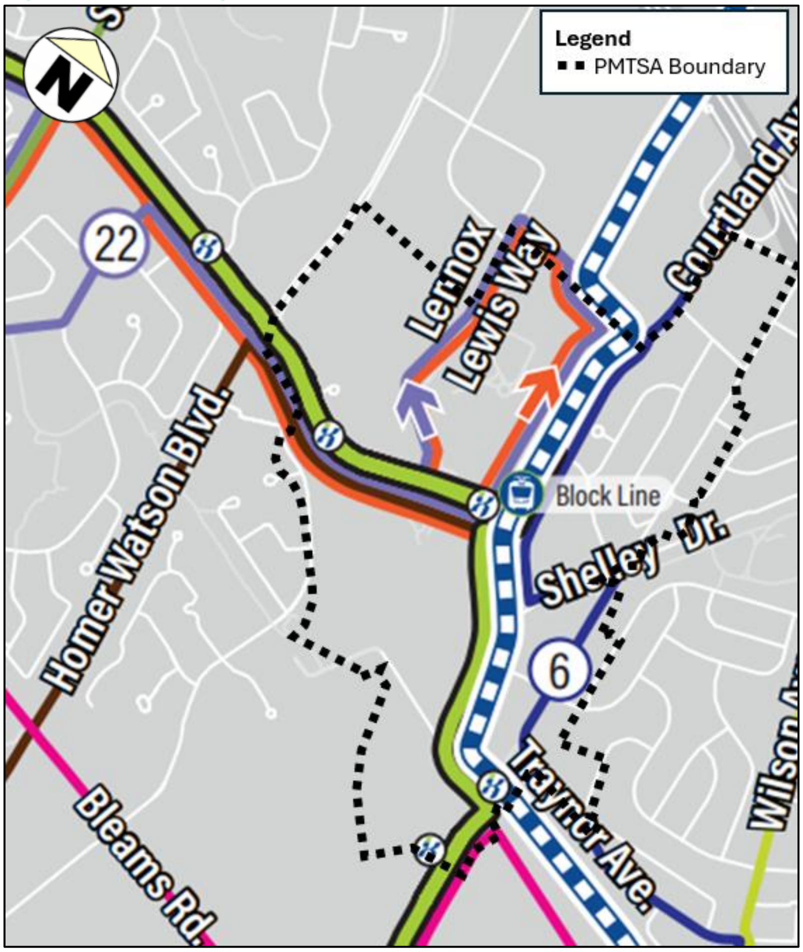
Table 3-2: Existing Transit Service – Block Line PMTSA

Transit System	Route	Description	Frequency *
Grand River Transit (GRT)	ION LRT (301)	LRT service operating between Conestoga Station and Fairway Station.	10 minutes on-peak 15 minutes off-peak
	Fischer-Hallman iXpress (201)	Express bus service operating between Conestoga Station and Conestoga College. A direct connection to ION LRT is provided via Block Line Station and Fairway Station.	10 minutes on-peak 15 minutes off-peak
	Bridge-Courtland (6)	Bus service operating between Conestoga Station and Fairway Station. A direct connection to ION LRT is provided via Block Line Station and Fairway Station.	30 minutes
	Westmount (12)	Bus service operating between University/King and Fairway Station (continues as Route 8 past	15 minutes on-peak

Transit System	Route	Description	Frequency *
		University/King). A direct connection to ION LRT is provided via and Fairway Station.	
	Laurentian West (22)	Bus service operating between Sunrise Centre Station and Block Line Station. A direct connection to ION LRT is provided via Block Line Station.	60 minutes
	Trillium (26)	Bus service operating to and from Block Line Station, while looping to Huron Natural Area.	30 minutes
	Huron (33)	Bus service operating between Sunrise Centre and Block Line Station. A direct connection to ION LRT is provided via Block Line Station.	30 minutes

** Headways provided are non-summer frequencies.*

Figure 3-3: Existing Grand River Transit Network – Block Line PMTSA



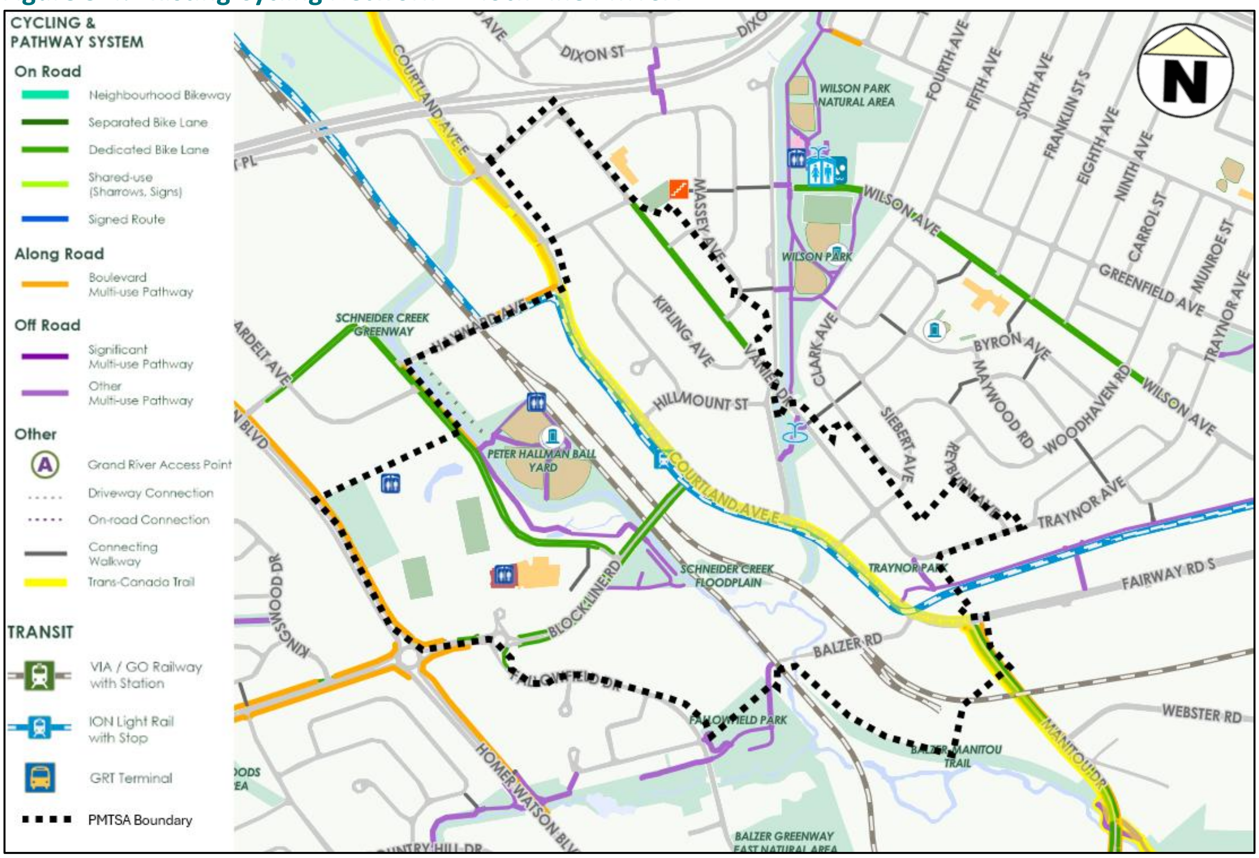
Source: Grand River Transit System Map (September 2024)

Within the Block Line PMTSA, there are numerous transit services available, providing several options for residents and visitors to easily reach employment, discretionary, and recreational destinations. Block Line station serves as an important transit connection point for routes that service south and west Kitchener. The proposed ION extension past Fairway Station will enhance the convenience of transit-based travel and provide an improved transit experience within the study area.

3.1.3 Existing Cycling Network – Block Line

The Block Line PMTSA study area has numerous cycling options. Dedicated bike lanes are provided along Hanson Avenue/Lennox-Lewis Way and portions of Block Line Road and Vanier Drive. Furthermore, an in boulevard multi-use pathway is provided along Homer Watson Boulevard, providing a key active transportation link within the study area. There are also numerous off-road cycling facilities within the Peter Hallam Ballyard/Activa Sportsplex. The Trans-Canada Trail runs along Courtland Avenue E, before continuing south along Manitou Drive. An in boulevard multi-use pathway is provided for most of the Trans Canada Trail but is interrupted in the study area due to the ION alignment. **Figure 3-4** illustrates the existing cycling facilities within the study area.

Figure 3-4: Existing Cycling Network – Block Line PMTSA



Source: City of Kitchener Bike Web Map

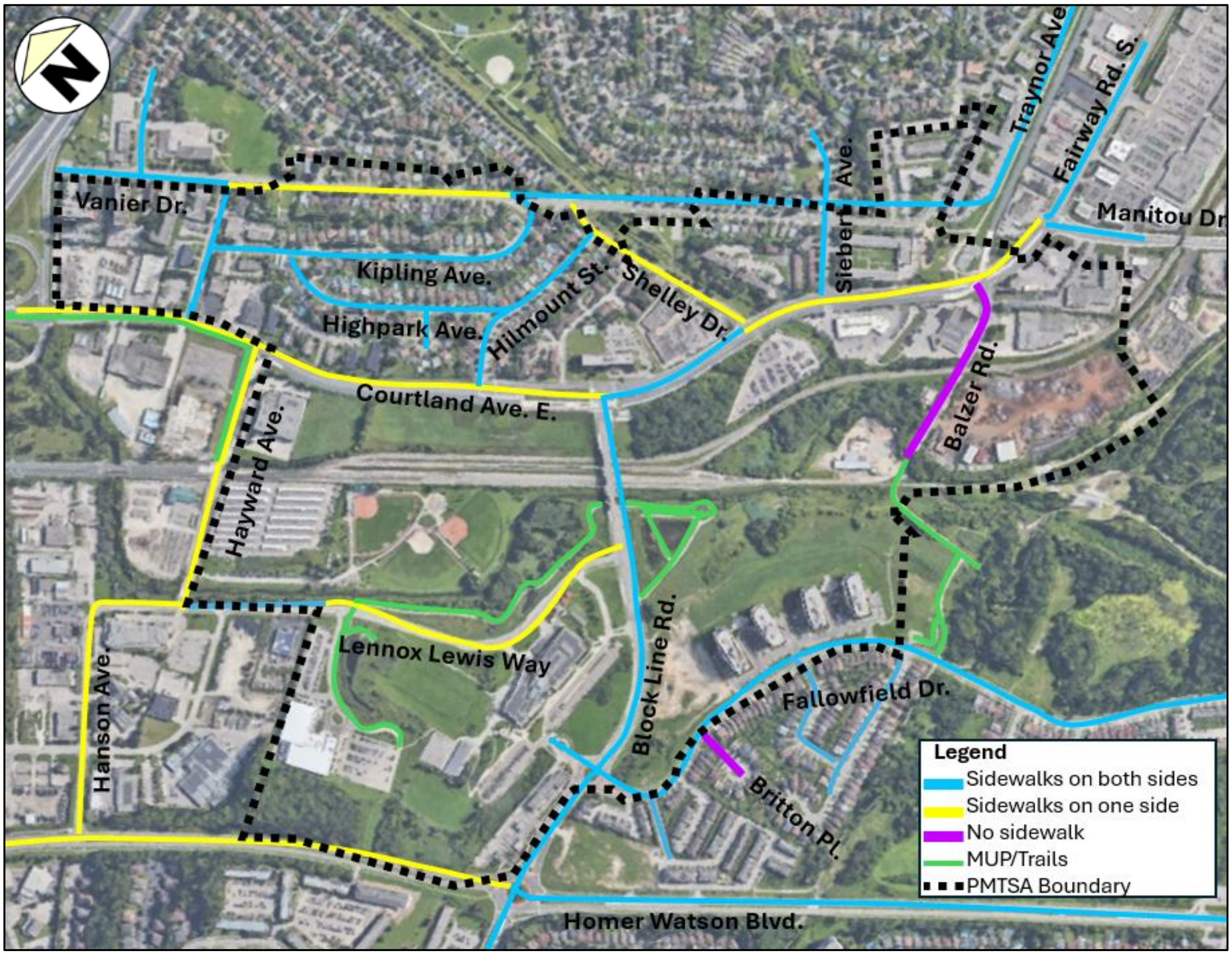
The existing cycling network is supportive of active transportation; however, a few gaps have been identified. Notably, there is a break in the Trans Canada Trail network along Courtland Avenue E, between Hayward Avenue and Manitou Drive. There is an opportunity to consider cycling infrastructure along this road segment to provide a continuous cycling network for the Trans Canada Trail and improve active transportation connectivity between the north and south areas of the Block Line PMTSA. Furthermore, Block Line is a high volume/high speed road. While painted bike lanes are provided east of Homer Watson Boulevard, implementing dedicated cycling facilities is critical to increase comfort and safety for cyclists and would create better access to the transit station.

3.1.4 Existing Pedestrian Network – Block Line

The study area exhibits somewhat good connectivity in the pedestrian network which can be attributed to the number of local, collector, and arterial streets with continuous sidewalks on at least one side of the road, and the presence of physical safety infrastructure (i.e., pedestrian rail crossing lights and arms) where the ION intersects a roadway. A review of the existing pedestrian sidewalk network indicates that most roadways have sidewalks on either side of the road; however, a few roads have no sidewalks at all. **Figure 3-5** illustrates the existing pedestrian sidewalk network.

Sidewalks are available on both sides of Fallowfield Drive, Homer Watson Boulevard, south of Block Line Road, Block Line Drive, Walton Avenue, Kipling Avenue, Siebert Avenue, and Manitou Drive. Sidewalks are also available on both sides for portions of Courtland Avenue E, Hayward Avenue, and Hanson Avenue / Lennox Lewis Way. The remaining segments of these roadways only have sidewalks on one side of the roadway. Roadways with sidewalks on only one side of the road include Vanier Drive and Shelley Drive. Street within the study area with no sidewalks include Balzer Road, which subsequently connects to the Balzer Creek Trail, and Britton Place which serves 20 semi-detached dwellings. Furthermore, the existing at-grade freight rail crossing at Balzer Road is currently unsafe from a pedestrian perspective due to the lack of rail arms. However, pedestrian crossings are available at all signalized intersections within the study area.

Figure 3-5: Existing Pedestrian Sidewalk Network – Block Line PMTSA

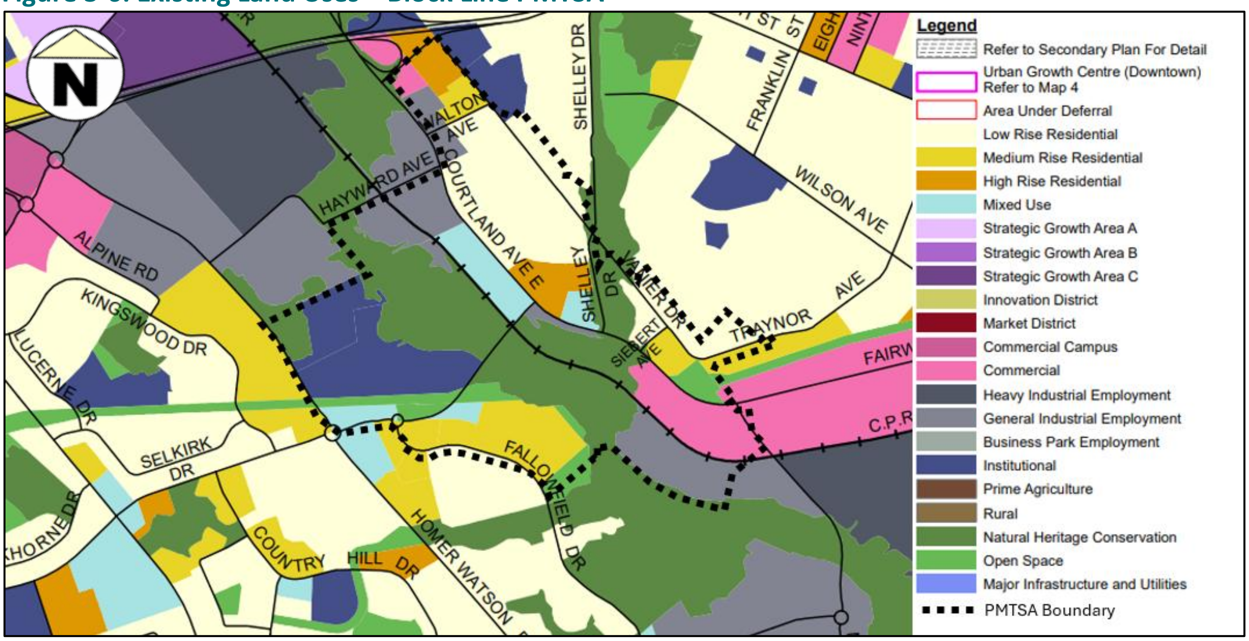


There are a few gaps in the sidewalk network as some roadways have either no sidewalks or discontinuous sidewalks provided on only one side of the street. These existing gaps in the pedestrian network provide opportunities to add new sidewalks or infill gaps which would improve the connectivity for pedestrians in the study area. The Block Line PMTSA would also benefit from additional mid-block crossings to support future transit-oriented development and create a pedestrian-friendly network. While the existing land uses are generally industrial, there are also opportunities to improve the pedestrian experience along Balzer Road, fulfilling the need for a pedestrian connection between Courtland Avenue E and the Balzer Creek Trail and improving pedestrian safety at the freight rail crossing. Overall, improvements to the active transportation network will be critically important to support the development of a transit-oriented community within the Block Line PMTSA.

3.1.5 Existing Land Use Context – Block Line

At the time of preparing this report, the Block Line PMTSA has an estimated population of 4,569 people and 993 jobs in 2024. Within the PMTSA, there are numerous existing land uses, as illustrated in **Figure 3-6**. The majority of the study area is currently occupied by general industrial and institutional uses with a few residential and commercial pockets. There is also a large portion of the study area that is within floodplain limits and designated as Natural Heritage Conservation. The lands surrounding the PMTSA mainly consist of residential uses to the east and west, and industrial uses to the north. Key destinations within the PMTSA include the Activa Sportsplex, St. Mary's High School, and Peter Hallman Ball Park.

Figure 3-6: Existing Land Uses – Block Line PMTSA



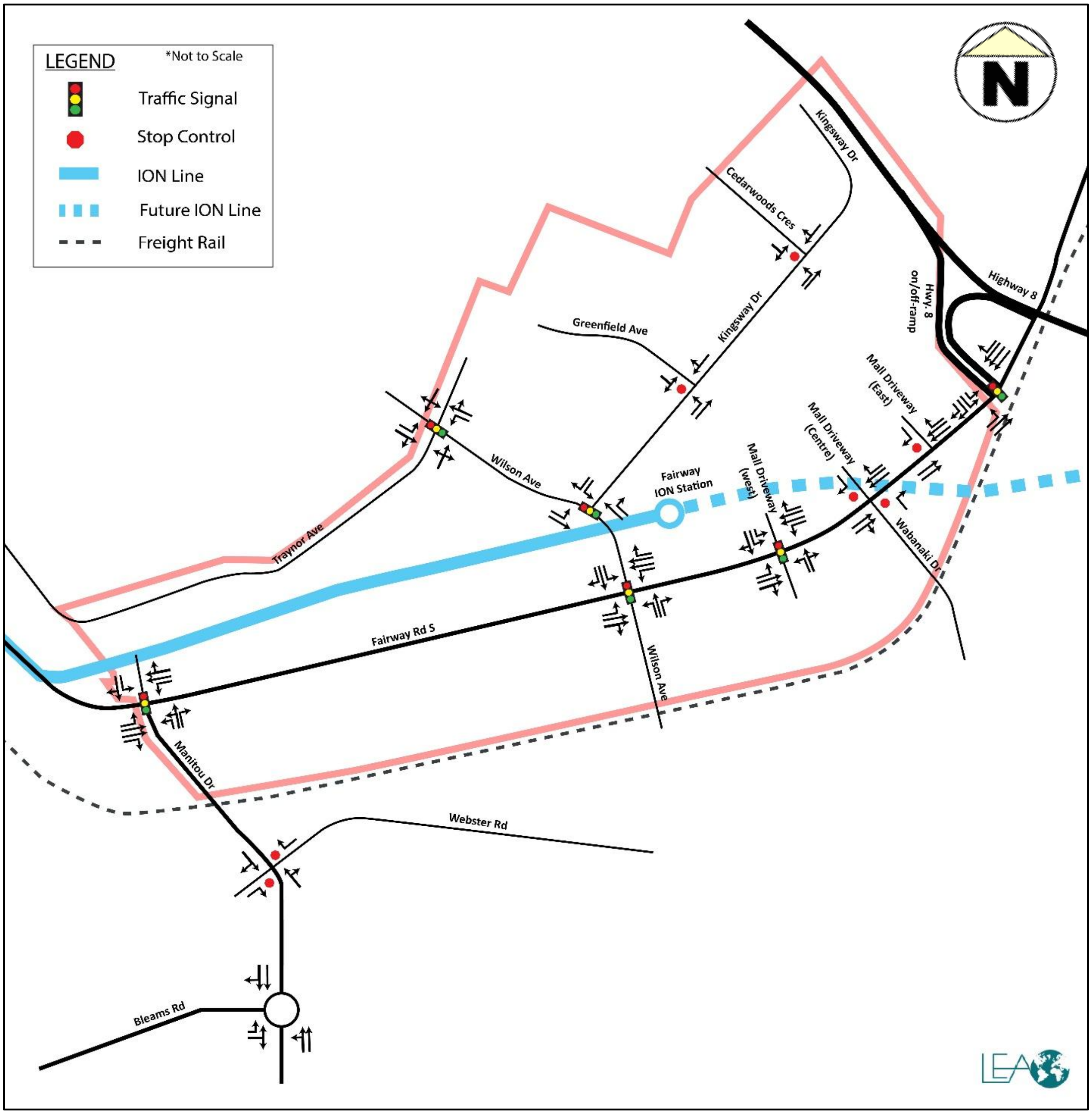
Source: City of Kitchener Official Plan, Map 3 – Land Use (City of Kitchener, 2024)

3.2 FAIRWAY PMTSA

The study includes the analysis of the following roads and intersections within the Fairway PMTSA. The analyzed intersections and lane configurations are illustrated in **Figure 3-7**.

- Courtland Avenue E/Fairway Road S & Manitou Drive (Signalized);
- Manitou Drive & Webster Road (Unsignalized);
- Manitou Drive & Bleams Road (Unsignalized Roundabout);
- Fairway Road S & Wilson Avenue (Signalized);
- Fairway Road S & Fairway Mall Driveway (West) (Signalized);
- Fairway Road S & Fairway Mall Driveway (Centre) /Wabanaki Drive (Unsignalized);
- Fairway Road S & Fairway Mall Driveway (East) (Unsignalized);
- Fairway Road S & Highway 8 On/Off-Ramp (Signalized);
- Kingsway Drive & Cedarwoods Cresent (Unsignalized);
- Kingsway Drive & Greenfield Avenue (Unsignalized);
- Kingsway Drive & Wilson Avenue (Signalized); and
- Wilson Avenue & Traynor Avenue (Signalized).

