5.0 IDENTIFICATION OF THE RECOMMENDED PLAN

Through the screening evaluation in **Section 4.0**, and review of input from the consultation process, Alternatives 1 and 5 have been carried forward. Both alternatives address the issues in the problem and opportunity statement and have distinct and supplementary benefits to the study area. The infrastructure improvement components of the two recommended alternatives are as follows and described in more detail in Section 5.2:

- **Widening of St. Clair Avenue West** between Keele Street / Weston Road and Old Weston Road. (Alternative 1); This initiative provides the most direct improvement to east-west travel through the study area and minimizes the risk of network blockage due to traffic incidents and emergencies. In addition, this widening can be coordinated with the replacement of the rail bridge to reduce transportation impacts.
- **Extension of Gunns Road** between Weston Road and Union Street / Turnberry Avenue. (Alternative 5); This new east-west link improves connectivity for pedestrians, cyclists, motorists and transit. As a parallel route to St. Clair Avenue, this extension helps to relieve some of the transportation demand funnelled onto St. Clair Avenue West by the lack of alternate routes. Active transportation connections are also enhanced by the recommended extension of the Lavender Creek Trail from its current terminus to the north-west corner of Gunns Road and Weston Road.
- **Extension of Keele Street** between the southerly terminus of Keele Street and the extended Gunns Road. (Alternative 5); This new link accommodates pedestrians, cyclists, motorists, and transit users traveling to and from the north, particularly for accessing the future SmartTrack station. In addition, this extension helps to minimize traffic infiltration through the local road network.
- **Extension of Davenport Road** between Old Weston Road and Union Street. (Alternative 5); This extension improves pedestrians, cyclists, motorist and transit travel to and from the southeast, including trips to and from the SmartTrack station. In addition, this improvement reduces traffic demands at the St. Clair / Old Weston Road intersection and acts as an active transportation facility extension between the Davenport bike lanes and the West Toronto Railpath.
- **Improvement of Union Street** between Townsley Street / Davenport Road and Turnberry Avenue. (Alternative 5); The initiative improves access and safety for pedestrians, cyclists, motorists and transit users between the Davenport Road and Gunns Road extensions, including those accessing the future SmartTrack station.

All of these improvements are recommended as part of the Transportation Master Plan to address the problem and opportunity statement. The details of the recommended improvements and their contributions to the study area are discussed in this section. A key map showing the recommended improvements is provided in **Exhibit 5-1**.

Exhibit 5-1: Recommended Improvements Key Map

5.1 Design Parameters

The following design constraints were identified and considered through the analysis of the recommended improvements to achieve a holistic design:

- Potential property and access/entrance impacts;
- The planned St. Clair-Old Weston SmartTrack Station reference concept design;
- A minimum vertical clearance of 5.0 m for motor vehicles maintained through the St. Clair Avenue and the Gunns Road Extension bridge structures.
- Metrolinx and CP Rail's request for the St. Clair rail bridge replacement width to be widened by 10 m to the east to accommodate two future tracks, one for Metrolinx and the protection of one for CP Rail;
- Metrolinx and CP Rail's request for the Gunns Road rail bridge to accommodate two future tracks, one for Metrolinx and the protection of one for CP Rail;
- The need to maintain at one lane of traffic in each direction along St. Clair Avenue West during the widening of the road;
- Toronto Road Engineering Design Guidelines;
- The *Accessibility for Ontarians with Disabilities Act* (AODA) requirements for pedestrians;
- Toronto Complete Street Guidelines;
- Utility relocation (joint trench);
- Toronto Green Standard for soil volumes and planting types; and
- TTC design and service requirements.