Figure 3-7: Existing Road Network and Lane Configuration – Fairway PMTSA

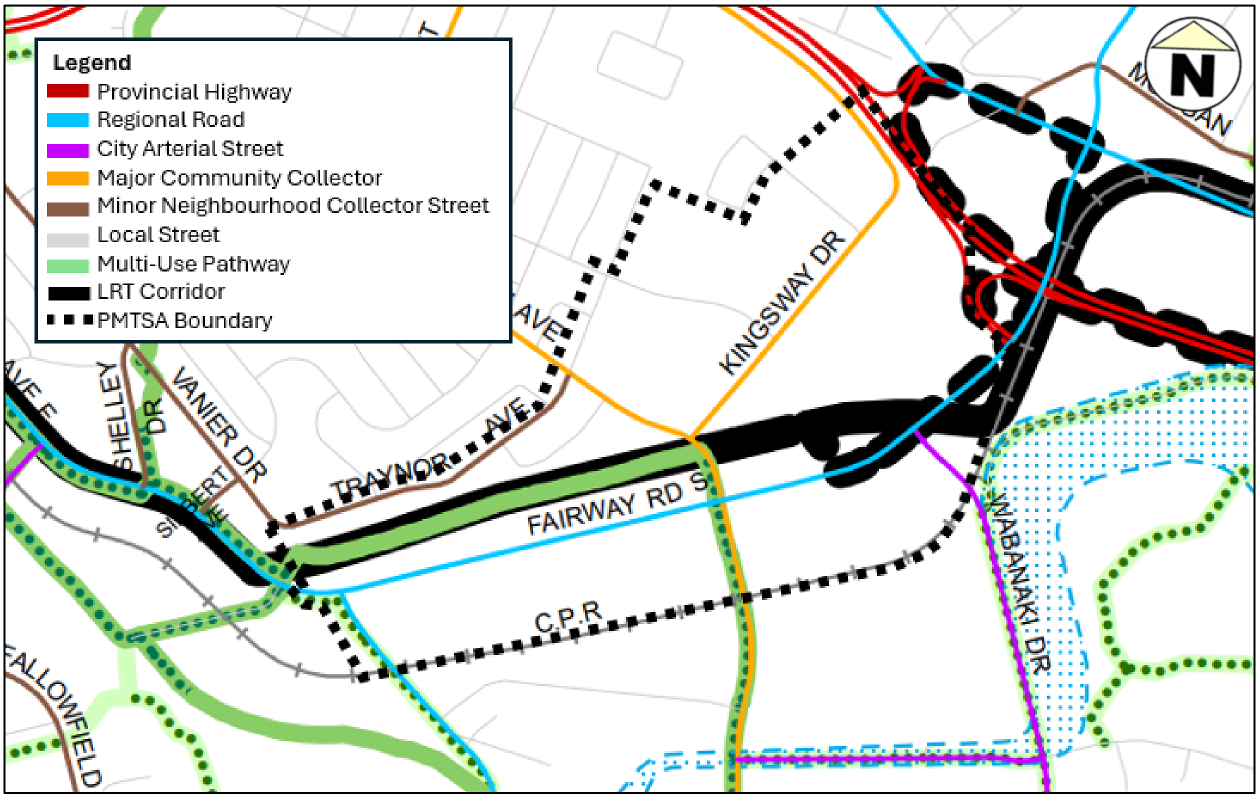


3.2.1 Existing Road Network – Fairway

The Fairway PMTSA study area is currently serviced by an existing network of regional and municipal roads and is generally bounded by Traynor Avenue to the north, the freight corridor to the south, Highway 8 to the east, and Courtland Avenue E/Manitou Road to the west. The ION LRT bisects the study area and provides rapid transit service via Fairway Station. The freight corridor runs in an east-west direction along the southern perimeter of the Fairway PMTSA.

Within the overall study area, there is one (1) provincial highway: Highway 8, and three (3) regional roadways: Fairway Road S, Manitou Drive, and Bleams Road. The study area also includes one (1) arterial street: Wabanaki Drive and three (3) collector roadways: Wilson Avenue, Kingsway Drive, and Traynor Avenue. Additionally, there are three (3) local roadways: Webster Road, Cedarwoods Cresent, and Greenfield Avenue. The existing road classification is shown in **Figure 3-8**, which is based on the City of Kitchener Official Plan (2014).

Figure 3-8: Existing Road Classification – Fairway PMTSA



Source: City of Kitchener Official Plan (2014)

Table 3-3 includes details on the existing roads within the study area.

Table 3-3: Summary of Study Area Roadways – Fairway PMTSA

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
Highway 8	Highway 8 is a provincial highway operating generally in an east-west direction. The highway extends from Highway 21 in Goderich, on the shores of Lake Huron, in the west to Highway 5 in the outskirts of Hamilton near Lake Ontario. Within the study area, on/off ramps are provided along Fairway Road South.	Provincial	Highway	100	8

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
Fairway Road S	Fairway Road S is a regional road, operating generally in an east-west direction. The roadway extends eastward from King Street E to Manitou Drive, before continuing as Courtland Avenue E. The ION runs parallel to this roadway within the study area.	Region of Waterloo	Regional Road	60	4
Manitou Drive	Manitou Drive is a north-south regional road extending from Courtland Avenue E/ Fairway Road So in the north to Homer Watson Boulevard in the south.	Region of Waterloo	Regional Road	60	2
Bleams Road	Bleams Road is a regional road, operating generally in an east-west direction. The roadway extends from Manitou Drive in the east to Trussler Road in the west.	Region of Waterloo	Regional Road	60	4
Wabanaki Drive	Wabanaki Drive is a north-south arterial roadway which then turns east-west, extending from Fairway Road S in the North to Manitou Drive in the west.	City of Kitchener	Arterial Street	50	2
Wilson Avenue (north of Kingsway Drive)	Wilson Avenue is a north-south collector roadway extending from Wilson Park in the north to Homer Watson Park in the South. Of note, north of Franklin Street South, Wilson Avenue is classified as a local roadway.	City of Kitchener	Major Community Collector Street	40	2
Wilson Avenue (south of Kingsway Drive)				50	4
Kingsway Drive	Kingsway Drive is an east-west collector roadway that becomes north-south, operating between Wilson Avenue in the west to First Avenue in the north.	City of Kitchener	Major Community Collector Street	40	2
Traynor Avenue	Traynor Avenue is an east-west collector roadway operating between Siebert Avenue in the west to St Aloysius Catholic Elementary School in the east before continuing as Connaught Street.	City of Kitchener	Minor Neighbourhood Collector Street	30*	2
Webster Road	Webster Road is an east-west local roadway extending from	City of Kitchener	Local Street	50*	2

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
	Wilson Avenue in the east to Manitou Drive in the west.				
Cedarwoods Cresent	Cedarwoods Cresent is a north-south local roadway operating along Kingsway Drive as a Cresent.	City of Kitchener	Local Street	40*	2
Greenfield Avenue	Greenfield Avenue is a north-south local roadway operating between Kingsway Drive in the south to Fifth Avenue in the north.	City of Kitchener	Local Street	40*	2

**Assumed speed limit as per the Region of Waterloo 2011 Visum Model*

3.2.2 Existing Transit Network - Fairway

The Fairway PMTSA study area is currently serviced by Grand River Transit (GRT), where ION and iXpress bus stops and services are provided. A total of thirteen (13) transit routes have been identified in the Fairway PMTSA study area.

The existing GRT network within the study area is illustrated in **Figure 3-9**. **Table 3-4** detail the available services in the area.

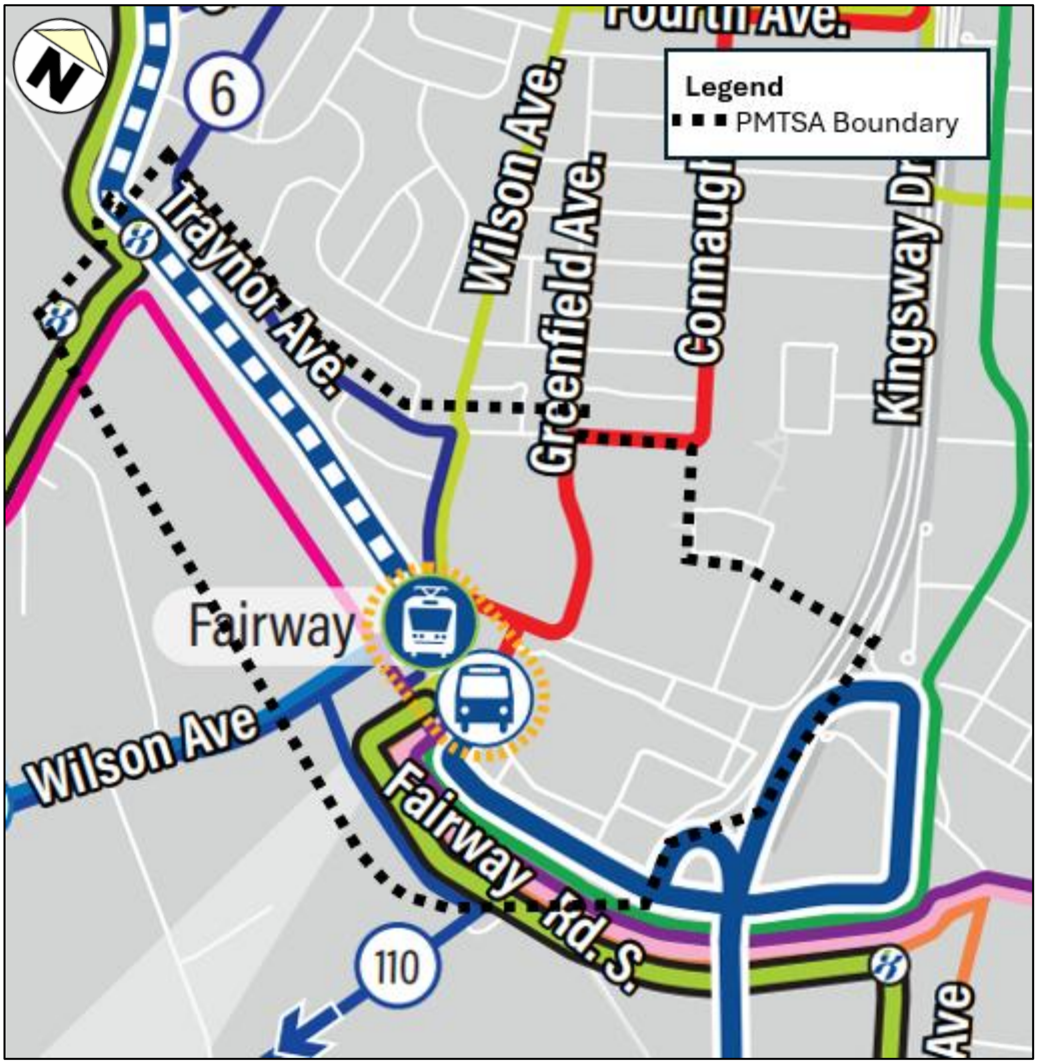
Table 3-4: Existing Transit Service – Fairway PMTSA

Transit System	Route	Description	Frequency *
Grand River Transit (GRT)	ION LRT (301)	LRT service operating between Conestoga Station and Fairway Station.	10 minutes on-peak 15 minutes off-peak
	ION Bus (302)	Bus service operating between Ainslie (Cambridge) and Fairway Station. A direct connection to ION LRT is provided via Fairway Station.	10 minutes on-peak 30 minutes off-peak
	Fischer-Hallman iXpress (201)	Express bus service operating between Conestoga Station and Conestoga College. A direct connection to ION LRT is provided via Block Line Station and Fairway Station.	10 minutes on-peak 15 minutes off-peak
	Coronation iXpress (206)	Express bus service operating between Fairway Station and Southwood/Cedar. A direct connection to ION LRT is provided via Fairway Station.	20 minutes on-peak 30 minutes off-peak
	Queen-River (1)	Bus service operating between The Boardwalk Station and Fairway Station. A direct connection to ION LRT is provided via Frederick Station and Fairway Station.	15 minutes on-peak 30 minutes off-peak
	Bridge-Courtland (6)	Bus service operating between Conestoga Station and Fairway Station. A direct connection to ION LRT is provided via Block Line Station and Fairway Station.	30 minutes

Transit System	Route	Description	Frequency *
	King (7)	Bus service operating between Conestoga Station and Fairway Station. A direct connection to ION LRT is provided via Conestoga Station, Waterloo Public Square Station, Grand River Hospital Station, Central Station, and Frederick Station, and Fairway Station.	15 minutes
	Weber (8)	Bus service operating between University/King and Fairway Station (continues as Route 8 before University/King). A direct connection to ION LRT is provided via Central Station, Frederick Station, and Fairway Station.	15 minutes
	Pioneer/College Express (10/110)	Bus service operating between Conestoga College Doon Campus and Fairway Station. A direct connection to ION LRT is provided via Fairway Station.	15 minutes on-peak 30 minutes off-peak
	Westmount (12)	Bus service operating between University/King and Fairway Station (continues as Route 8 past University/King). A direct connection to ION LRT is provided via and Fairway Station.	15 minutes
	Idlewood (23)	Bus service operating between Stanley Park and Fairway Station. A direct connection to ION LRT is provided via and Fairway Station.	30 minutes
	Morrison (27)	Bus service operating between Fairway Station and Quinte/Morrison before looping back towards Fairway Station. A direct connection to ION LRT is provided via and Fairway Station.	35 minutes
	Franklin North (28)	Bus service operating between Stanley Park and Fairway Station. A direct connection to ION LRT is provided via and Fairway Station.	35 minutes

** Headways provided are non-summer frequencies.*

Figure 3-9: Existing Grand River Transit Network – Fairway PMTSA



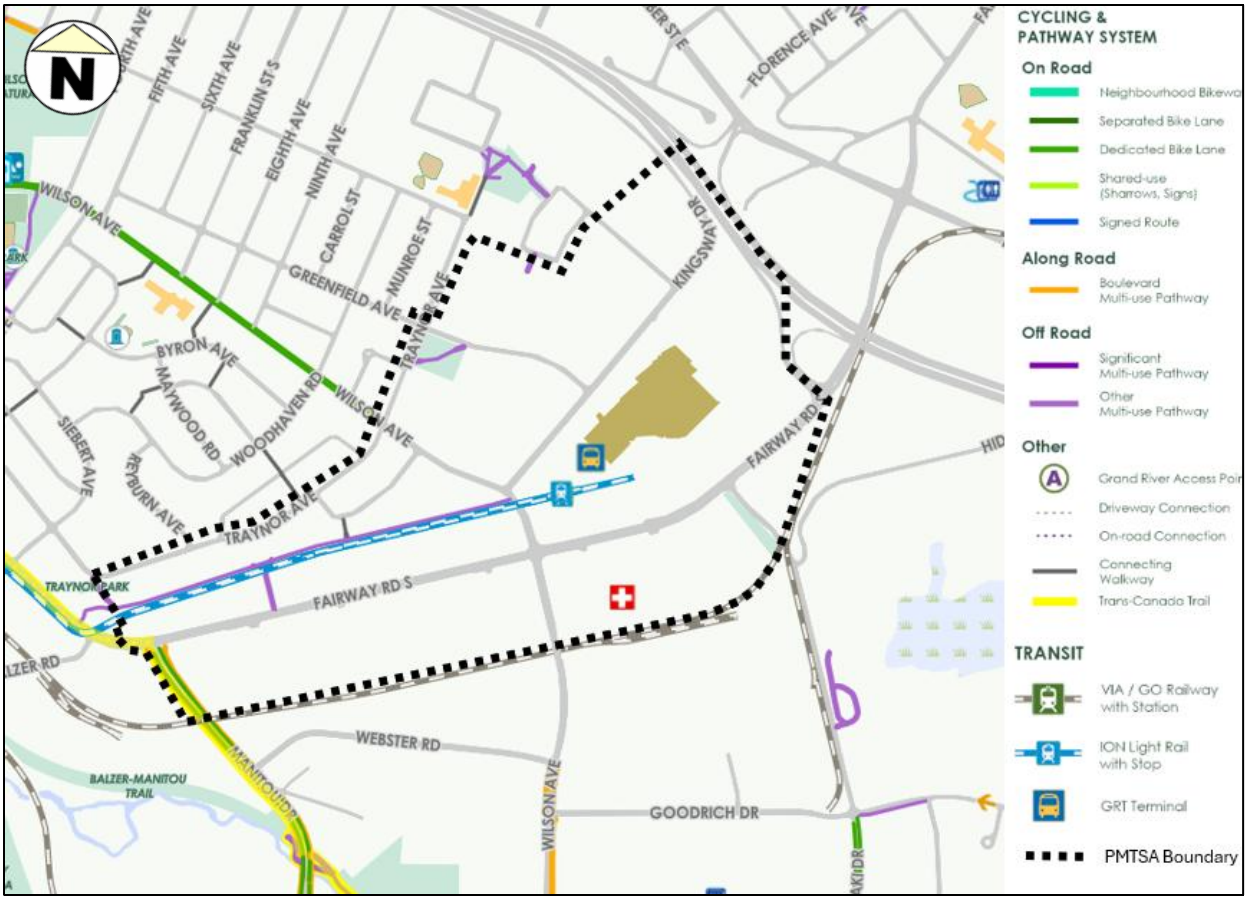
Source: Grand River Transit System Map (September 2024)

Within the Fairway PMTSA, there are numerous transit services available, providing many options for residents and visitors to easily reach employment, discretionary, and recreational destinations including the various amenities at Fairview Park Mall and neighbouring retail plazas. Furthermore, Fairway Station is currently a terminus station and provides bus connections to Cambridge. The proposed ION extension past Fairway Station will enhance the convenience of transit-based travel and provide an improved transit experience for trips to/from south Kitchener and Cambridge, destinations which are currently serviced by the ION 302 bus route.

3.2.3 Existing Cycling Network – Fairway

The Fairway PMTSA study area has some cycling options available. Dedicated bike lanes are provided along Wilson Avenue north of Traynor Avenue and Manitou Drive south of Courtland Road E/Fairway Road S, facilitating active transportation within the surrounding area. There is also a paved multi-use pathway provided along the ION corridor between Traynor Park and Wilson Avenue, providing east-west active transportation connectivity towards Wilson Avenue before terminating. A midblock connection is also available between the multi-use pathway to Fairway Road with an at-grade crossing of the ION corridor. Furthermore, the Trans Canada Trail runs south along Manitou Drive, where an in boulevard multi-use pathway is provided on both sides of the roadway. It is understood that several projects are also underway in the Vanier Neighbourhood to improve active transportation connections. **Figure 3-10** illustrates the existing cycling facilities within the study area.

Figure 3-10: Existing Cycling Network – Fairway PMTSA



Source: City of Kitchener Bike Web Map

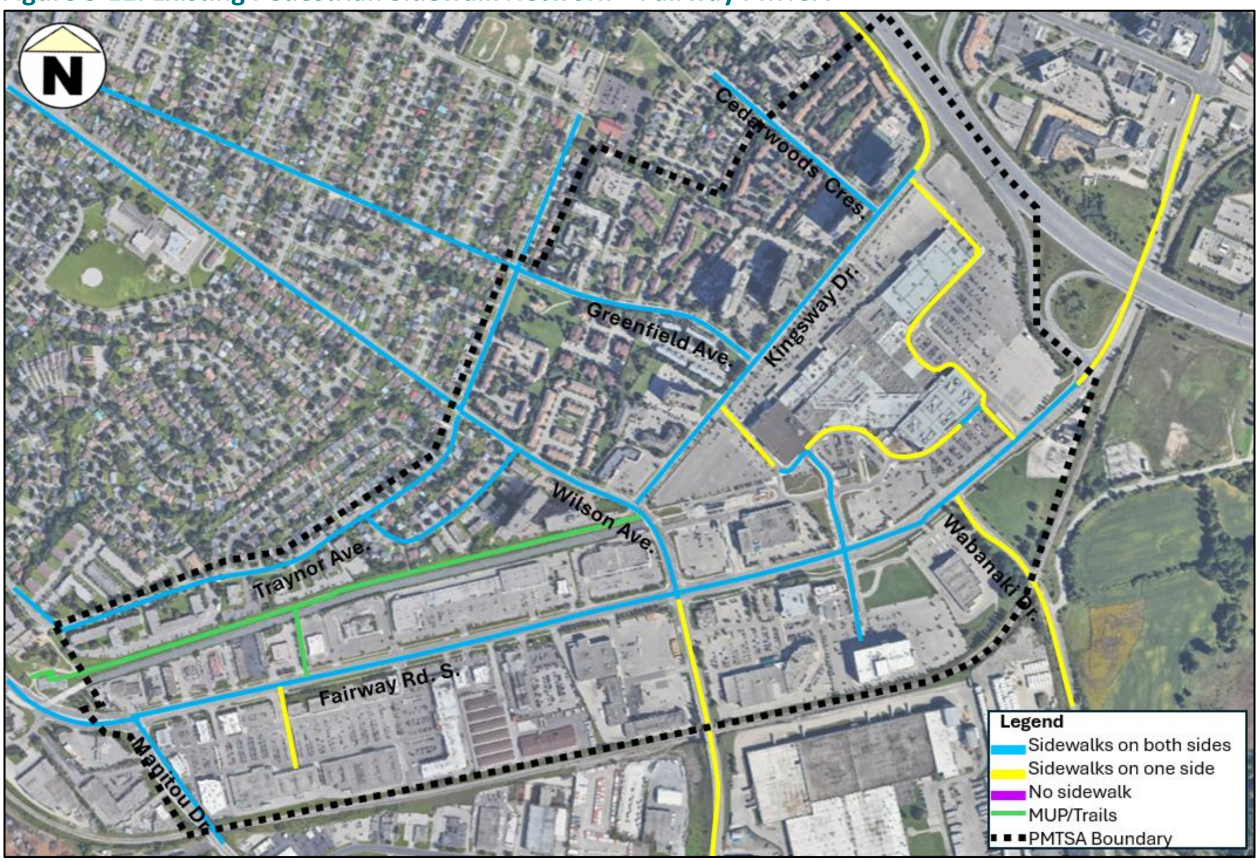
The existing cycling environment is somewhat supportive of active transportation; however, gaps are identified in the overall network. Notably, continuation of the bike lanes along Wilson Avenue would significantly improve cycling connectivity between the north and south areas of the Fairway PMTSA study area. Furthermore, expanding the paved trail provided along the ION corridor between Traynor Park and Wilson Avenue further east towards the boundary of the study area as part of a future redevelopment of the Fairview Park would address a missing gap in the network, and additional cycling connectivity is required for the lands located south of Fairway Road and within the CF Fairview Park area. Providing dedicated cycling facilities would also increase comfort and safety for cycling on routes where cycling within mixed traffic is unfavorable or unsafe.

3.2.4 Existing Pedestrian Network – Fairway

The study area exhibits some connectivity in the pedestrian network due to the lack of mid-block crossings and continuous north-south and east-west streets. However, the majority of the study area roadways have sidewalks on at least one side of the road, and the presence of physical safety infrastructure (i.e., pedestrian rail crossing lights and arms) where the ION intersects a roadway. A few sidewalks are provided surrounding Fairview Park Mall which facilitates some mid-block connectivity. An additional mid-block crossing is observed between Fairway Road S and the trail along the ION corridor. **Figure 3-11** illustrates the existing pedestrian sidewalk network.

Sidewalks are available on both sides of Fairway Road S, Manitou Drive, Traynor Avenue, Greenfield Avenue, and Cedarwoods Cresent. Sidewalks are also available on both sides of Wilson Avenue (north of Fairway Road South) and Kingsway Drive (west of the north bend). The remaining portions of these roadways (Wilson Avenue south of Fairway and Kingsway north of the bend) only have sidewalks on one side of the roadway. Sidewalks are also only available on one side of Wabanaki Drive. It should be noted that the existing at-grade freight rail crossing at Wabanaki Drive is currently unsafe from a pedestrian perspective due to the lack of rail arms. However, pedestrian crossings are available at all signalized intersections within the study area.

Figure 3-11: Existing Pedestrian Sidewalk Network – Fairway PMTSA



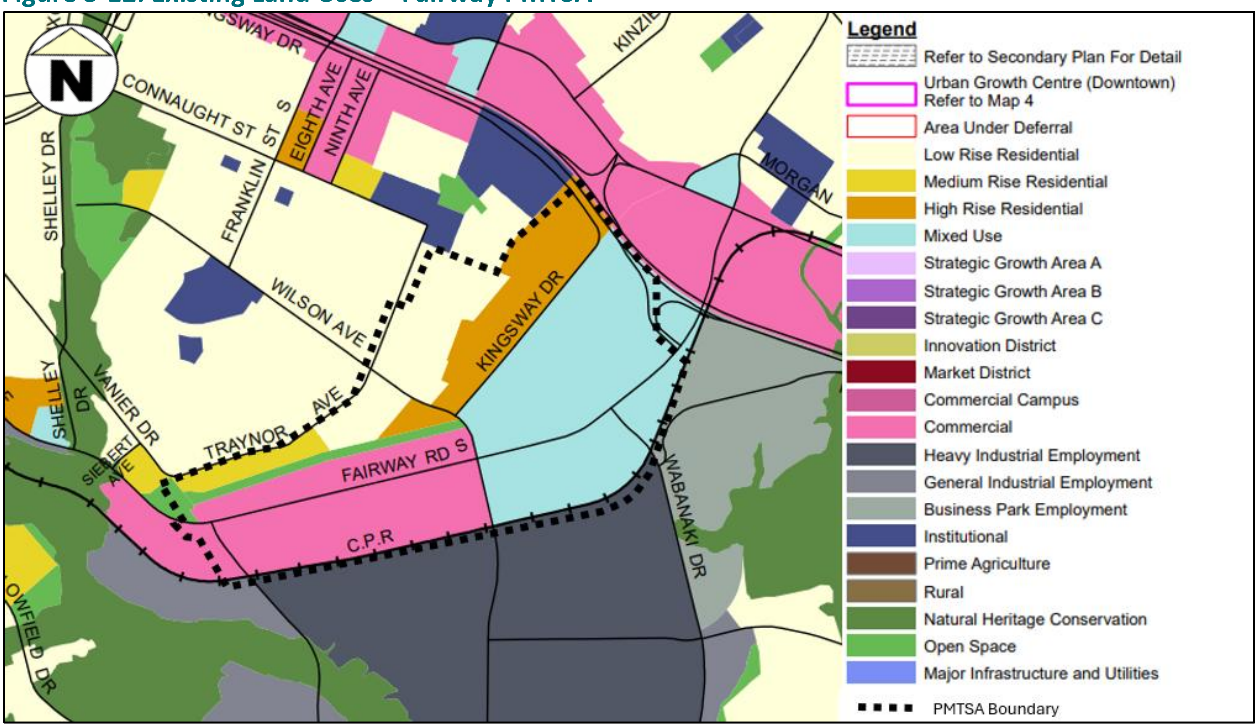
There are a few gaps in the pedestrian network due to the lack of collector/local roads and mid-block crossings resulting in limited continuous pedestrian infrastructure. As such, the Fairway PMTSA would benefit from additional mid-block crossings to improve existing conditions and support future transit-oriented development. While there are no critical caps from a sidewalk perspective, there are opportunities to fill in missing linkages where sidewalks currently only exist on one side of the road.

Furthermore, while the existing land uses are generally industrial and commercial, there are also opportunities to improve the pedestrian experience at Wabanaki Drive & the freight rail corridor, assessing the need for pedestrian safety measures at the rail crossing. Overall, improvements to the active transportation network would improve the safety and connectivity for pedestrians and support the development of a transit-oriented community within the Fairway PMTSA.

3.2.5 Existing Land Use Context - Fairway

At the time of preparing this report, the Fairway PMTSA has an estimated population of 6,523 people and 2,413 jobs in 2024. Within the PMTSA, there are numerous existing land uses, as illustrated in **Figure 3-12**. Towards the south, the PMTSA is currently occupied by commercial and mixed-use land uses with the Fairview Park Mall composing most of the north-west lands. The remaining commercial lands in the south are box stores and retail plazas. Towards the north of the PMTSA, there is a mix of low- and high-density residential developments, along with the ION corridor dissecting the study area. The land surrounding the PMTSA consists of residential and industrial uses. Key destinations within the PMTSA include the Fairview Park Mall, Fairway ION Station, and Fairway Plaza. The Fairway MTSA is generally a major destination and trip generator given the regional retail function of the area.

Figure 3-12: Existing Land Uses – Fairway PMTSA



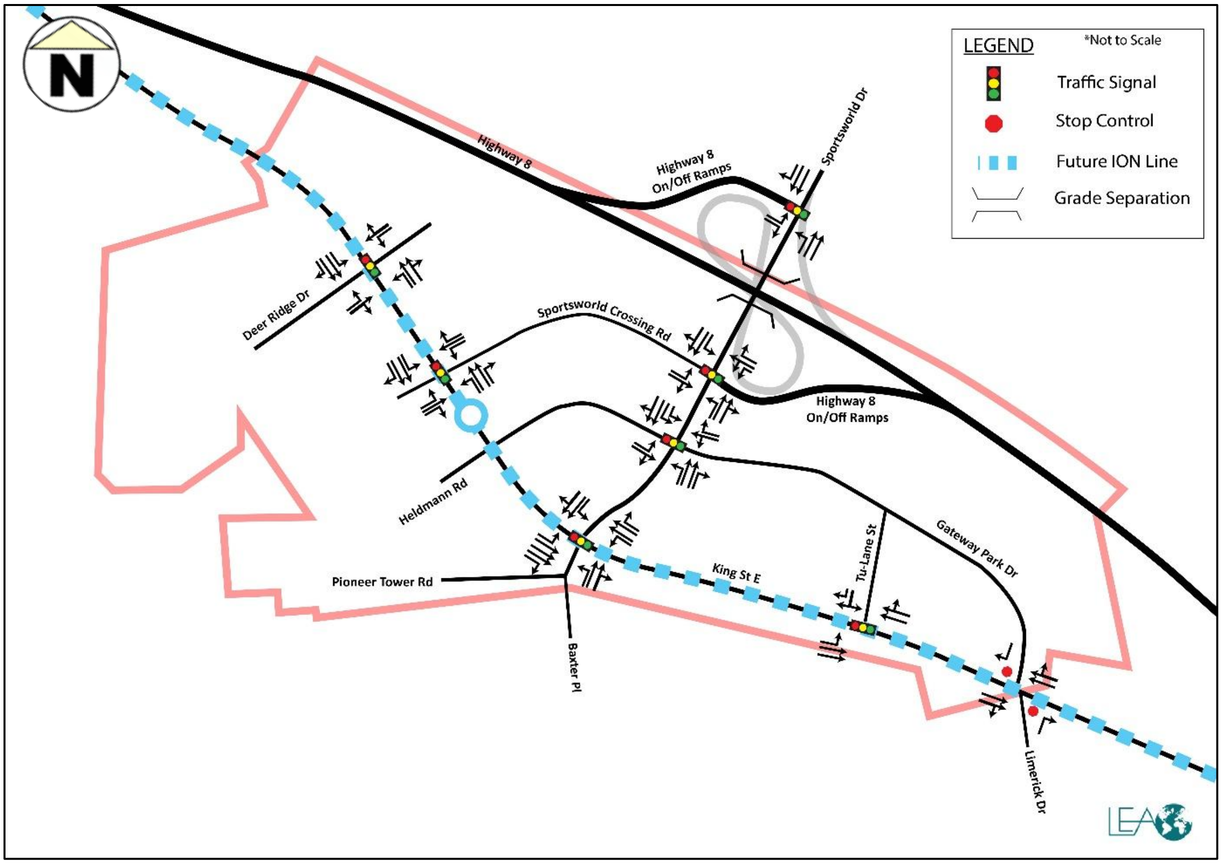
Source: City of Kitchener Official Plan, Map 3 – Land Use, (City of Kitchener, 2024)

3.3 SPORTSWORLD PMTSA

The study includes the analysis of the following roads and intersections within the Sportsworld PMTSA. The analyzed intersections and lane configurations are illustrated in **Figure 3-13**.

- King Street E & Deer Ridge Drive (Signalized);
- King Street E & Sportsworld Crossing Road (Signalized);
- King Street E & Sportsworld Drive / Baxter Place / Pioneer Tower Road (Signalized);
- King Street E & Tu-Lane Street (Signalized);
- King Street E & Gateway Park Drive / Limerick Drive (Unsignalized);
- Sportsworld Drive & Gateway Park Drive / Heldmann Road (Signalized);
- Sportsworld Drive & Sportsworld Crossing Road / Highway 8 SB On/Off-Ramp (Signalized); and
- Sportsworld Drive & Highway 8 NB On/Off-Ramp (Signalized).

Figure 3-13: Existing Road Network and Lane Configuration – Sportsworld PMTSA

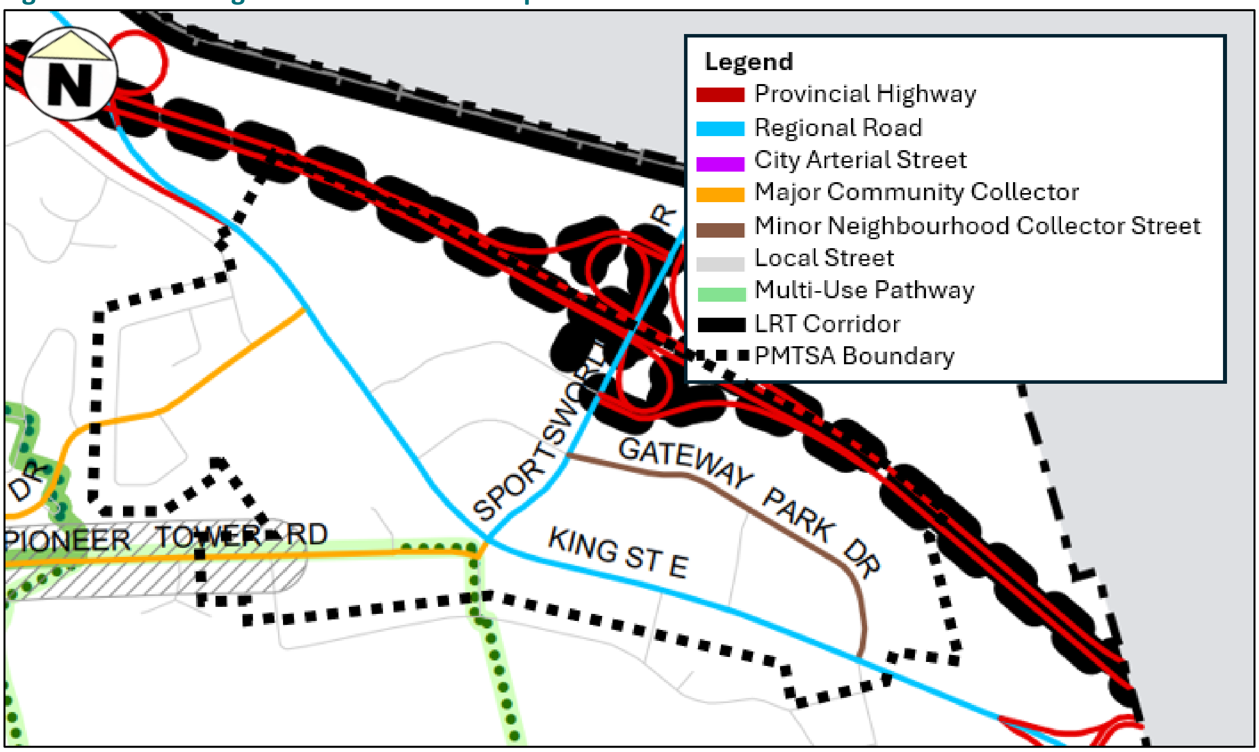


3.3.1 Existing Road Network – Sportsworld

The Sportsworld PMTSA study area is currently serviced by an existing network of regional and local roads and is generally bounded by Folleys Lane to the north, Pioneer Tower Road to the south, Highway 8 to the east, and Wagon Street to the west. The proposed ION LRT alignment will bisect the study area to provide rapid transit service. The existing freight corridor runs along the northern border of the Sportsworld PMTSA.

Within the overall study area, there is one (1) provincial highway; Highway 8, and two (2) regional roadways: King Street E and Sportsworld Drive. The study area also includes three (3) collector roadways: Deer Ridge Drive, Pioneer Tower Road, and Gateway Park Drive. The study area also includes five (5) local roadways: Sportsworld Crossing Road, Baxter Place, Tu Lane Street, Limerick Drive, and Heldmann Road. The existing road classification is shown in **Figure 3-14** which is based on the City of Kitchener Official Plan (2014).

Figure 3-14: Existing Road Classification – Sportsworld PMTSA



Source: City of Kitchener Official Plan (2014)

Table 3-5 includes details on the existing roads within the study area.

Table 3-5: Summary of Study Area Roadways – Sportsworld PMTSA

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
Highway 8	Highway 8 is a provincial highway operating generally in an east-west direction. The highway extends from Highway 21 in Goderich, on the shores of Lake	Provincial	Highway	100	8

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
	Huron, in the west to Highway 5 in the outskirts of Hamilton near Lake Ontario. Within the study area, on/off ramps are provided along King Street East				
King Street E	King Street E is a regional road, operating generally in an east-west direction. The roadway extends eastward from Weber Street South/ Highway 8 WB on/off-ramp to Highway 401, before continuing as Shantz Hill Road.	Region of Waterloo	Regional Road	60	4
Sportsworld Drive	Sportsworld Drive is a regional road, operating generally in a north-south direction. The roadway extends southward from the City's boundary to King Street East, before terminating.	Region of Waterloo	Regional Road	50	4
Deer Ridge Drive	Deer Ridge Drive is an east-west collector roadway operating west of King Street East and connects with Pioneer Tower Road in the west where the road the loops as a Cresent.	City of Kitchener	Major Community Collector Street	40	2
Pioneer Tower Road	Pioneer Tower Road is an east-west collector roadway extending from King Street E in the east to the Pioneer Sportsmen Club in the west where it then operates as Pioneer Ridge Drive.	City of Kitchener	Major Community Collector Street	40	2
Gateway Park Drive	Gateway Park Drive is an east-west collector roadway extending from Sportsworld Drive in the west to King Street E in the east.	City of Kitchener	Minor Neighbourhood Collector	50*	2
Sportsworld Crossing Road	Sportsworld Crossing Road is an east-west local roadway extending from King Street E in the west to Sportsworld Drive in the east.	City of Kitchener	Local Street	20	2
Baxter Place	Baxter Place is a north-south local roadway extending from King Street E in the north to River Edge Golf Club in the south.	City of Kitchener	Local Street	40	2

Roadway	Description	Jurisdiction	Service Function	Regulatory Speed Limit	# of through lanes
Tu Lane Street	Tu Lane Street is a north-south local roadway extending from King Street E in the south to Gateway Park Drive in the north.	City of Kitchener	Local Street	50*	2
Limerick Drive	Limerick Drive is a north-south local roadway extending from King Street E in the north to Greensview Drive in the south.	City of Kitchener	Local Street	40	2
Heldmann Road	Heldmann Road is an east-west local roadway, extending from King Street E in the west to Sportsworld Drive in the east.	City of Kitchener	Local Street	20	2

**Assumed speed limit as per the Region of Waterloo 2011 Visum Model*

3.3.2 Existing Transit Network - Sportsworld

The Sportsworld PMTSA is a major mobility hub for regional transportation. The study area is currently serviced by Grand River Transit (GRT), with ION and iXpress bus routes available. Additional transit routes within the PMTSA are provided by GO Transit and private bus operators such as OurBus, FlixBus, Intercity Bus, and Red Arrow transit services. These private bus operators make stops at Sportsworld Station and offer a variety of intercity transit connections between Kitchener and other major cities in Ontario. Furthermore, the Sportsworld Drive @ Highway 8 Park & Ride is located at the northwest corner of Sportsworld Drive & Sportsworld Crossing Road and provides a total of 125 parking spaces. The Park & Ride serves as a free parking destination for GO Transit and GRT users.

The existing GRT network within the study area is illustrated in **Figure 3-15**. **Table 3-6** detail the available services in the area.

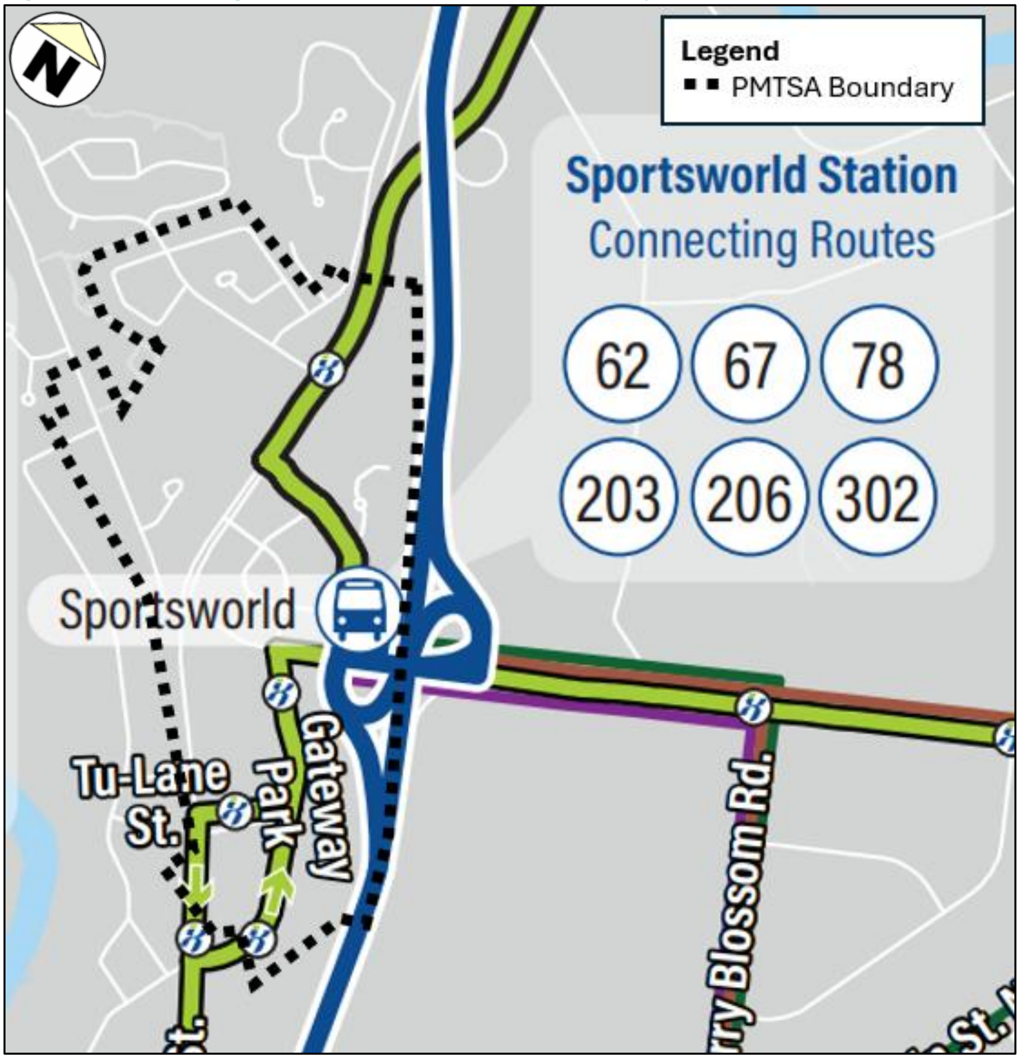
Table 3-6: Existing Transit Service – Sportsworld PMTSA

Transit System	Route	Description	Frequency *
Grand River Transit (GRT)	ION Bus (302)	Bus service operating between Ainslie (Cambridge) and Fairway Station. A direct connection to ION LRT is provided via Fairway Station.	10 minutes on-peak 30 minutes off-peak
	Maple Grove iXpress (203)	Express bus service operating between Cambridge Centre Station and Conestoga College.	30 minutes
	Coronation (206) iXpress	Express bus service operating between Fairway Station and Southwood/Cedar. A direct connection to ION LRT is provided via Fairway Station.	20 minutes on-peak 30 minutes off-peak
	Speedsville (62)	Bus service operating to and from Sportsworld Station, travelling north to Speedsville Road before returning.	30 minutes (Mon-Fri)
	Eagle-Pinebush (67)	Bus service operating between Sportsworld Station and Cambridge Centre Station.	30 minutes (Mon-Fri)

Transit System	Route	Description	Frequency *
	Fountain (78)	Bus service operating between Sportsworld Station and Region of Waterloo Internation Airport.	30 minutes (Mon-Fri)
GO Transit	Waterloo-Mississauga (25)	Regional bus service operating between the University of Waterloo and Square one Bus Terminal.	5-15 minutes on-peak 60 minutes off-peak
Private Bus Operators	Brampton, London, Milton, Stratford, and Toronto	Intercity bus service operating between southwestern Ontario cities, making frequent stops at Sportsworld Station.	60-120 minutes (varies based on destination)

** Headways provided are non-summer frequencies.*

Figure 3-15: Existing Grand River Transit Network – Sportsworld PMTSA



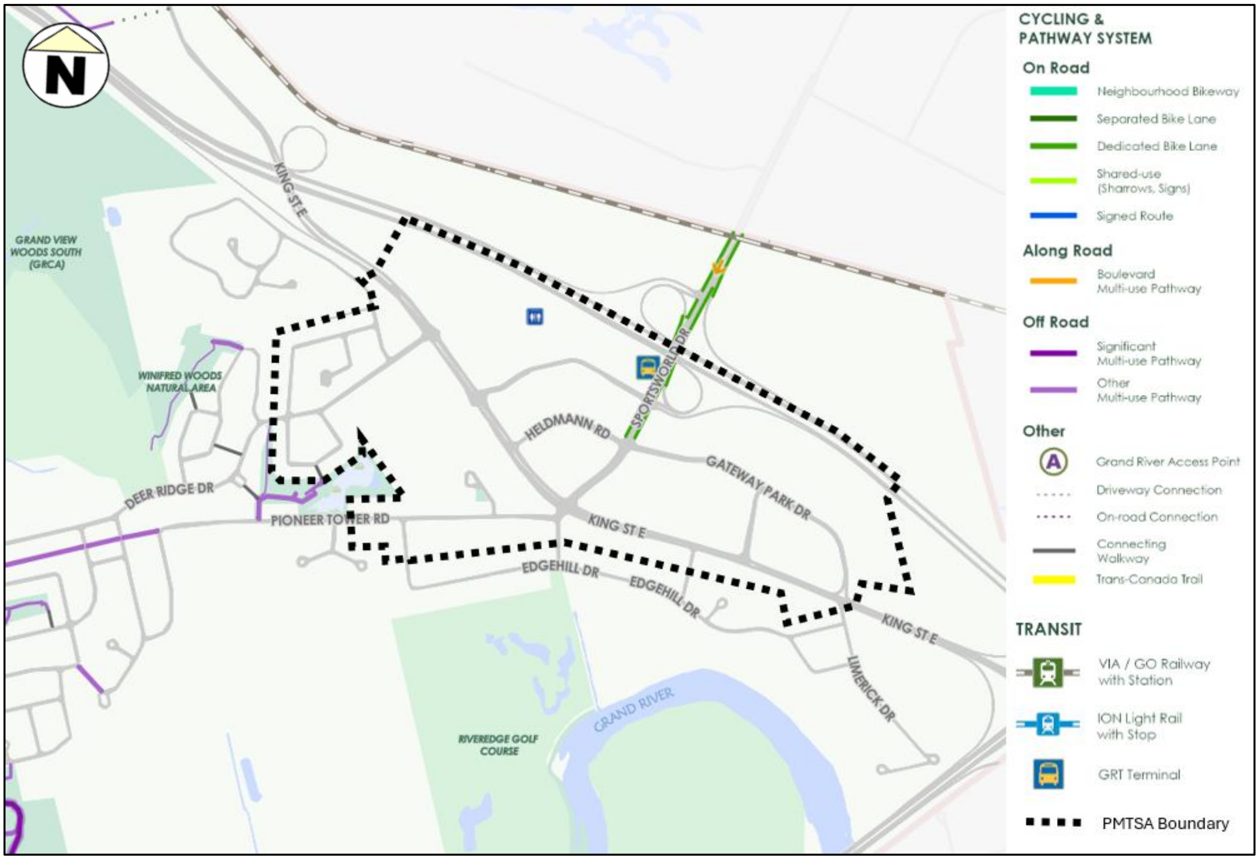
Source: Grand River Transit System Map (September 2024)

Within the Sportsworld PMTSA, there are several transit services available, providing options for residents and visitors to rely on public transit as a travel alternative for trips to many destinations. Furthermore, the proposed ION LRT extension from Fairway Station to Sportsworld Station will create a more convenient and connected transit experience within the study area, replacing the existing ION 302 bus route.

3.3.3 Existing Cycling Network – Sportsworld

The Sportsworld PMTSA study area has limited cycling options available. It is understood that multi-use pathways are planned for King Street through road re-construction; however, the only cycling facilities currently available are dedicated bike lanes along Sportsworld Drive, east of Gateway Park Drive. These bike lanes abruptly end at the Highway 8 off-ramp, creating a potential safety concern as cyclists must transfer to the road shoulder within an interchange. **Figure 3-16** illustrates the existing cycling facilities within the study area.

Figure 3-16: Existing Cycling Network – Sportsworld PMTSA



Source: City of Kitchener Bike Web Map

The existing cycling environment is currently not supportive of active transportation, with numerous gaps identified in the overall network. It should be noted that most, if not all of the identified cycling gaps are on Regional roads. Notably, the continuation of the bike lanes along Sportsworld Drive, south of Gateway Park Drive, would significantly improve cycling connectivity between north and south areas of the Sportsworld PMTSA study area. Furthermore, the bike lanes along Sportsworld Drive, north of Gateway Park Drive lack seamless connectivity with the Highway 8 on/off ramps resulting in an unsafe environment for cyclists. There are opportunities to improve signage and add appropriate crossings to improve overall safety and continuity of these bike lanes. Furthermore, there are opportunities to expand the cycling network to the remaining regional and collector streets, including facilities along King Street E, Gateway Park Drive, and Sportsworld Crossing Road.

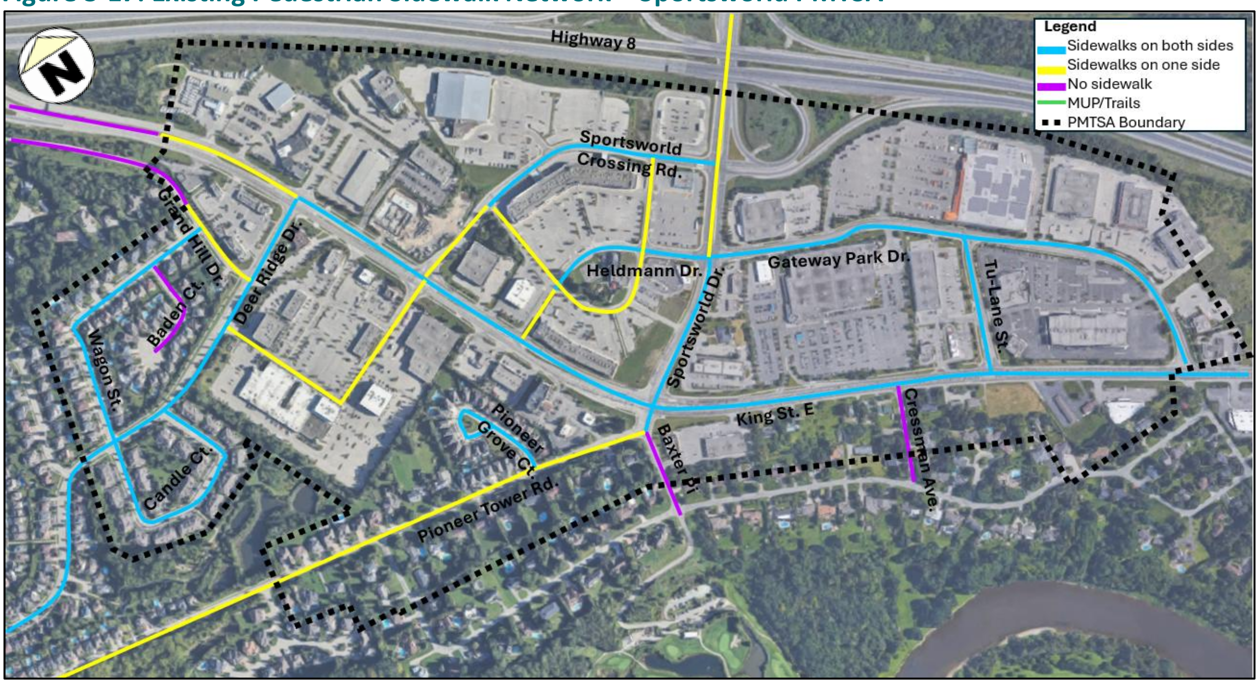
3.3.4 Existing Pedestrian Network – Sportsworld

The study area exhibits some connectivity in the pedestrian network which can be attributed to the existing commercial block structure and minimal mid-block connections. However, the majority of the study area roadways have sidewalks on at least one side of the road, with the exception of a few local roads. **Figure 3-17** illustrates the existing pedestrian sidewalk network.

Sidewalks are available on both sides of Wagon Street, Deer Ridge Drive, Candle Cresent, Pioneer Grove Cresent, Gateway Park Drive, and Tu-Lane Street. On parts of Sportsworld Crossing (south of Sportsworld Drive) sidewalks are also available on both sides, while north of the intersection sidewalks are only on one side of the roadway. Similarly, King Street E has sidewalks on both sides of the roadway, while west of Deer Ridge Drive, sidewalks continue on one side. Sportsworld Crossing Road and Heldmann Road begin with sidewalks on both sides on the east but continue with sidewalks only on one side upon intersecting with King Street E.

No sidewalks are provided along Cresman Avenue, Baxter Place, Baden Cresent, Grand Hill Drive north of Folleys Lane, and King Street E, west of the PMTSA boundary. Pedestrian crossings are available at all signalized intersections within the study area.

Figure 3-17: Existing Pedestrian Sidewalk Network – Sportsworld PMTSA



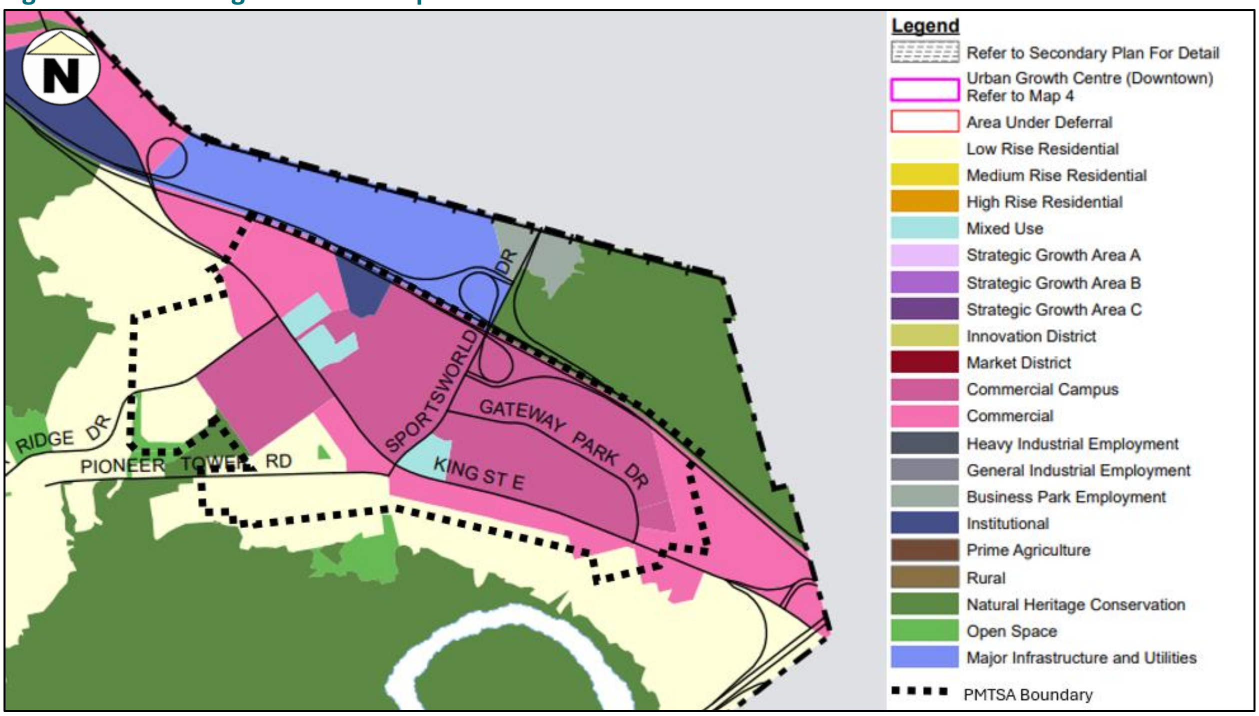
There are critical gaps in the sidewalk network as roadways have either no sidewalks or discontinuous sidewalks on one side of the street within the study area. The lack of mid-block connections available through many of the commercial uses hinders walkability as well. These existing gaps in the pedestrian network provide opportunities to add new sidewalks or fill in missing linkages which would improve safety and connectivity for pedestrians in the study area. There are also opportunities to identify streets to be considered to improve the pedestrian experience and support transit-oriented development.

Improvements to the active transportation network will be critical to creating a complete mixed-use community within the Sportsworld PMTSA.

3.3.5 Existing Land Use Context

At the time of preparing this report, the Sportsworld PMTSA has an estimated population of 1,298 people and 2,413 jobs in 2024. Within the PMTSA, there are numerous existing land uses, as illustrated in **Figure 3-18**. Notably, the majority of the study area is occupied by commercial land uses, with pockets of mixed-use designations. The Sportsworld Crossing Mall and associated retail plazas compose most of the land. Furthermore, towards the northwest of the PMTSA, the area is currently occupied by a Highway Maintenance Facility and a water tower. The majority of the land surrounding the PMTSA is designated as Natural Heritage Conservation with pockets of residential communities. Key destinations within the PMTSA include the Sportsworld Crossing Mall, Costco Wholesale, and Deer Ridge Centre.

Figure 3-18: Existing Land Uses – Sportsworld PMTSA



Source: City of Kitchener Official Plan, Map 3 – Land Use (City of Kitchener, 2024)

4 COLLISION ANALYSIS

Collision data from the Kitchener Open Data Portal was utilized to evaluate the vehicle collision history within the study area. The available data spans the years 2015 to 2022. The following sections will summarize the number and type of collision that have occurred within the PTMSA boundaries, highlighting areas with high collision counts.

The collision data for each PMTSA has been extracted and visualized in GIS software to map the location of vehicle collisions. Two types of maps were created for each PMTSA: the first displays individual collision points, while the second aggregates collisions within a 200m radius to illustrate total counts in those areas. All maps include a heatmap layer underneath which visualizes the density of collisions. These maps have been used to determine areas of interest with high collision rates.

4.1 BLOCK LINE PMTSA

Table 4-1 summarizes the historical collisions within the Block Line PMTSA by collision type and year.

Table 4-1: Block Line Collision Summary

Collision Type	Year								Total
	2015	2016	2017	2018	2019	2020	2021	2022	
Turning movement	4	3	3	2	0	1	0	0	**13**
Approaching	2	1	0	0	0	0	0	0	**3**
Rear end	4	1	4	3	6	3	0	1	**22**
Sideswipe	1	0	2	1	3	5	3	2	**17**
SMV unattended vehicle	1	7	5	3	1	3	4	1	**25**
Angle	2	2	1	1	4	5	4	0	**19**
SMV other	4	3	5	4	5	8	4	1	**34**
Other	2	1	0	2	2	0	0	0	**7**
Total	20	18	20	16	21	25	15	5	140
Pedestrian involved	0	1	1	0	0	0	1	1	**4**
Cyclist Involved	2	0	0	0	1	0	1	0	**4**

Within the Block Line PMTSA, a total of 140 vehicle collisions were reported between 2015 and 2022. Within these collisions, 4 involved pedestrians, and 4 involved cyclists. Notably, there was one recorded fatal pedestrian injury near the intersection of Shelley Drive & Vanier Drive in 2016.

Figure 4-1 and **Figure 4-2** illustrate the number and location of collisions through a point and cluster map.

Figure 4-1: Block Line PMTSA Collisions Points Map

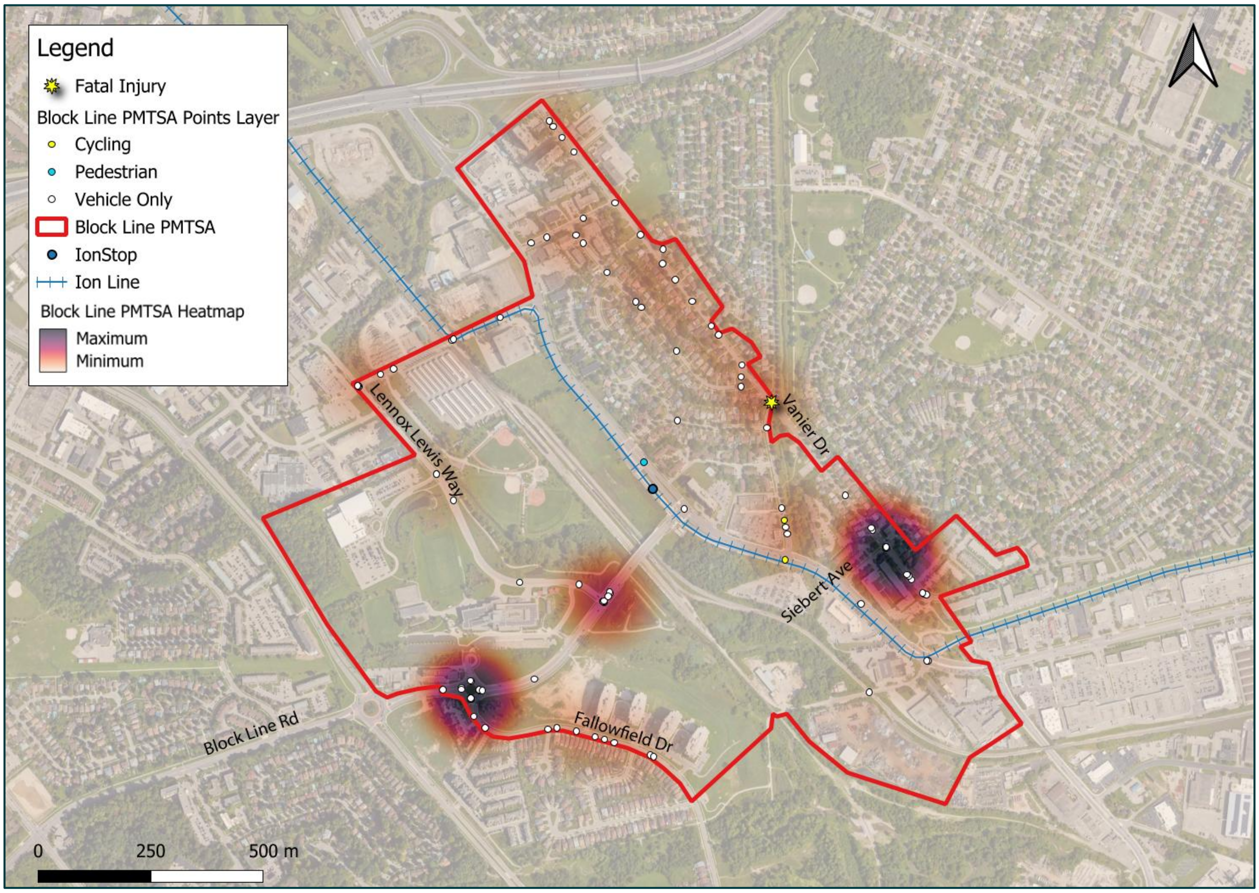


Figure 4-2: Block Line PMTSA Collisions Cluster Map

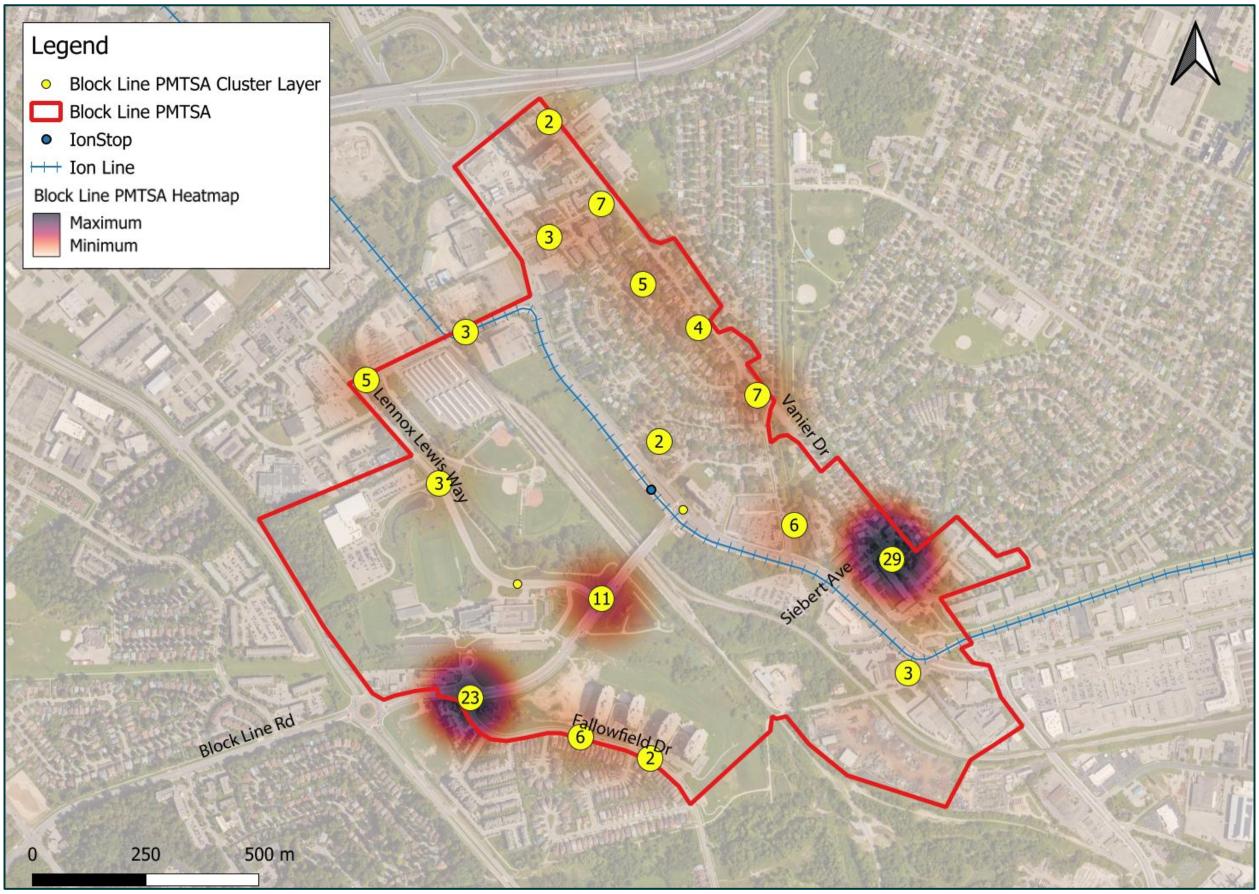


Table 4-2 provides a summary of collision types at identified areas of interest. Based on the density of collisions shown in the figures above, identified areas of interest include the following areas:

- Block Line Road & Fallowfield Drive (Unsignalized Roundabout);
- Block Line Road & Lennox Lewis Way (Signalized 3-way intersection); and,
- Vanier Drive & Siebert Avenue (Unsignalized 4-way intersection).

Table 4-2: Areas of Interest Collision Summary

Areas of Interest	Turning Movement	Approaching	Rear end	Sideswipe	Angle	SMV other	Other	Total
Block Line Road & Fallowfield Drive	0	0	9	4	2	4	0	19
Block Line Road & Lennox Lewis Way	5	0	0	2	2	1	0	10
Vanier Drive & Siebert Avenue	1	0	3	0	9	3	2	18
Total	6	0	12	6	13	8	2	47

Note: Collisions for areas of interest were selected manually, compared to the Cluster Map which automatically grouped collisions within a 200m search distance. This has resulted in discrepancies between the figures presented in this table and those shown on the Cluster Map.

As described above, these areas have the highest density of collisions within the Block Line PMTSA boundary. Together, collisions at these locations account for approximately 34% of all collisions within the study area. Based on the heatmap layer in the two figures above, the majority of collisions occurred on Block Line Road and Vanier Drive. Based on the data in **Table 4-2**, 47% of total collisions at Block Line Road & Fallowfield Drive are rear-end collisions. 50% of collisions at Vanier Drive & Siebert Avenue are angle collisions, while turning movements contribute to 50% of collisions at Block Line Road & Lennox Lewis Way.

4.2 FAIRWAY PMTSA

Table 4-3 summarizes the historical collisions within the Fairway PMTSA by collision type and year.

Table 4-3: Fairway Collision Summary

Collision Type	Year								Total
	2015	2016	2017	2018	2019	2020	2021	2022	
Turning movement	16	12	16	10	10	2	6	1	73
Approaching	1	0	0	1	0	1	1	0	4
Rear end	6	9	4	7	18	5	2	2	53
Sideswipe	3	2	1	0	11	5	5	2	29
SMV unattended vehicle	1	1	1	2	2	2	1	0	10
Angle	3	1	2	1	16	6	5	8	42
SMV other	6	7	2	3	8	5	6	5	42
Other	1	1	1	0	3	3	0	0	9
Total	37	33	27	24	68	29	26	18	262
Pedestrian involved	2	3	1	2	8	2	2	3	23
Cyclist Involved	0	1	0	0	0	0	0	0	1

Within the Fairway PMTSA, a total of 262 vehicle collisions were reported between 2015 and 2022. Within these collisions, 23 involved a pedestrian, and 1 involved a cyclist. Out of the three PMTSAs studied, the Fairway PMTSA had the highest volume of pedestrian-involved collisions. This equates to approximately 9% of all collisions in this area identified as involving a pedestrian. However, no fatal-pedestrian injuries have been reported.

Figure 4-3 and **Figure 4-4** illustrate the number and location of collisions through a point and cluster map.

Figure 4-3: Fairway PMTSA Collisions Points Map

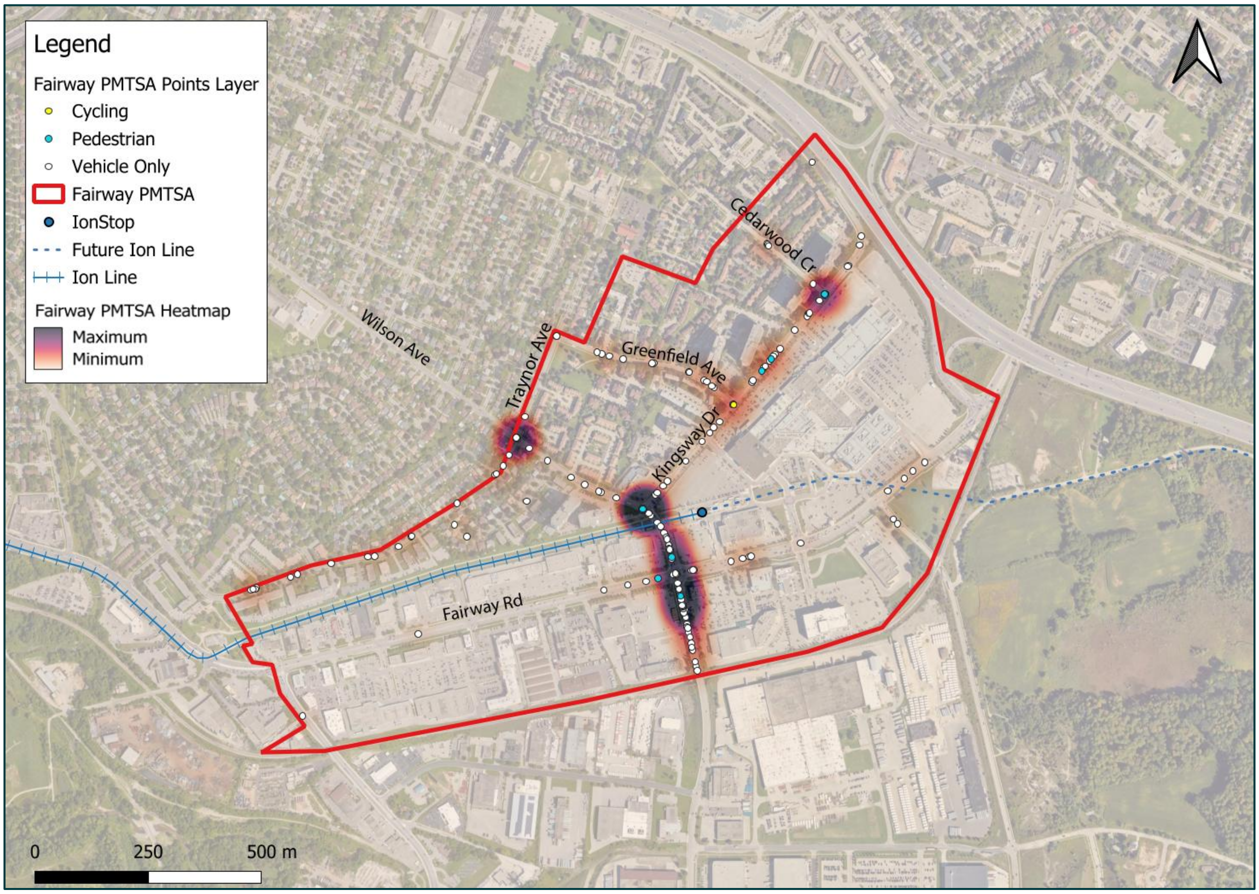


Figure 4-4: Fairway PMTSA Collisions Cluster Map

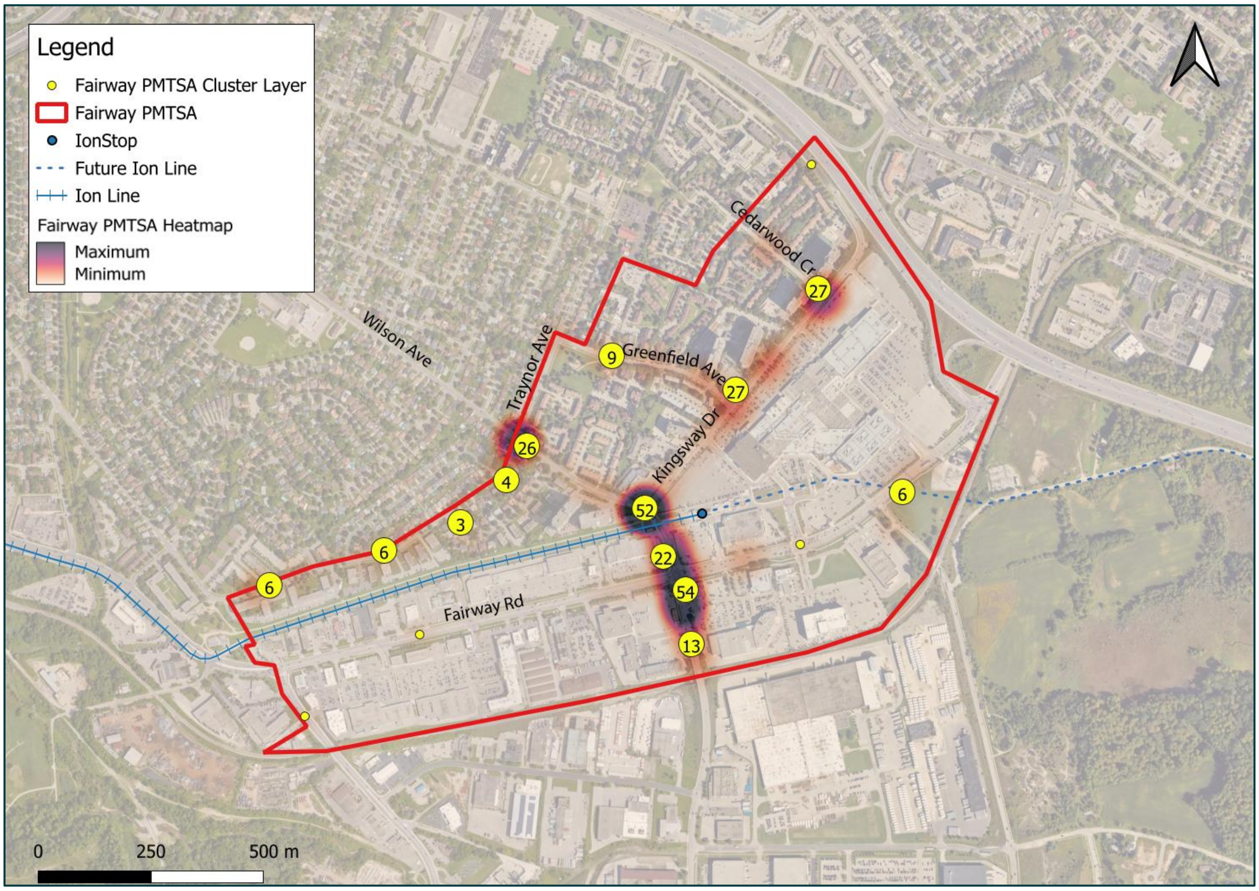


Table 4-4 provides a summary of collision types at identified areas of interest. Based on the heatmap layer in the figures above, the following areas have been identified as having the highest density of collisions.

- Wilson Avenue & Traynor Avenue (Signalized 4-way intersection);
- Wilson Avenue & Kingsway Drive (Signalized 4-way intersection);
- Wilson Avenue, North of Fairway Road (Unsignalized midblock);
- Wilson Avenue & Fairway Road (Signalized 4-way intersection);
- Wilson Avenue, South of Fairway Road (Unsignalized midblock); and,
- Kingsway Drive & Cedarwood Cresent (Unsignalized 3-way intersection with one stop control).

Table 4-4: Areas of Interest Collision Summary

Areas of Interest	Turning Movement	Approaching	Rear end	Sideswipe	Angle	SMV other	Other	Total
Wilson Avenue & Traynor Avenue	5	1	9	0	3	1	0	**19**
Wilson Avenue & Kingsway Drive	7	1	12	8	2	15	0	**45**
Wilson Avenue, North of Fairway Road	6	0	4	5	4	1	1	**21**
Wilson Avenue & Fairway Road	9	0	3	3	1	1	1	**18**
Wilson Avenue, South of Fairway Road	20	0	5	1	16	3	0	**45**
Kingsway Drive & Cedarwood Crescent	3	0	5	0	1	6	0	**15**
Total	50	2	38	17	27	27	2	163

Note: Collisions for areas of interest were selected manually, compared to the Cluster Map which automatically grouped collisions within a 200m search distance. This has resulted in discrepancies between the figures presented in this table and those shown on the Cluster Map.

As shown above, there are six intersections that experience a significant number of collisions. Collisions in these areas account for 62% of all collisions in the Fairway PMTSA boundary. Majority of collisions occurred on Wilson Avenue and Kingsway Drive. Intersections with the highest number of collisions include Wilson Avenue & Kingsway Drive, and Kingsway Drive & Cedarwood Crescent, totaling 90 collisions, or 34% of all collisions. For the intersection of Wilson Avenue & Kingsway Drive, approximately 33% of collisions were due to slow moving vehicles, and 27% from rear end collisions. For the midblock intersection on Wilson Avenue south of Fairway Road, 44% of collisions were from turning movements, and 35% from angle collisions. Overall, a large proportion of collisions in this PMTSA were from turning movements and rear-end collisions.

Due to the high number of pedestrian collisions in this PMTSA, a second analysis was conducted to determine the number of pedestrian-involved collisions at the intersections of interest. No cyclist-involved collisions have been identified in the areas of interest. The number of pedestrian-involved collisions are described in **Table 4-5**.

Table 4-5: Areas of Interest Pedestrian Involved Collisions

Areas of Interest	Pedestrian Collisions	Total Collisions	% of Pedestrian Collisions
Wilson Avenue & Traynor Avenue	0	19	0%
Wilson Avenue & Kingsway Drive	14	45	31%
Wilson Avenue, North of Fairway Road	1	21	5%
Wilson Avenue & Traynor Avenue	1	18	6%
Wilson Avenue & Kingsway Drive	1	45	2%
Wilson Avenue, North of Fairway Road	4	15	27%
All Areas of Interests	21	163	13%

Note: Percentages have been rounded to the nearest whole number.

In total, pedestrian involved collisions account for 13% of all collisions in the areas of interest. The intersection of Wilson Avenue & Kingsway Drive had the highest number of pedestrian involved collisions, with 14 reported collisions. This translates to 31% of all collisions at this intersection. This intersection includes pedestrian signals and crosswalks for 3 sides of the road. One leg of the road is a dedicated exit for vehicles from a high-rise residential building. Sidewalks are also available for all segments of the road. Pedestrian-involved collisions at this intersection have been organized by collision year in **Table 4-6**.

Table 4-6: Wilson Avenue & Kingsway Drive Pedestrian Involved Collisions

Year	Pedestrian-Involved Collisions
2015	1
2016	1
2017	1
2018	2
2019	4
2020	1
2021	2
2022	2
Total	14

As shown above, pedestrian-involved collisions have occurred consistently at this intersection, with the highest number of collisions reported in 2019. It is recommended that the intersection of Wilson Avenue & Kingsway Drive be further examined to enhance pedestrian safety.

4.3 SPORTSWORLD PMTSA

Table 4-7 summarizes the historical collisions within the Sportsworld PMTSA by collision type and year.

Table 4-7: Sportsworld Collision Summary

Collision Type	Year								Total
	2015	2016	2017	2018	2019	2020	2021	2022	
Turning movement	5	6	5	8	3	0	0	0	27
Approaching	0	0	0	0	0	0	0	0	0
Rear end	4	0	2	3	5	2	2	1	19
Sideswipe	0	1	1	3	3	2	1	0	11
SMV unattended vehicle	2	0	0	0	0	0	0	0	2
Angle	3	2	0	1	4	0	0	1	11
SMV other	0	2	0	1	1	0	2	0	6
Other	1	0	0	0	1	0	1	0	3
Total	15	11	8	16	17	4	6	2	79
Pedestrian involved	0	1	0	0	0	0	1	0	2
Cyclist Involved	0	0	0	0	0	0	1	0	1

Within the Sportsworld PMTSA, a total of 79 vehicle collisions were reported between 2015 and 2022. Within these collisions, 2 involved a pedestrian, and 1 involved a cyclist. Overall, this PMTSA experiences minimal collisions with pedestrians and cyclists.

Figure 4-5 and **Figure 4-6** illustrate the number and location of collisions through a point and cluster map.

Figure 4-5: Sportsworld PMTSA Collisions Points Map

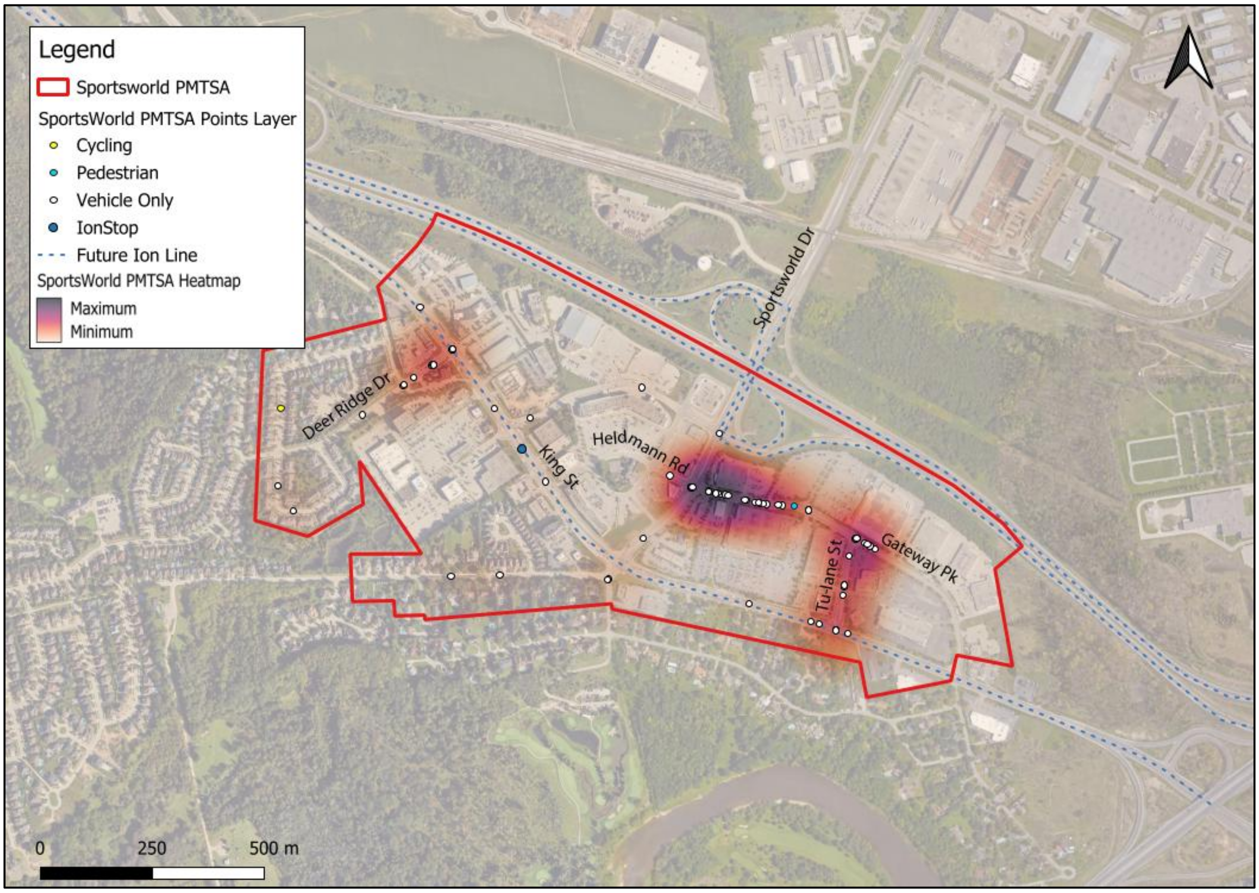


Figure 4-6: Sportsworld PMTSA Collisions Cluster Map

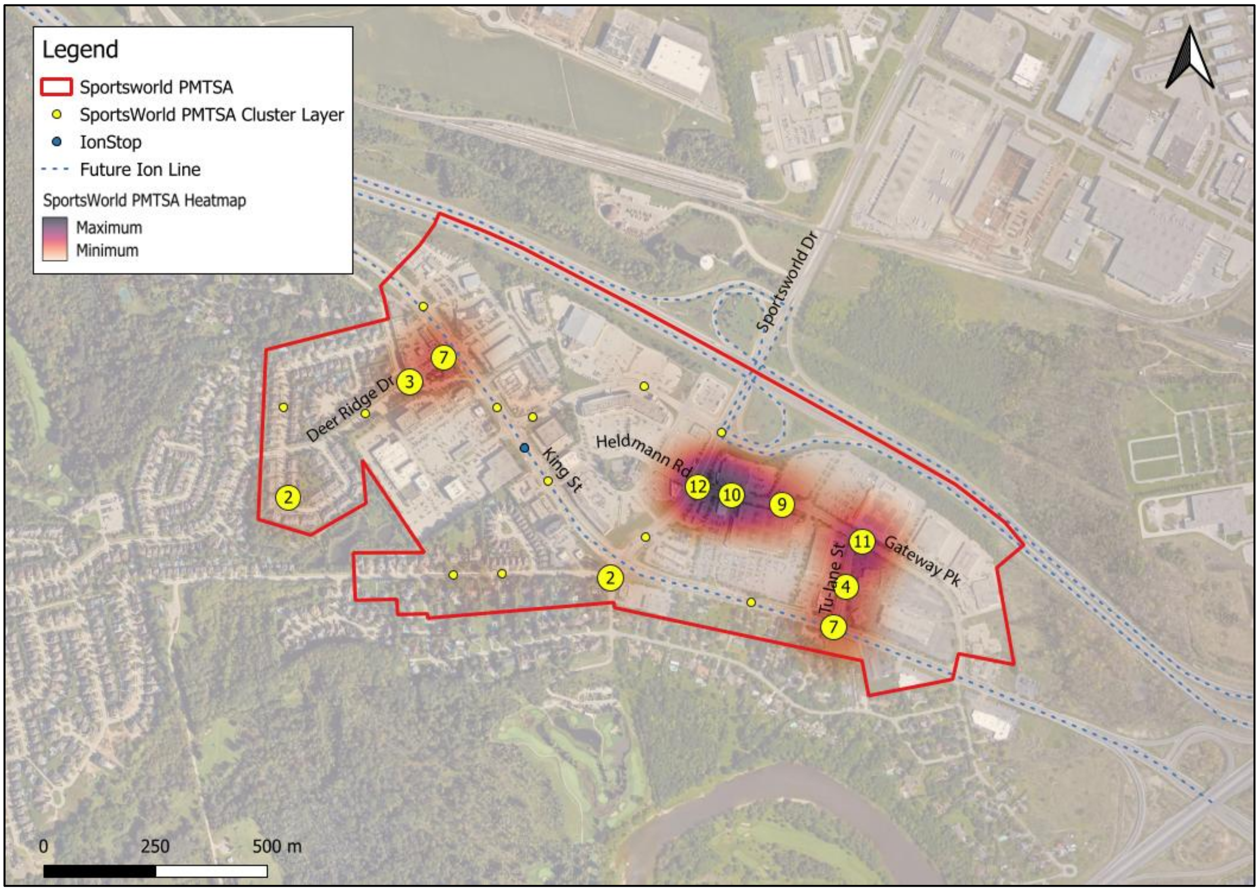


Table 4-8 provides a summary of collision types at identified areas of interest. Based on the density of collisions shown in the figures below, identified areas of interest include the following areas:

- Sportsworld Drive & Heldmann Road (Signalized 4-way intersection);
- Gateway Park Drive, east of Sportsworld Drive (Unsignalized midblock);
- Gateway Park Drive & Tu-lane Street (Unsignalized 3-way intersection with one stop sign); and,
- King Street & Tu-Lane Street (Signalized 3-way intersection).

Table 4-8: Areas of Interest Collision Summary

Areas of Interest	Turning Movement	Approaching	Rear end	Sideswipe	Angle	SMV other	Other	Total
Sportsworld Drive & Heldmann Road	4	0	3	2	2	1	0	12
Gateway Park Drive, east of Sportsworld Drive	8	0	2	3	4	2	0	19
Gateway Park Drive & Tu-Lane Street	5	0	1	2	0	1	0	9
King Street & Tu-Lane Street	3	0	2	1	0	0	0	6
Total	20	0	8	8	6	4	0	46

Note: Collisions for areas of interest were selected manually, compared to the Cluster Map which automatically grouped collisions within a 200m search distance. This has resulted in discrepancies between the figures presented in this table and those shown on the Cluster Map.

The intersections described in the table above have the highest density of collisions, and account for 58% of all collisions in the Sportsworld PMTSA. The majority of collisions in this PMTSA occurred on Heldmann Road/Gateway Park Drive. Additionally, most collisions occurred in the east portion of the Sportsworld PMTSA. Based on the data in **Table 4-8**, 43% of collisions at these intersections were due to turning movements. The midblock segment on Gateway Park, east of Sportworld Drive had the highest density of 19 collisions, with 50% of collisions from turning movements.

4.4 CONCLUSIONS

The collision analysis results have identified several locations in each PMTSA with higher collision rates that could be attributable to intersection design and/or vehicle speeds. In particular, the roundabouts on Block Line Road within the study area, Vanier Drive, and sections of Fairway Road, Wilson Avenue, and Gateway Park Drive with a high number of unsignalized all-moves driveways are noted as areas requiring targeted improvements. Recommendations with respect to access consolidation, intersection improvements, and traffic calming will be considered as part of Phase 2 of the study.

5 SUMMARY OF GAPS AND FINDINGS

5.1 BLOCK LINE PMTSA

Within the Block Line PMTSA, the existing transit network is robust and served by GRT via the ION LRT, local bus routes, and iXpress bus routes. The proposed ION extension past Fairway Station will further improve connectivity and convenience to/from the PMTSA.

To improve the existing cycling experience, there are opportunities to address gaps in the cycling network, particularly along Courtland Avenue E, to create a continuous and safe cycling route. The interruption in the MUP along Courtland Avenue E due to the ION alignment presents a challenge for continuous cycling connectivity. Consideration should be made to continue the MUP along the north side of Courtland Avenue E. For the pedestrian network, new sidewalks along Balzer Road along with filling existing gaps in the pedestrian network can significantly improve safety and connectivity for pedestrians.

5.2 FAIRWAY PMTSA

Within the Fairway PMTSA, Fairway Station serves as a key terminus station, offering connections between frequent local, express, and rapid transit lines. The proposed ION extension past Fairway Station will further enhance travel convenience for those living in the PMTSA by providing dedicated rapid transit service towards south Kitchener.

The existing cycling network has notable gaps, particularly the lack of continuous bike lanes along Wilson Avenue and the abrupt terminus of the paved multi-use pathway along the ION corridor, south of Traynor Avenue. There are also limited cycling facilities throughout the PMTSA area with few connections to surrounding neighbourhoods. The ION rail corridor is also a significant connectivity barrier from a pedestrian perspective, which limits the ability to implement mid-block crossings to neighbourhoods in the north. The existing land use patterns have also contributed to the limited north-south and east-west streets that would be facilitate active trips. While the sidewalk network is generally connected, there are opportunities to infill gaps where they are currently only provided on one side of the road, enhancing pedestrian safety and connectivity. Improving pedestrian safety at the rail crossing along Wabanaki Drive by adding pedestrian rail crossing lights and arms is also necessary to ensure a safe pedestrian environment.

5.3 SPORTSWORLD PMTSA

The Sportsworld PMTSA is well served by GRT, GO Transit, and other private bus operators, creating an important transit node in south Kitchener which provides access to Kitchener, Cambridge, the GTHA and southwestern Ontario. Recent service changes implemented by GRT have continued to reinforce the important role of Sportsworld in servicing key destinations including the Waterloo Region International Airport and new Conestoga College Reuter Drive Campus. The proposed ION extension from Fairway Station to Sportsworld Station will further improve connectivity and convenience to/from the PMTSA. The extension will also relocate the Sportsworld Bus Station to an on-street LRT stop, paving the way for enhanced active transportation connections and improving overall transit accessibility.

The existing cycling network has significant gaps, particularly the need for continuous bike lanes along Sportsworld Drive and improved safety at the Highway 8 on/off ramps. Expanding the cycling network to include King Street E, Gateway Park Drive, and Sportsworld Crossing Road will also enhance active transportation options. From a pedestrian perspective, several roadways, such as portions of Sportsworld Crossing and King Street E, have sidewalks on only one side, limiting pedestrian accessibility. Adding new sidewalks and filling existing gaps, especially on roads with no sidewalks, will improve pedestrian safety and connectivity. Enhancing mid-block connections through commercial areas will also boost walkability. The lack of mid-block connections through commercial areas currently hinders overall walkability and pedestrian convenience.

6 EXISTING TRAFFIC CONDITIONS

An assessment of the existing traffic conditions in the study area was completed to identify existing travel patterns and roadway constraints. Of note, the analysis study area below was determined based on the anticipated traffic impacts associated with intensification within the MTSAs. Several key intersections outside of the MTSA boundary were included in the traffic analysis because of their importance to overall traffic circulation and the regional road network.

6.1 STUDY AREA AND TRAFFIC DATA COLLECTION

Base Synchro models, turning movement counts (TMCs), and signal timing plans (STPs) were obtained from the Region. An additional TMC was provided by the City. Additional TMC data collection was undertaken by LEA in November 2024 to address data gaps that were critical to the evaluation of existing and future network operations.

A summary of the analysis intersections and source of traffic data is provided in **Table 6-1**. Detailed TMCs and STPs are provided in **Appendix A**.

Table 6-1: Data Collection

Intersection	TMC Date	Source
Deer Ridge Dr & King St E	October 11, 2022	Region of Waterloo
Sportsworld Crossing Rd & King St E	October 11, 2022	
Sportsworld Dr / Baxter Pl & King St E	October 31, 2019	
Tu-Lane St & King St E	October 11, 2022	
Gateway Park Dr / Limerick Dr & King St E	October 11, 2022	
Sportsworld Dr & Gateway Park Dr / Heldmann Rd	October 11, 2022	
Sportsworld Dr & Sportsworld Crossing Rd / Hwy 8 On/off-ramp	April 12, 2022	
Ottawa St S & Homer Watson Blvd	October 4, 2023	
Hanson Ave & Homer Watson Blvd	September, 6, 2023	
Block Line Rd & Homer Watson Blvd	September, 6, 2023	
Block Line Rd & Courtland Ave E	October 4, 2017	
Overland Dr / Hwy 8 On/off-ramp & Courtland Ave E	March 28, 2023	
Walton Ave & Courtland Ave E	March 20, 2024	
Hayward Ave & Courtland Ave E	March 28, 2023	
Hillmount St & Courtland Ave E	March 28, 2023	
Shelley Dr & Courtland Ave E	February 11, 2020	
Siebert Ave & Courtland Ave E	February 11, 2020	
Balzer Rd & Courtland Ave E	March 20, 2024	
Fairway Rd S / Courtland Ave E & Manitou Dr	October 19, 2022	
Webster Rd & Manitou Dr	March 9, 2023	
Bleams Rd & Manitou Dr	October 19, 2022	
Traynor Ave & Wilson Ave	May 17, 2022	
Kingsway Dr & Wilson Ave	May 17, 2022	
Fairway Rd S & Wilson Ave	May 17, 2022	
Fairway Rd S & Fairview Mall Driveway (West) / Driveway	September 14, 2022	
Fairway Rd S & Wabanaki Dr / Fairview Mall Driveway (Centre)	March 9, 2023	
Fairway Rd S & Hwy 8 On/off-ramp	May 17, 2022	
Kingsway Dr & Greenfield Ave	June 27, 2023	Ontario Traffic Inc.
Sportsworld Dr / Hwy 8 On-ramp		LEA Consulting Ltd.

Intersection	TMC Date	Source
Block Line Rd & Fallowfield Dr	November 21, 2024	
Kingsway Dr & Cedarwoods Cres		
Fairway Rd S & Fairview Mall Driveway (East)		

Given that TMC data was collected over several years, corridor volumes were balanced between adjacent intersections where volume differences of 10% or greater were present. To be conservative, traffic volumes were increased to balance to intersections with higher observed volumes.

6.2 ANALYSIS METHODOLOGY

The existing traffic operations were assessed using Synchro 11 software to complete the intersection capacity analysis for key intersections in the three (3) PMTSAs. The analysis was completed based on the Highway Capacity Manual (HCM) 2000 methodology for signalized intersections and HCM 6th Edition for unsignalized intersections. In addition, roundabouts were analyzed using Junctions/Arcady 8.

The analysis was completed as per the *Region of Waterloo Transportation Impact Study Guidelines (2013*), the *Region of Waterloo Requirements for Capacity Analysis, Roundabouts, Signal Warrants*, and the *Ministry of Transportation Ontario's (MTO) General Guidelines for the Preparation of Traffic Impact Studies (March 2023).* As such, saturation flow rates for each movement were set to values defined by the Region, peak hour factors were set to 1.0 for all movements, and lost time adjustments were made such that the total lost time for each movement equaled 4 seconds.

As per the Region's guidelines, critical movements are defined as those which operate at level of service (LOS) E or F, or those with queues exceeding the available storage capacity or which block entry to other lanes. The MTO defines critical movements as those with a V/C ratio above 0.85, or 0.75 for highway ramp movements.

The results from the intersection capacity analysis are summarized in the following sections. For signalized intersections, only movements approaching capacity (i.e. V/C > 0.85 or LOS E/F, V/C > 0.75 for highway ramps) are shown in the tables below. Detailed Synchro reports are provided in **Appendix B**.

6.3 BLOCK LINE PMTSA EXISTING TRAFFIC CONDITIONS

The following section summarizes the existing traffic conditions within the Block Line PMTSA. **Figure 6-1** and **Figure 6-2** illustrate the resulting overall LOS at the intersections studied during the AM and PM peak hours, respectively. Of note, the worst movement LOS is illustrated for the unsignalized intersections as HCM 2000 does not report an overall LOS.

Figure 6-1: Existing Traffic Conditions Level of Service (AM) – Block Line PMTSA

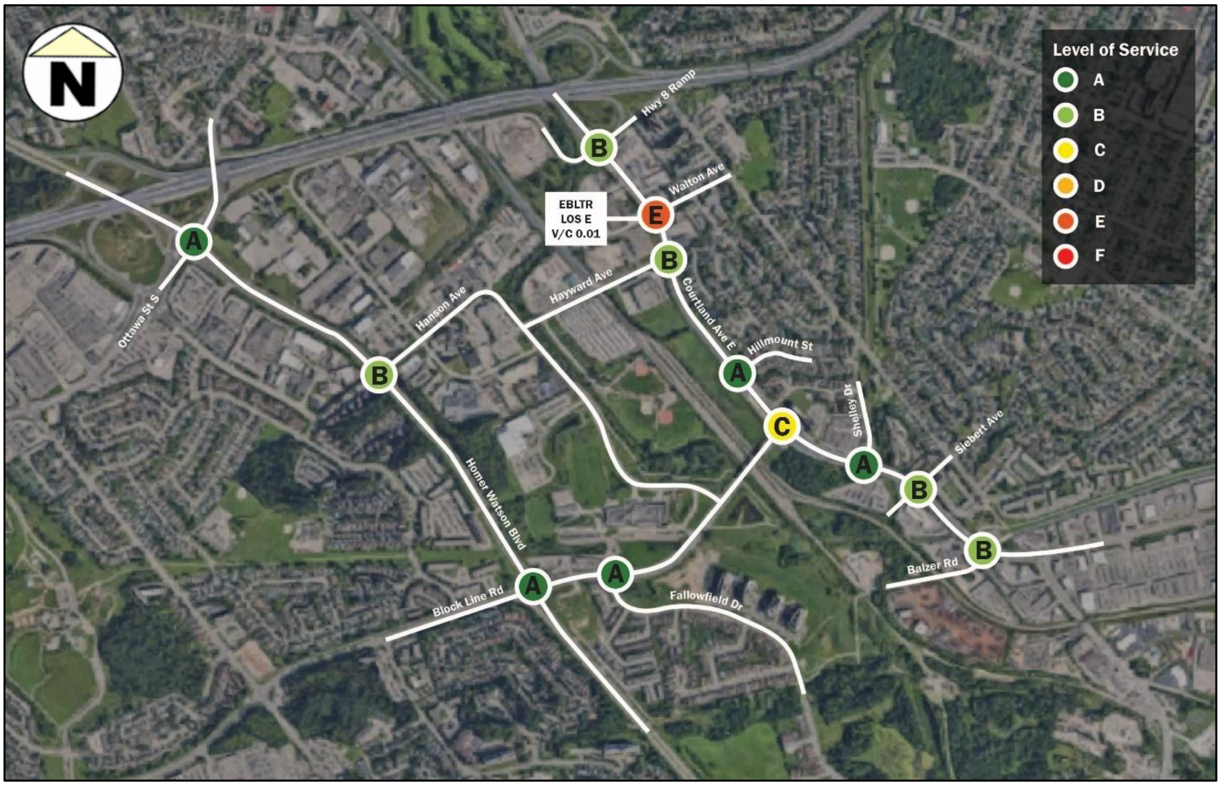


Figure 6-2: Existing Traffic Conditions Level of Service (PM) – Block Line PMTSA

The analysis results indicate that intersections within the Block Line PMTSA generally perform well, with most locations reporting an overall LOS C (or better) during the weekday peak hours. The unsignalized intersection of Courtland Avenue E & Walton Ave experiences LOS E for the unsignalized eastbound movement while maintaining capacity, and the SBR at Courtland Avenue E and Block Line Rd is deemed critical during the PM peak hour. These study findings indicate that there is residual capacity within the study area road network.

The analysis results are detailed for each intersection in the subsections below.

6.3.1 Signalized Intersections

6.3.1.1 Homer Watson Boulevard & Hanson Avenue

The intersection capacity analysis results for the signalized intersection of Homer Watson Boulevard & Hanson Avenue are summarized in **Table 6-2**.

Table 6-2: Intersection Capacity Analysis – Homer Watson Boulevard & Hanson Avenue

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.67	12	B	-	-
PM Peak Hour						
Overall	-	0.55	10	B	-	-

Under existing conditions, the intersection of Homer Watson Boulevard & Hanson Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

3.1.1.3 Courtland Avenue E & Overland Drive / Hwy 8 On/Off-Ramp

The intersection capacity analysis results for the signalized intersection of Courtland Avenue E & Overland Drive / Highway 8 On/Off-Ramp are summarized in **Table 6-3**.

Table 6-3: Intersection Capacity Analysis – Courtland Ave E & Overland Dr / Hwy 8 On/Off-Ramp

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.38	13	B	-	-
PM Peak Hour						
Overall	-	0.37	10	A	-	-

Under existing conditions, the intersection of Courtland Avenue E & Overland Drive / Highway 8 On/Off-Ramp operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.3.1.2 Courtland Ave E & Hayward Avenue

The intersection capacity analysis results for the signalized intersection of Courtland Avenue E & Hayward Avenue are summarized in **Table 6-4**.

Table 6-4: Intersection Capacity Analysis – Courtland Ave E & Hayward Avenue

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.39	14	B	-	-
PM Peak Hour						
Overall	-	0.46	12	B	-	-

Under existing conditions, the intersection of Courtland Avenue E & Hayward Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.3.1.3 Courtland Avenue E & Hillmount Street

The intersection capacity analysis results for the signalized intersection of Courtland Avenue E & Hillmount Street are summarized in **Table 6-5**.

Table 6-5: Intersection Capacity Analysis – Courtland Avenue E & Hillmount Street

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.19	4	A	-	-
PM Peak Hour						
Overall	-	0.29	3	A	-	-

Under existing conditions, the intersection of Courtland Avenue E & Hillmount Street operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.3.1.4 Courtland Avenue E & Block Line Road

The intersection capacity analysis results for the signalized intersection of Courtland Avenue E & Block Line Road are summarized in **Table 6-6**.

Table 6-6: Intersection Capacity Analysis – Courtland Avenue E & Block Line Road

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.60	22	C	-	-
SBR	225	0.58	28	C	34	63
PM Peak Hour						
Overall	-	0.74	28	C	-	-
SBR	456	0.87	43	D	91	171

Under existing conditions, the intersection of Courtland Avenue E & Block Line Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. It is noted that the southbound right movement is approaching capacity during the PM peak hour. The queues for the southbound right movement also exceed the available storage of 40m during both peak periods, and may spill back into the through lane on occasion. An extension of the SBR turn lane is not feasible due to the presence of a bus layby further north. No critical movements have been identified.

6.3.1.5 Courtland Avenue E & Shelley Drive

The intersection capacity analysis results for the signalized intersection of Courtland Avenue E & Shelley Drive are summarized in **Table 6-7**.

Table 6-7: Intersection Capacity Analysis – Courtland Avenue E & Shelley Drive

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.30	7	A	-	-
PM Peak Hour						
Overall	-	0.43	7	A	-	-

Under existing conditions, the intersection of Courtland Avenue E & Shelley Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.3.1.6 Courtland Avenue E & Siebert Avenue

The intersection capacity analysis results for the signalized intersection of Courtland Avenue E & Siebert Avenue are summarized in **Table 6-8.**

Table 6-8: Intersection Capacity Analysis – Courtland Avenue E & Siebert Avenue

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.38	12	B	-	-
PM Peak Hour						
Overall	-	0.56	18	B	-	-

Under existing conditions, the intersection of Courtland Avenue E & Siebert Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.3.2 Roundabout Intersections

6.3.2.1 Homer Watson Boulevard & Ottawa Street S

The intersection capacity analysis results for the roundabout at Homer Watson Boulevard & Ottawa Street S are summarized in **Table 6-9**.

Table 6-9: Intersection Capacity Analysis – Homer Watson Boulevard & Ottawa Street S

Leg	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Weekday AM Peak Hour								
Westbound	0.22	~1	1.67	0.17	A	1.92	A	74% (Eastbound Leg)
Southbound	0.53	1.05	1.93	0.33	A			
Eastbound	0.68	~1	2.45	0.39	A			
Northbound	0.28	~1	1.60	0.21	A			
Leg	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity

Weekday PM Peak Hour								
Westbound	0.34	~1	1.85	0.25	A	2.10	A	63% (Eastbound Leg)
Southbound	0.75	~1	2.31	0.42	A			
Eastbound	0.68	~1	2.58	0.27	A			
Northbound	0.37	~1	1.68	0.64	A			

Under existing weekday AM and PM peak hour conditions, the Homer Watson Boulevard & Ottawa Street S roundabout functions well with all movements operating within capacity with V/C ratios below 1.00, minimal delay at LOS A, and minimal queuing. No critical movements have been identified.

6.3.2.2 Homer Watson Boulevard & Block Line Road

The intersection capacity analysis results for the roundabout at the Homer Watson Boulevard & Block Line Road are summarized in **Table 6-10**.

Table 6-10: Intersection Capacity Analysis – Homer Watson Boulevard & Block Line Road

Leg	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Weekday AM Peak Hour								
Westbound	0.41	~1	3.67	0.28	A	3.33	A	46% (Northbound Leg)
Southbound	0.54	1.05	1.67	0.34	A			
Eastbound	0.59	~1	4.58	0.36	A			
Northbound	1.54	3.18	4.58	0.59	A			
Leg	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Weekday PM Peak Hour								
Westbound	0.75	~1	4.72	0.42	A	3.71	A	39% (Northbound Leg)
Southbound	0.87	1.03	2.17	0.46	A			
Eastbound	0.51	1.03	3.68	0.33	A			
Northbound	1.84	5.15	4.94	0.64	A			

Under existing weekday AM and PM peak hour conditions, the Homer Watson Boulevard & Block Line Road roundabout functions well with all movements operating within capacity with V/C ratios below 1.00, minimal delay at LOS A, and minimal queuing. No critical movements have been identified.

6.3.2.3 Block Line Road & Fallowfield Drive

The intersection capacity analysis results for the roundabout at Block Line Road & Fallowfield Drive are summarized in **Table 6-11**.

Table 6-11: Intersection Capacity Analysis – Block Line Road & Fallowfield Drive

Leg	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Weekday AM Peak Hour								
Westbound	0.17	~1	1.95	0.14	A	2.24	A	176% (Northbound Leg)
Southbound	0.15	~1	2.54	0.23	A			
Eastbound	0.30	~1	1.92	0.14	A			
Northbound	0.16	~1	3.52	0.14	A			

Leg	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Weekday PM Peak Hour								
Westbound	0.35	~1	2.11	0.26	A	2.21	A	218% (Northbound Leg)
Southbound	0.07	~1	2.71	0.06	A			
Eastbound	0.28	~1	1.88	0.22	A			
Northbound	0.16	~1	3.26	0.14	A			

Under existing weekday AM and PM peak hour conditions, the Block Line Road & Fallowfield Drive roundabout functions well with all movements operating within capacity with V/C ratios below 1.00, minimal delay at LOS A, and minimal queuing. No critical movements have been identified.

6.3.3 Unsignalized Intersections

6.3.3.1 Courtland Avenue E & Walton Avenue

The intersection capacity analysis results for the unsignalized intersection of Courtland Avenue E & Walton Avenue are summarized in **Table 6-12**.

Table 6-12: Intersection Capacity Analysis – Courtland Avenue E & Walton Avenue

Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue (vehicles)
AM Peak Hour					
Overall	-	-	3	-	-
NBL	0	0.00	0	A	0
NBT	550	0.00	0	-	0
NBR	29	0.00	0	-	0
EBLTR	**1**	**0.01**	**39**	**E**	**0**
WBLTR	230	0.36	14	B	2
SBL	75	0.08	9	A	0
SBT	761	0.00	1	A	0
SBR	0	0.00	0	-	0
PM Peak Hour					
Overall	-	-	3	-	-
NBL	2	0.00	9	A	0
NBT	914	0.00	0	A	0
NBR	29	0.00	0	-	0
EBLTR	**18**	**0.15**	**40**	**E**	**1**
WBLTR	141	0.39	21	C	2
SBL	107	0.15	11	B	1
SBT	687	0.00	1	A	0
SBR	0	0.00	0	-	0

Under existing conditions, the intersection of Courtland Avenue E & Walton Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound movement (private driveway) operates at LOS E during both peak hours. This movement maintains capacity but experiences above-average levels of delay due to the limited number of gaps in through traffic along Courtland Avenue E. No other critical movements have been identified.

6.3.3.2 Courtland Avenue E & Balzer Road

The intersection capacity analysis results for the unsignalized intersection of Courtland Avenue E & Balzer Road are summarized in **Table 6-13**.

Table 6-13: Intersection Capacity Analysis –Courtland Avenue E & Balzer Road

Mvmt	Vol	V/C	Delay(s)	LOS	95th Queue (vehicles)
AM Peak Hour					
Overall	-	-	0	-	-
NBL	16	0.02	9	A	0
NBT	647	0.00	0	-	0
EBLR	19	0.04	14	B	0
SBT	590	0.00	0	-	0
SBR	19	0.00	0	-	0
PM Peak Hour					
Overall	-	-	0	-	-
NBL	4	0.00	9	A	0
NBT	973	0.00	0	-	0
EBLR	36	0.13	20	C	0
SBT	689	0.00	0	-	0
SBR	9	0.00	0	-	0

Under existing conditions, the intersection of Courtland Avenue E & Balzer Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

It is noted that there is a signalized LRT rail crossing on Courtland Avenue E just north of Balzer Road. The signal was not modelled in the analysis as it was noted that LRT trains currently cross 12 times per hour during peak periods and would not cause significant vehicle delays.

6.4 FAIRWAY PMTSA EXISTING TRAFFIC CONDITIONS

The following section summarizes the existing traffic conditions within the Fairway PMTSA. **Figure 6-3** and **Figure 6-4** illustrate the resulting LOS at the intersections studied during the AM and PM peak hours, respectively. Of note, the worst movement LOS is illustrated for the unsignalized intersections as HCM 2000 does not report an overall LOS.

Figure 6-3: Existing Traffic Conditions Level of Service (AM) – Fairway PMTSA

Figure 6-4: Existing Traffic Conditions Level of Service (PM) – Fairway PMTSA

The analysis results indicate that intersections within the Fairway PMTSA generally perform well, with most locations reporting an overall LOS C (or better) during the weekday peak hours. Some capacity constraints are noted along Fairway Road S at major intersections during the PM peak hour, particularly near Fairview Park Mall and the Highway 8 ramps. However, capacity constraints are largely limited to turning movements and the results indicate that there is residual through movement capacity along major corridors.

The analysis results are detailed for each intersection in the subsections below.

6.4.1 Signalized Intersections

6.4.1.1 Courtland Avenue E / Fairway Drive S & Manitou Drive

The intersection capacity analysis results for the signalized intersection of Courtland Avenue E / Fairway Drive S & and Manitou Drive are summarized in **Table 6-14**.

Table 6-14: Intersection Capacity Analysis – Courtland Avenue E / Fairway Road S & Manitou Dr

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.51	18	B	-	-
WBL	334	0.58	12	B	18	57
PM Peak Hour						
Overall	-	0.82	29	C	-	-

WBL	567	0.92	37	D	62	163
NBR	616	0.50	35	C	3	49

Under existing conditions, the intersection of Courtland Avenue E / Fairway Road S & Manitou Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. It is noted that the westbound left movement is approaching capacity in the PM peak hour. During both peak hours, the queues for the westbound left movement exceed the available storage of 40m. In addition, the 95th percentile queue for the northbound right movement exceeds the available storage of 30m during the PM peak hour. No other critical movements have been identified.

6.4.1.2 Fairway Road S & Wilson Avenue

The intersection capacity analysis results for the signalized intersection of Fairway Road S & Wilson Avenue are summarized in **Table 6-15**.

Table 6-15: Intersection Capacity Analysis – Fairway Road S & Wilson Avenue

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.68	22	C	-	-
SBL	153	0.44	29	C	24	43
PM Peak Hour						
Overall	-	0.88	37	D	-	-
WBL	350	0.95	64	E	61	122
SBL	205	0.79	50	D	35	66

Under existing conditions, the intersection of Fairway Road S & Wilson Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays, with the exception of the westbound left movement which approaches capacity and operates at LOS E during the PM peak hour. It is also noted that queues for the southbound left movement exceed the available storage length of 35m in both peak hours. No other critical movements have been identified.

6.4.1.3 Fairway Road S & Fairview Mall Driveway (West)

The intersection capacity analysis results for the signalized intersection of Fairway Road S & Fairview Mall Driveway (West) are summarized in **Table 6-16**. Note: the northbound movement at this intersection corresponds to the access for 225 Fairway Road S and adjacent commercial properties.

Table 6-16: Intersection Capacity Analysis – Fairway Road S & Fairview Mall Driveway (West)

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.38	12	B	-	-
PM Peak Hour						
Overall	-	0.63	25	C	-	-

Under existing conditions, the intersection of Fairway Road S & Fairview Mall Driveway (West) operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.4.1.4 Fairway Road S & Hwy 8 On/Off-Ramp

The intersection capacity analysis results for the signalized intersection of Fairway Road S & Highway 8 On/Off-Ramp are summarized in **Table 6-17**.

Table 6-17: Intersection Capacity Analysis – Fairway Road S & Hwy 8 On/Off-Ramp

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.71	13	B	-	-
PM Peak Hour						
Overall	-	0.91	28	C	-	-
EBL	314	0.95	74	E	63	122
SBL	698	0.76	42	D	80	103

Under existing conditions, the intersection of Fairway Road S & Highway 8 On/Off-Ramp operates well during both weekday peak hours. Most movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound left and southbound left movements operate with V/C ratios greater than 0.75 during the PM peak hour. In particular, the eastbound left is approaching capacity during the PM peak hour with a V/C of 0.95 and LOS E. No other critical movements have been identified.

6.4.1.5 Wilson Avenue & Traynor Avenue

The intersection capacity analysis results for the signalized intersection of Wilson Avenue & Traynor Avenue are summarized in **Table 6-18**.

Table 6-18: Intersection Capacity Analysis – Wilson Avenue & Traynor Avenue

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.22	9	A	-	-
PM Peak Hour						
Overall	-	0.25	11	B	-	-

Under existing conditions, the intersection of Wilson Avenue & Traynor Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.4.1.6 Wilson Avenue & Kingsway Drive

The intersection capacity analysis results for the signalized intersection of Wilson Avenue & Kingsway Drive are summarized in **Table 6-19**.

Table 6-19: Intersection Capacity Analysis –Wilson Avenue & Kingsway Drive

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.23	10	B	-	-
PM Peak Hour						
Overall	-	0.38	17	B	-	-

Under existing conditions, the intersection of Wilson Avenue & Kingsway Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.4.2 Roundabout Intersections

6.4.2.1 Manitou Drive & Bleams Road

The intersection capacity analysis results for the roundabout at Manitou Drive & Bleams Road are summarized in **Table 6-20**.

Table 6-20: Intersection Capacity Analysis – Manitou Drive & Bleams Road

Leg	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Weekday AM Peak Hour								
Southbound	0.38	~1	2.41	0.26	A	2.32	A	221% (Eastbound Leg)
Eastbound	0.35	~1	2.22	0.25	A			
Northbound	0.24	~1	2.34	0.18	A			
Leg	Queue (PCE)	95% Queue (PCE)	Delay (s)	V/C	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
Weekday PM Peak Hour								
Southbound	0.91	1.03	3.34	0.47	A	2.96	A	86% (Southbound Leg)
Eastbound	0.50	1.05	2.62	0.32	A			
Northbound	0.50	1.03	2.75	0.33	A			

Under existing weekday AM and PM peak hour conditions, the Manitou Drive & Bleams Road roundabout functions well with all movements operating within capacity with V/C ratios below 1.00, minimal delay at LOS A, and minimal queuing. No critical movements have been identified.

6.4.3 Unsignalized Intersections

6.4.3.1 Fairway Road S & Fairview Mall Driveway (Centre) / Wabanaki Drive

The intersection capacity analysis results for the unsignalized intersection of Fairway Road S & Fairview Mall Driveway (Centre) / Wabanaki Drive are summarized in **Table 6-21**.

Table 6-21: Intersection Capacity Analysis – Fairway Road S & Fairview Mall Driveway (Centre) / Wabanaki Drive

Mvmt	Vol	V/C	Delay(s)	LOS	95th Queue (vehicles)
AM Peak Hour					
Overall	-	-	4	-	-
NBR	390	0.68	24	C	5
EBT	768	0.00	0	-	0
EBR	64	0.00	0	-	0
WBT	1095	0.00	0	-	0
WBR	20	0.00	0	-	0
SBR	0	0.00	0	A	0
PM Peak Hour					
Overall	-	-	6	-	-
NBR	**356**	**0.92**	**61**	**F**	**10**
EBT	1297	0.00	0	-	0
EBR	49	0.00	0	-	0
WBT	1565	0.00	0	-	0
WBR	173	0.00	0	-	0
SBR	0	0.00	0	A	0

Under existing conditions, the intersection of Fairway Road S & Fairview Mall Driveway (Centre) / Wabanaki Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays, with the exception of the northbound right movement which approaches capacity and is operating at LOS F during the PM peak hour due to the high eastbound volumes limiting the available gaps for northbound right-turning vehicles. No other critical movements have been identified. All existing 95th percentile queues can be accommodated by their available storage lanes.

6.4.3.2 Fairway Road S & Fairview Mall Driveway (East)

The intersection capacity analysis results for the unsignalized intersection of Fairway Road S & Fairview Mall Driveway (East) are summarized in **Table 6-22**.

Table 6-22: Intersection Capacity Analysis – Fairway Road S & Fairview Mall Driveway (East)

Mvmt	Vol	V/C	Delay(s)	LOS	95th Queue (vehicles)
AM Peak Hour					
Overall	-	-	0	-	-
EBT	1158	0.00	0	-	0
WBT	1077	0.00	0	-	0
WBR	102	0.00	0	-	0
SBR	38	0.08	13	B	0
PM Peak Hour					
Overall	-	-	1	-	-
EBT	1660	0.00	0	-	0
WBT	1560	0.00	0	-	0
WBR	526	0.00	0	-	0
SBR	178	0.52	26	D	3

Under existing conditions, the intersection of Fairway Road S & Fairview Mall Driveway (East) operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.4.3.3 Manitou Drive & Webster Road

The intersection capacity analysis results for the unsignalized intersection of Manitou Drive & Webster Road are summarized in **Table 6-23**.

Table 6-23: Intersection Capacity Analysis – Manitou Drive & Webster Road

Mvmt	Vol	V/C	Delay(s)	LOS	95th Queue (vehicles)
AM Peak Hour					
Overall	-	-	0	-	-
NBT	541	0.00	0	-	0
NBR	116	0.00	0	-	0
EBR	2	0.00	12	B	0
WBR	24	0.05	13	B	0
SBT	579	0.00	0	-	0
SBR	3	0.00	0	-	0
PM Peak Hour					
Overall	-	-	1	-	-
NBT	830	0.00	0	-	0
NBR	130	0.00	0	-	0
EBR	2	0.01	17	C	0
WBR	86	0.25	19	C	1
SBT	976	0.00	0	-	0
SBR	3	0.00	0	-	0

Under existing conditions, the intersection of Manitou Drive & Webster Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.4.3.4 Kingsway Drive & Greenfield Avenue

The intersection capacity analysis results for the unsignalized intersection of Kingsway Drive & Greenfield Avenue are summarized in **Table 6-24**.

Table 6-24: Intersection Capacity Analysis – Kingsway Drive & Greenfield Avenue

Mvmt	Vol	V/C	Delay(s)	LOS	95th Queue (vehicles)
AM Peak Hour					
Overall	-	-	3	-	-
EBL	64	0.05	8	A	0
EBT	180	0.00	0	-	0
WBT	185	0.00	0	-	0
WBR	53	0.00	0	-	0
SBLR	101	0.17	12	B	1
PM Peak Hour					
Overall	-	-	3	-	-
EBL	73	0.07	8	A	0
EBT	330	0.00	0	-	0
WBT	271	0.00	0	-	0
WBR	69	0.00	0	-	0

SBLR	138	0.32	17	C	1

Under existing conditions, the intersection of Kingsway Drive & Greenfield Avenue operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.4.3.5 Kingsway Drive & Cedarwoods Cresent

The intersection capacity analysis results for the unsignalized intersection of Kingsway Drive & Cedarwoods Crescent are summarized in **Table 6-25**.

Table 6-25: Intersection Capacity Analysis – Kingsway Drive & Cedarwoods Cresent

Mvmt	Vol	V/C	Delay(s)	LOS	95th Queue (vehicles)
AM Peak Hour					
Overall	-	-	3	-	-
EBL	29	0.02	8	A	0
EBT	170	0.00	0	-	0
WBT	159	0.00	0	-	0
WBR	40	0.00	0	-	0
SBLR	117	0.16	11	B	1
PM Peak Hour					
Overall	-	-	2	-	-
EBL	59	0.05	8	A	0
EBT	336	0.00	0	-	0
WBT	293	0.00	0	-	0
WBR	101	0.00	0	-	0
SBLR	94	0.20	15	B	1

Under existing conditions, the intersection of Kingsway Drive & Cedarwoods Crescent operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.5 SPORTSWORLD PMTSA EXISTING TRAFFIC CONDITIONS

The following section summarizes the existing traffic conditions within the Sportsworld PMTSA. **Figure 6-5** and **Figure 6-6** illustrate the resulting LOS at the intersections studied during the AM and PM peak hours, respectively. Of note, the worst movement LOS is illustrated for the unsignalized intersections as HCM 2000 does not report an overall LOS.

Figure 6-5: Existing Traffic Conditions Level of Service (AM) – Sportsworld PMTSA

Figure 6-6: Existing Traffic Conditions Level of Service (PM) – Sportsworld PMTSA

The analysis results indicate that intersections within the Sportsworld PMTSA generally perform well, with all locations reporting an overall LOS C (or better) during the weekday peak hours. Some capacity constraints are noted along Sportsworld Drive at the intersection with King Street E and the Highway 8 ramps during the PM peak hour. These capacity constraints indicate some limitations on available roadway capacity to enter/exit the study area from the east and north.

The analysis results are detailed for each intersection in the subsections below.

6.5.1 Signalized Intersections

6.5.1.1 King Street E & Deer Ridge Drive

The intersection capacity analysis results for the signalized intersection of King Street E & Deer Ridge Drive are summarized in **Table 6-26**.

Table 6-26: Intersection Capacity Analysis – King Street E & Deer Ridge Drive

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.59	14	B	-	-
PM Peak Hour						
Overall	-	0.69	18	B	-	-
EBL	204	0.80	69	E	56	87

Under existing conditions, the intersection of King Street E & Deer Ridge Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound left movement operates at LOS E during the PM peak hour, but within capacity and with acceptable queues. No other critical movements have been identified.

6.5.1.2 King Street E & Sportsworld Crossing Road

The intersection capacity analysis results for the signalized intersection of King Street E & Sportsworld Crossing Road are summarized in **Table 6-27**.

Note: the eastbound movement corresponds to the driveway for the Deer Ridge Centre shopping mall.

Table 6-27: Intersection Capacity Analysis – King Street E & Sportsworld Crossing Road

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.44	9	A	-	-
PM Peak Hour						
Overall	-	0.52	10	B	-	-
EBL	35	0.24	57	E	10	19
EBT	19	0.09	56	E	5	12
EBR	73	0.05	55	E	0	14
WBL	12	0.09	56	E	3	9
WBT	15	0.07	55	E	4	10
WBR	126	0.09	56	E	0	17

Under existing conditions, the intersection of King Street E & Sportsworld Crossing Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound and westbound movements (Sportsworld Crossing Road and the private mall access) operate at LOS E during the PM peak hour. No other critical movements have been identified.

6.5.1.3 King Street E & Sportsworld Drive / Baxter Place / Pioneer Tower Road

The intersection capacity analysis results for the signalized intersection of King Street E & Sportsworld Drive / Baxter Place /Pioneer Tower Road are summarized in **Table 6-28**.

Table 6-28: Intersection Capacity Analysis – Kings Street E & Sportsworld Drive / Baxter Place / Pioneer Tower Road

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.67	30	C	-	-
NBR	325	0.36	24	C	26	66
PM Peak Hour						
Overall	-	0.76	39	D	-	-
EBL	60	0.35	59	E	16	34
EBTR	84	0.14	56	E	5	15
WBL	511	0.80	63	E	78	146
WBT	44	0.85	69	E	80	155

Under existing conditions, the intersection of King Street E & Sportsworld Drive / Baxter Place / Pioneer Tower Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. It is noted that the eastbound and westbound movements operate at LOS E during the PM peak hour. It is also noted that the 95th percentile queue length for the northbound right turn lane exceeds the available 50m storage length in the AM peak hour. No other critical movements have been identified.

6.5.1.4 King Street E & Tu-Lane Street

The intersection capacity analysis results for the signalized intersection of King Street E & Tu-Lane Street are summarized in **Table 6-29**.

Table 6-29: Intersection Capacity Analysis – King Street E & Tu-Lane Street

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.46	5	A	-	-
PM Peak Hour						
Overall	-	0.70	14	B	-	-
WBL	328	0.69	59	E	50	64

Under existing conditions, the intersection of King Street E & Tu-Lane Street operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the westbound left movement operates at LOS E during the PM peak hour. No other critical movements have been identified.

6.5.1.5 Sportsworld Drive & Gateway Park Drive / Heldmann Road

The intersection capacity analysis results for the signalized intersection of Sportsworld Drive & Gateway Drive / Heldmann Road are summarized in **Table 6-30**.

Table 6-30: Intersection Capacity Analysis – Sportsworld Drive & Gateway Park Drive / Heldmann Road

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.30	22	C	-	-
PM Peak Hour						
Overall	-	0.49	26	C	-	-

Under existing conditions, the intersection of Sportsworld Drive & Gateway Park Drive / Heldmann Road operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

6.5.1.6 Sportsworld Drive & Sportsworld Crossing Rd / Hwy 8 SB On/Off-Ramp

The intersection capacity analysis results for the signalized intersection of Sportsworld Drive & Sportsworld Crossing Road / Highway 8 Southbound On/Off-Ramp are summarized in **Table 6-31**.

Table 6-31: Intersection Capacity Analysis – Sportsworld Drive & Sportsworld Crossing Road / Hwy 8 SB On/Off-Ramp

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.76	13	B	-	-
EBTR	843	0.58	18	B	60	97
PM Peak Hour						
Overall	-	0.66	15	B	-	-
EBTR	764	0.54	18	B	51	83

Under existing conditions, the intersection of Sportsworld Drive & Sportsworld Crossing / Highway 8 Southbound On/Off-Ramp operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. No critical movements have been identified. It is noted however, that the 95th percentile queue length for the eastbound through movement exceeds the available storage of 80m, indicating the potential for an occasional spillback into the upstream intersection during both peak hours.

6.5.1.7 Sportsworld Drive & Hwy 8 NB On/Off-Ramp

The intersection capacity analysis results for the signalized intersection of Sportsworld Drive & Highway 8 Northbound On/Off-Ramp are summarized in **Table 6-32**.

Note: the Region Synchro model categorizes movements along Sportsworld Drive as eastbound/westbound at this location. Southbound movements correspond to vehicles exiting the Hwy 8 NB Off-Ramp.

Table 6-32: Intersection Capacity Analysis – Sportsworld Drive & Hwy 8 NB On/Off-Ramp

Mvmt	Vol	V/C	Delay (s)	LOS	50th Queue (m)	95th Queue (m)
AM Peak Hour						
Overall	-	0.50	3	A	-	-
PM Peak Hour						
Overall	-	1.02	17	B	-	-
WBR	1182	1.03	47	D	162	238

Under existing conditions, the intersection of Sportsworld Drive & Highway 8 Northbound On/Off-Ramp operates within capacity during the weekday AM peak hour; however, the intersection operates at theoretical capacity in the weekday PM peak hour. The westbound right movement is operating at capacity during the PM peak hour, constraining overall intersection operations. It is also noted that the queue length of the westbound right movement exceeds the available storage in the PM peak hour, with queues likely to spill back into the westbound through lane. All other movements are operating with residual capacity and acceptable delays.

Signal optimization will be investigated as part of the Phase 2 transportation assessment to determine if these issues can be alleviated but it is worth noting that this movement will not typically be used by PMTSA growth-related traffic as it relates to traffic originating from east of the study area (eg. the industrial area and Region of Waterloo complex).

6.5.2 Unsignalized Intersections

6.5.2.1 King Street E & Gateway Park Drive / Limerick Drive

The intersection capacity analysis results for the unsignalized intersection of King Street E & Gateway Park Drive / Limerick Drive are summarized in **Table 6-33**.

Note: the Region Synchro model categorizes movements along King Street E as northbound/southbound at this location.

Table 6-33: Intersection Capacity Analysis – King Street E & Gateway Park Drive / Limerick Drive

Mvmt	Vol	V/C	Delay(s)	LOS	95th Queue (vehicles)
AM Peak Hour					
Overall	-	-	3	-	-
NBL	0	0.00	0	A	0
NBT	550	0.00	0	-	0
NBR	29	0.00	0	-	0
EBLTR	1	0.01	39	E	0
WBLTR	230	0.36	14	B	2
SBL	75	0.08	9	A	0
SBT	761	0.00	1	A	0
SBR	0	0.00	0	-	0
PM Peak Hour					
Overall	-	-	3	-	-
NBL	2	0.00	9	A	0
NBT	914	0.00	0	A	0
NBR	29	0.00	0	-	0
EBLTR	18	0.15	40	E	1
WBLTR	141	0.39	21	C	2
SBL	107	0.15	11	B	1
SBT	687	0.00	1	A	0
SBR	0	0.00	0	-	0

Under existing conditions, the intersection of King Street E & Gateway Park Drive / Limerick Drive operates well during both weekday peak hours. All movements are operating with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. It is noted that the eastbound movement operates at LOS E during both peak hours. No other critical movements have been identified.

6.6 SUMMARY OF INTERSECTION CAPACITY ANALYSIS RESULTS

In conclusion, the following movements were noted to have critical operations under existing conditions:

- Southbound right turn movement from Courtland Avenue E to Block Line Road
  - V/C = 0.87 in PM peak hour
  - 95th percentile queues exceed storage length in AM peak hour
  - 50th percentile queues exceed storage length in PM peak hour
  - Note: movement is restricted to no right turn on red due to the LRT running parallel
- Eastbound movement from the driveway opposite Walton Avenue at Courtland Avenue E
  - LOS E during both peak hours
- Westbound left turn movement from Fairway Road S to Manitou Drive
  - V/C = 0.92 in PM peak hour
  - 95th percentile queues exceed storage length in AM peak hour
  - 50th percentile queues exceed storage length in PM peak hour
- Northbound right turn movement from Manitou Drive to Fairway Road S
  - 95th percentile queues exceed storage length in PM peak hour
- Southbound left turn movement from Wilson Avenue to Fairway Road S
  - 95th percentile queues exceed storage length in both peak hours
- Westbound left turn movement from Fairway Road S to Wilson Avenue
  - LOS E in PM peak hour
- Eastbound left turn movement from Fairway Road S to the Highway 8 On-Ramp
  - V/C = 0.95 in PM peak hour
  - LOS E in PM peak hour
- Southbound left turn movement from Highway 8 Off-Ramp to Fairway Road S
  - V/C = 0.76 in PM peak hour
- Northbound right turn movement from Wabanaki Drive to Fairway Road S
  - V/C = 0.92 in PM peak hour
  - LOS F in PM peak hour

- Eastbound and westbound movements at signalized intersections along King Street E (Deer Ridge Drive, Sportsworld Crossing Road, Sportsworld Drive, Baxter Place, Tu-Lane Street)
    - LOS E in PM peak hour
    - Note: cycle lengths along King Street are long and prioritize the north-south movements, resulting in higher delays for eastbound and westbound movements
- Northbound right turn movement from King Street E to Sportsworld Drive
    - 95th percentile queues exceed storage length in AM peak hour
- Eastbound through-right movement from Sportsworld Drive at Sportsworld Crossing Road and the Highway 8 On-Ramp
    - 95th percentile queues exceed storage length in both peak hours
- Westbound right turn movement from Sportsworld Drive to the Highway 8 On-Ramp
    - V/C = 1.03 in PM peak hour
    - 50th percentile queues exceed storage length in PM peak hour

The analysis results indicate that some localized capacity and delay issues are present within the study area road network but that in general there is residual roadway capacity and acceptable operations for most major intersections and movements. In particular, major regional corridors and intersections are operating well and have capacity to support additional through traffic.

7 PROPOSED METHODOLOGY

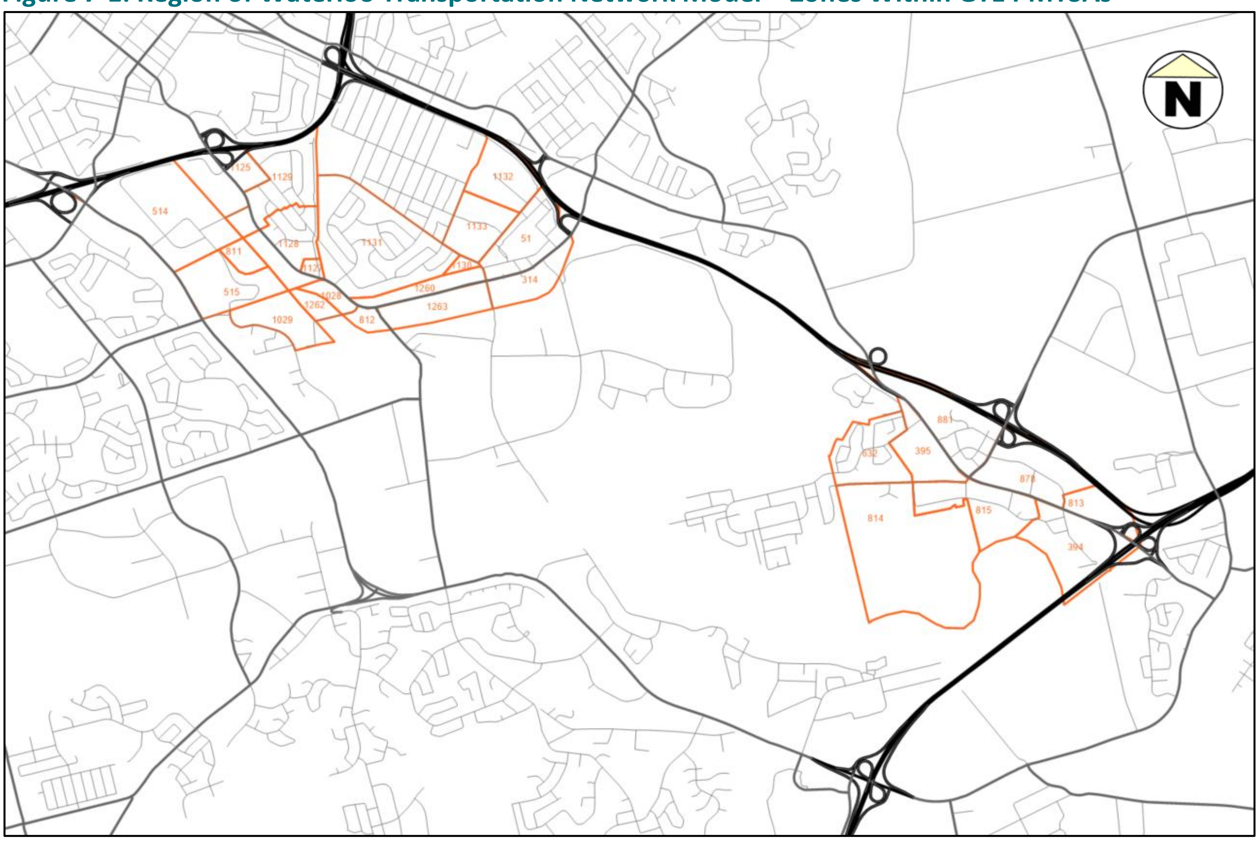
The following section discusses the proposed methodology for the completion of the Phase 2 transportation analysis that will evaluate the proposed land use framework for the Growing Together East PMTSAs.

7.1 STUDY AREA

As discussed in **Section 3** of this memorandum, the mobility study area for the Growing Together East transportation study includes key intersections in the Block Line, Fairway and Sportsworld PMTSAs. Several intersections outside of the MTSA boundary were also included in the traffic analysis because of their importance to overall traffic circulation and the regional road network. The existing conditions of the study area have been reviewed and analyzed to inform the Phase 2 transportation evaluation.

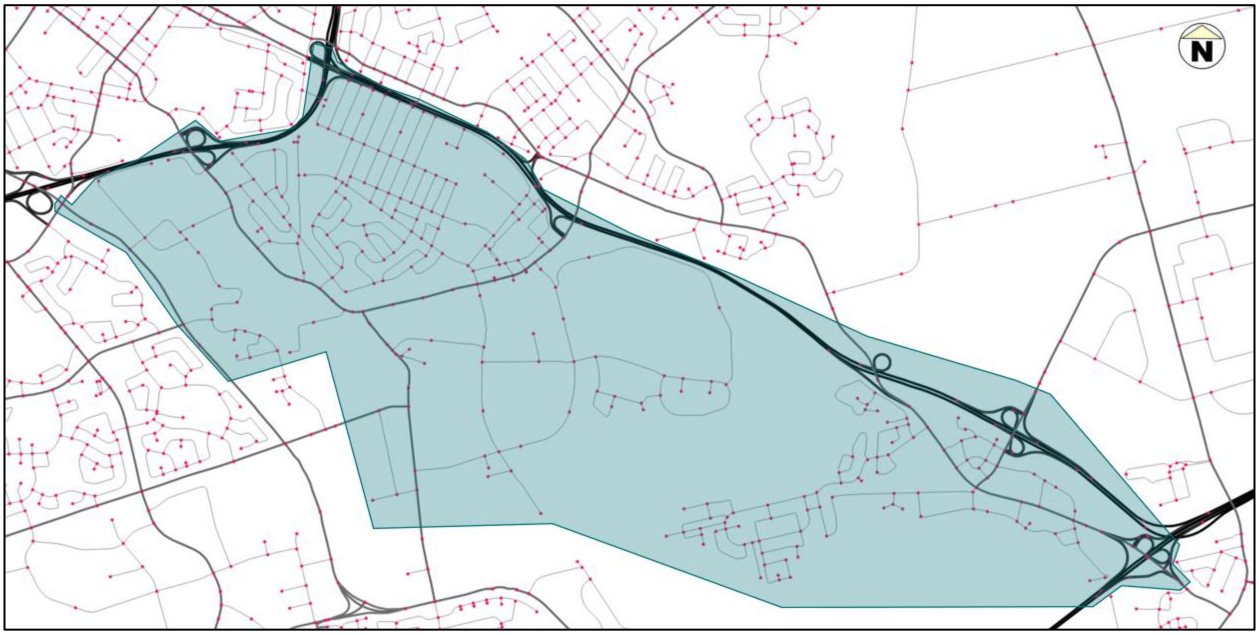
The transportation analysis of future conditions will utilize the Region of Waterloo's VISUM transportation network model which divides the Region into traffic analysis zones. The VISUM zones lying partially within and fully within the PMTSA boundaries are shown in **Figure 7-1**.

Figure 7-1: Region of Waterloo Transportation Network Model – Zones Within GTE PMTSAs



Based on the identification of key analysis zones, roads and intersections, a broader study area was outlined, as shown in **Figure 7-2**.

Figure 7-2: Kitchener Growing Together East Transportation Mobility Study Area



The mobility study area is generally bounded by Highway 7/8 to the north, Highway 8 to the east, Highway 401 and the Grand River to the south, and Homer Watson Boulevard to the west. The existing land use, infrastructure and travel patterns, as well as future land use plans were considered while determining the study area boundaries to ensure that the analysis addresses key intersections and corridors of interest. The resulting mobility study area will allow for a fulsome transportation assessment that aligns with key municipal and regional policy objectives.

7.2 FUTURE DEMAND FORECASTING AND VOLUME CONVERSION

The proposed methodology for forecasting future demand and converting volumes will leverage the VISUM transportation network model as the primary tool to accurately estimate future traffic volumes within the study area. This approach will be based on the preferred land use scenario identified by the City of Kitchener and will align with the 2041 planning horizon to capture long-term trends in mobility pattern and regional growth. The study methodology will involve extracting data from the VISUM transportation network model to forecast future traffic conditions at both the corridor and intersection levels. This includes converting forecasted volumes into actionable metrics, such as turning movement counts, to facilitate a detailed intersection analysis.

To ensure accuracy and relevance, the modelling process will incorporate existing travel patterns, planned land use changes, and regional growth projections.

7.2.1 Transportation Model Software

The traffic forecasting model will be developed based on existing traffic volumes and land use data. It should be noted that the analysis carried out with the help of the model is fully dependent on the accuracy of the data entered into the model. VISUM is a comprehensive flexible software package intended to be used in strategic traffic and transportation planning. It incorporates GIS mapping systems and can identify changes in travel pattern according to modifications in land use, population, employment and road network infrastructure. In addition, it can analyze the level of service for each intersection in the network.

To develop an existing traffic model for the three PMTSAs, the focus will be on extracting zones, land uses, and road networks overlapping these areas from the regional traffic model developed in 2011. This process will ensure the model captures localized trip-making characteristics within the PMTSAs while maintaining consistency with the broader regional framework.

7.2.2 Network Assumptions

Links, nodes, zones and connectors form the basic skeleton structure of the VISUM model; links representing the roads, nodes the intersections and zones representing the different land use/traffic generators broken down by area. The zone system, nodes and links will be consistent with the base regional model.

7.2.2.1 Links

Links connect nodes and consequently represent and describe the road infrastructure. Each link has a particular direction, and each link has several attributes assigned to it – i.e. link number, length, speed, link type (road classification), capacity, and number of lanes.

The speed on links reflects the posted speed of each road segment. The link capacity is defined by the link type and road classification. The road classifications in the models were determined based on the City's road classification system; however, in a few cases road parameters were adjusted in the model to reflect their function in the field rather than their actual classification.

7.2.2.2 Nodes

Nodes are objects which define the position of intersections in the network. Each node has different attributes such as node number, node type and traffic control type at the intersections (eg. signalized, 2-way stop, unsignalized, roundabout). Nodes also are the start and end points of links.

7.2.2.3 Zones

Zones, also called traffic cells, describe areas with a particular set of land uses and their location in the network (i.e. residential areas, commercial areas, shopping centers, industrial areas, hospital, schools). They are the origin and destination of trips within the network and represent areas of traffic production and attraction.

The zone system is used to disaggregate the study area into small areas and grouping regions with similar demographic and economic land uses. Zone borders are often defined by natural boundaries (main roads, highways, etc.).

Two general types of zones will be used – internal and external zones. Internal zones represent areas of development within the PMTSA's limits. External zones to the PMTSA's are used to represent through traffic with an origin and destination outside of the PMTSA's limits. Included in the traffic model will be 14 external zones to represent connections to the south, west, east and north.

Based on the initial modelling work completed, 60 internal and 14 external traffic zones defined within the model area. If adjustments are required based on the future analysis work, the number of zones will be modified accordingly to ensure that the model accurately represents the traffic patterns and demand within the study area.

7.2.2.4 Connectors

Connectors connect zones to the link network; they represent the access and egress points between the zone's center of gravity and the road network. Each zone can have numerous connectors that disperse traffic to several points on to the links. The amount of traffic that uses each individual connector can be changed based on observed distributions and/or desire lines within a community.

7.2.3 Model Structure

The model uses the traditional four-step demand modelling approach:

- Trip generation;
- Trip distribution;
- Mode split; and
- Trip assignment

7.2.3.1 Trip Generation

The traffic model is designed to predict the AM and PM peak hour volumes. The trips taken during the peak hours can be divided into four basic trip types:

- Home-Based Work (HBW)
- Home-Based School (HBS)
- Home-Based Other (HBO)
- Non-Home Based (NHB)

Each of these trip types has different characteristics and therefore produces different travel patterns. Below is a short description of each trip type:

- **Home-Based Work (HBW):** Trips made between residential areas and employment locations, typically representing the daily commute. These trips are a major contributor to peak hour traffic, with the majority of AM peak trips originating from homes and traveling to employment zones, and the reverse occurring during the PM peak. HBW trips are highly predictable, following consistent patterns aligned with standard work hours. Employment hubs, such as office districts, industrial parks, and commercial centers, serve as primary destinations, while residential neighborhoods are the primary origin points. Mode choice for HBW trips varies based on factors like commute distance, urban density, and transportation infrastructure, with options ranging from personal vehicles to public transit, cycling, or walking. These trips are critical in traffic modeling as they form the backbone of peak period congestion, influencing roadway demand, transit capacity, and overall network performance.
- **Home-Based School (HBS):** These trips are primarily associated with travel between residential areas and educational institutions, such as schools or colleges. During the AM peak hour, these trips are predominantly from home to school, while the PM peak hour includes return trips from school to home. The travel patterns for HBS trips are heavily influenced by school start and end times, with a significant concentration around these periods, often resulting in localized congestion near schools.

- **Home-Based Other (HBO):** During PM peak hour, these trips (home to others and others to home) are normally attracted to retail areas and generated by the residential areas. These trips represent travel between residential areas and a variety of non-work, non-school destinations, encompassing a broad range of activities such as shopping, recreational outings, dining, social visits, and errands.
- **Non-Home Based (NHB):** Non-home-based trips are trips that do not start or end at a residential location. Instead, these trips occur between other types of origins and destinations, such as travel from a workplace to a retail area, from one commercial zone to another, or between recreational locations. During the PM peak hour, NHB trips are typically generated by employment areas (e.g., offices, industrial parks) and attracted to destinations like retail centers, service locations, or recreational venues. These trips often reflect midday or after-work activities, such as running errands, attending appointments, or socializing. NHB trips tend to have more complex travel patterns and less predictable peak periods compared to home-based trips, as they are influenced by a wide range of trip purposes and behaviors. Their impact on the transportation network can be significant, particularly in urban or mixed-use areas where high concentrations of employment and commercial activities generate substantial NHB traffic volumes.

In addition, the model considers external-external trips that involve trips through the study network but no origin or destination.

7.2.3.2 Trip Distribution

After the trip generation is established for each zone, the trips are distributed amongst the network in origin-destination pairs. Each trip originates in one zone and has a destination in another zone. The distribution is conducted as a function of the zonal land uses, the established origin-destination travel patterns and the characteristics of the transportation network.

7.2.3.3 Mode Split

The mode split represents the proportion of trips made by different modes of transportation, such as vehicular (private cars, trucks) and non-vehicular modes (transit, walking, cycling). For this study, the mode split will play a critical role in shaping transportation planning and infrastructure decisions, as it reflects how people choose to travel within the study area. While the target mode split for the future has not yet been established, it will need to be determined based on an analysis of baseline future traffic volumes without considering the added growth planned for the PMTSAs. Establishing this target will also require benchmarking against comparable urban areas and considering factors such as transit-oriented development, active transportation opportunities, and capacity constraints within the roadway network. The final mode split target will aim to balance sustainable mobility objectives with the practical needs of the future communities envisioned for each PMTSA.

7.2.3.4 Trip Assignment

The resulting origin-destination pairs are then assigned to the transportation network using an "equilibrium assignment". This process allocates trips to links so as to minimize the cost of travel for the vehicle between the origin and destination zones. The cost is defined as travel time with a monetary cost expressed in terms of value of time. The model runs multiple iterations to create the "equilibrium assignment".

7.2.4 Model Inputs

7.2.4.1 Existing Population and Employment

The existing population and employment estimates for the PMTSAs will be updated within the Study Area. Employment estimates are distinguished between various employment types including retail, warehousing and education. It is noted that the regional model and its underlying data are currently based on the 2011 horizon, reflecting conditions at that time. However, recognizing that significant demographic and economic changes will have likely occurred since 2011, the project team will update these numbers to align closer to current conditions (2024). This adjustment will account for recent population growth, shifts in employment patterns, and updated land use information to ensure that the model accurately reflects the existing scenario and serves as a reliable foundation for projecting future conditions.

7.2.4.2 Future Population and Employment

The future population and employment estimates for the PMTSAs will be obtained directly from the preferred land use scenario prepared by the City, ensuring alignment with the City's growth forecasts and planning objectives. These projections will reflect anticipated changes in residential and employment uses. These estimates will be incorporated into the traffic model to simulate future travel demand as part of the three (3) future scenarios that will be evaluated.

Note: future population and employment estimates outside of the PMTSAs will reflect the base assumptions contained in the Region model.

7.2.4.3 Future Transportation Network Changes

The model base network parameters will be modified under the 2041 Scenario 2 and 3 (discussed in **Section 7.3**) based on planned network improvements within or near the study area, as identified in **Section 2.12.**

7.2.5 Model Calibration/Validation

Model calibration is an iterative process that involves changing the existing model attributes to adjust the travel patterns to match the counted turning movements at the intersections and screen lines.

To check if the model is well calibrated, a regression method will be used. Models with a R2 of 0.8 or higher are considered good. Some exceptions should be noted – i.e. low volumes roads which are difficult to calibrate accurately as small shifts in volume can improve or worsen the results. Multiple sources of traffic counts will be used to calibrate the model.

7.3 FUTURE ANALYSIS SCENARIOS

LEA will assess three (3) future 2041 scenarios, discussed below. The following methodology was agreed to by working with City of Kitchener and Region of Waterloo Planning and Transportation staff.

- **Scenario 1 (Do Nothing):** the existing road network will be assessed with the implementation of the preferred land use scenario. This baseline analysis will provide an understanding of how the current infrastructure can handle future traffic volumes and identify potential bottlenecks or areas where congestion might worsen. This scenario provides a critical benchmark, highlighting the limitations of the existing network in accommodating the projected increase in traffic.
- **Scenario 2 (Planned Improvements**): the future road network will be assessed with the preferred land use scenario. The future network will include planned infrastructure

enhancements that have been identified by the City or Region for future implementation (see **Section 2.12**). The analysis will test the effectiveness of these improvements by analyzing changes in traffic flow, intersection performance, and overall network capacity. This scenario is crucial for understanding where additional localized deficiencies exist and the required target mode split.

- **Scenario 3 (Optimized Network):** the analysis will take a step further by optimizing the road network based on the insights gained from Scenarios 1 and 2. The project team will explore strategic adjustments and targeted enhancements to the road network, such as localized intersection and capacity modifications and new roadways. Required transit improvements will also be identified based on the network analysis results. This scenario will focus on achieving the best possible balance between infrastructure investment, network efficiency, and the promotion of sustainable transportation modes. By testing various optimization strategies, the team will aim to identify the most cost-effective and impactful improvements that will ensure the road network can support future growth while aligning with the City's long-term transportation goals.

These three scenarios will provide a comprehensive understanding of how different network configurations perform under the preferred land use scenario. The transportation study will identify all necessary road network improvements, including new roadways, intersection improvements, and signal optimization.

7.4 TARGET MODE SPLIT METHODOLOGY

As part of Scenario 3 (Optimized Network), LEA will identify how the target non-auto mode split will be derived based on forecasted person trip generation, given that provincial and regional roadway capacity will be treated as a fixed constraint.

The proposed methodology for developing a target mode split in the Growing Together East study area focuses on establishing a sustainable and achievable balance between various transportation modes within the study area, emphasizing non-auto modes such as transit, walking, and cycling. This methodology begins with an analysis of existing travel patterns and regional benchmarks, using data from comparable urban areas with similar land use and transportation contexts. The modelling approach will integrate forecasted person trip generation from the 2041 preferred land use scenario, treating provincial and regional roadway capacity as a fixed constraint to prioritize sustainable travel options.

By aligning the target mode split with the goals of transit-oriented development, the methodology will ensure that future transportation infrastructure and policies promote a shift away from private vehicle dependency. This approach will also consider local demographic, economic, and geographic factors to refine the targets, enabling the creation of a multi-modal network that supports the City's objectives for accessibility, equity, and sustainability. The final output will provide a clear framework for achieving a balanced mode split and guiding future transportation and land-use planning efforts.

7.5 DEVELOPMENT OF EVALUATION CRITERIA – ROAD, TRANSIT, AND ACTIVE TRANSPORTATION NETWORK

The project team has established a framework for evaluating the future road, transit and active transportation networks using standard measures of capacity and multi-modal travel. This approach will ensure a thorough analysis of the network's ability to accommodate projected trip volumes while maintaining efficient traffic flow, transit operations, and safety. The evaluation criteria includes key roadway metrics such as volume-to-capacity ratios, intersection LOS, and queuing analysis to identify potential bottlenecks and operational challenges. Additionally, the assessment incorporates considerations for future road and active travel needs, with a focus on creating pedestrian-friendly block sizes, supporting convenient routing to major destinations, and optimizing intersection pacing to enhance walkability and accessibility. By integrating these criteria, the evaluation will aim to balance the needs of all road users and support the City’s key mobility objectives for each PMTSA.

The preliminary evaluation criteria are provided in **Table 7-1**.

Table 7-1: Preliminary Evaluation Criteria

Principle	Criteria	Measure		Source
Connectivity *Will it increase travel options and improve network connectivity?*	• Increases street network connectivity and continuity	Quantitative	• Meets desired Road Network and Active Connectivity Index • Street connectivity: 1.4 to 1.7 • Pedestrian connectivity: 1.5 to 1.8	Victoria Transportation Policy Institute (2017)
	• Provides more route options for transit, walking, and cycling	Quantitative	• Total length of sidewalks and dedicated cycling infrastructure exceeds existing coverage	-
		Quantitative	• Total transit routes exceed existing coverage	-
Accessibility & Integration with Other Modes *Will it increase accessibility to travel options and provide a seamless transition between different modes of transport?*	• Increase accessibility to public transit	Quantitative	95% of the residences, jobs and other activities / uses are within 400m walking distance of a transit stop	Kitchener Urban Design Manual
		Quantitative	• Meets desired bus stop spacing of 250m or less	Kitchener Urban Design Manual
	• Increases accessibility to active transportation infrastructure	Quantitative	• 90% of residents/jobs are within 400m of existing or proposed multi-use trail or cycling infrastructure	Best Practice Review
	• Integrates connections between different modes of travel &	Quantitative	• Number of transit to active transportation transfer points exceed existing coverage	-

Principle	Criteria	Measure		Source
	supports first-mile last mile connections			
Experience & Safety *Will it make travel safer, more comfortable, and convenient?*	• Provides adequate capacity for all modes of travel	Quantitative	• Vehicle travel times and intersection delays	Region of Waterloo Transportation Impact Study Guidelines (2013)
		Qualitative	• Meets desired transit level of service	City of Ottawa MMLOS Guidelines (2015)
	• Increases comfort and safety for pedestrians and cyclists	Qualitative	• Meets desired pedestrian & cycling level of service	City of Ottawa MMLOS Guidelines (2015)
	• Supports efficient surface transit	Qualitative	• Protects space for future transit-only lanes, queue jump lanes, and transit signal priority	Kitchener Complete Streets Guideline (2019)
	• Improves safety for all users	Qualitative	• Design to reduce potential fatalities and severity of collisions (traffic calming or reducing speed limits)	Kitchener Complete Streets Guideline (2019)
		Qualitative	• Intersection and mid-block crossing location that prioritize pedestrian safety and convenience	Kitchener Complete Streets Guideline (2019)
	• Minimizes number of driveway access	Quantitative	• Minimize the number of driveway access points and other points of conflict between vehicular traffic and pedestrians	Kitchener Urban Design Manual
Healthy Community *Will neighbourhoods be enhanced and support active travel?*	• Improves connectivity through walkable blocks	Quantitative Quantitative	• Meets desired MTSA block lengths of 150m or less	Kitchener Urban Design Manual
	• Increases connectivity between neighbourhoods	Qualitative	• Connections to trails, parks, open spaces, and community facilities	-
Technological Innovation	• Supports emerging trends including	Qualitative	• Opportunity to implement bike-sharing and carsharing programs	-

Principle	Criteria	Measure		Source
Does it support new transportation technology and shared mobility?	micromobility and curbside management	Qualitative	• Curbside management considering delivery and rideshare needs	-
Resilience & Sustainability *Can the network withstand and adapt to future challenges?*	• Supports shift in travel behaviours	Quantitative	• Implementing maximums on parking rates to support mode split targets	-
		Quantitative	• Implementing minimum bike parking rates near transit stations to support mode split targets	-

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