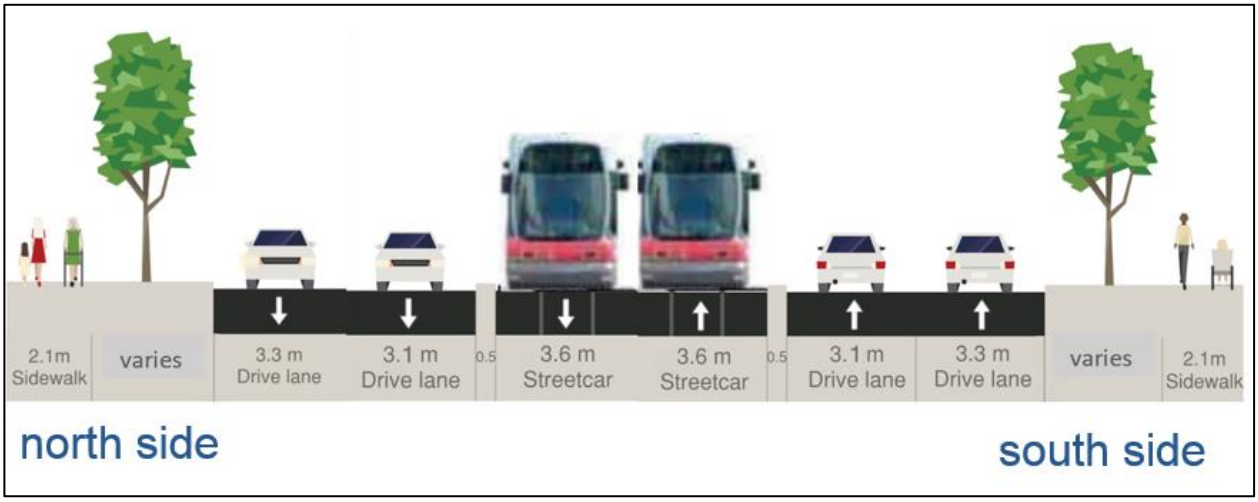
Where applicable, the identification and evaluation of alternative design concepts for each improvement are discussed in the following sections.

5.2 St. Clair Avenue West Widening

The plan and profile design drawings of the St. Clair Avenue West widening are shown in **Appendix L**, with the alignment and context of the widening shown in **Exhibit 5-2**. The proposed cross-section is shown in **Exhibit 5-3.** The entire section of St. Clair Avenue West through the study area will feature two traffic lanes in each direction. The Toronto Transit Commission (TTC) streetcar centre median exclusive right-of- way is being maintained, along with the two streetcar stops at Old Weston Road and Keele Street / Weston Road. *AODA*-compliant sidewalks are proposed on both sides of the street, along with three sets of accessible ramps and stairs leading to Townsley Street, Davenport Road extension and Mulock Avenue. These ramps and stairs will enhance vertical pedestrian connections between these streets and St. Clair Avenue West, and to the St. Clair-Old Weston SmartTrack Station. Further discussions of the three ramps are provided in Section 5.8, including the rationale behind the arrangement of the vertical connections. It should also be noted that wider 3.5 m sidewalks are proposed on both sides of St. Clair Avenue West under the rail bridge to enhance the pedestrian realm.

Exhibit 5-2: St. Clair Avenue West Widening

Exhibit 5-3: Typical Cross-section of Widened St. Clair Avenue West



The following design concepts were evaluated before arriving at the recommended design for the St. Clair Avenue West widening:

- **Realignment of St. Clair Avenue West near Old Weston Road**: In addition to widening of St. Clair Avenue West between Keele Street / Weston Road and Old Weston Road, it was determined that the alignment of St. Clair Avenue West would be improved east of Old Weston Road and transition back to the existing alignment near Osler Street. The realignment of St. Clair Avenue West in this section improves the geometric alignment and reduces the likelihood of bottlenecks occurring at the St. Clair / Old Weston intersection.
- **Cycling**: The need for bike lanes was considered along St. Clair Avenue West taking into consideration the City's existing and proposed cycling infrastructure links, and the space available on St. Clair Avenue. It was ultimately decided that a cycling facility will not be included in the design of the St. Clair Avenue West widening because this street is not identified for cycling facilities in the City's 10-year cycling plan, and there are no cycling facilities on St. Clair to the east or west. Therefore, any cycling facility provided on this street would operate as stand-alone infrastructure, which would be of limited value. The other road links proposed in the TMP provide better opportunities to connect the existing cycling lanes and off-street trails and create a comprehensive cycling network in this area;
- **Grades and bridge clearance along St. Clair Avenue West**: The proposed grades along St. Clair Avenue West through the study area and the 5 m vertical clearance at the Kitchener GO Rail Corridor bridge were reviewed by Metrolinx and Canadian Pacific Railway (CPR) to ensure they are acceptable. TTC streetcar grade allowances were maximized to ensure bridge clearance requirements were achieved.
- **Intersection improvements**: The addition of a dedicated northbound right-turn lane was considered at the Keele Street / Weston Road / St. Clair Avenue intersection. However, it was decided that the incremental improvement in intersection performance did not justify the additional pedestrian crossing distance and the property impact to the east side of Keele Street. For similar reasons, no additional turning lane improvements were implemented at the intersection of Old Weston Road at St. Clair Avenue West.
- **Vertical connections along St. Clair Avenue West**: Three ramps are proposed along St. Clair as either switchback / scissor or straight ramp configurations. Where possible, a straight ramp configuration was employed due to ease of navigation and appeal for pedestrians and cyclists. However, a straight ramp configuration is not feasible where the grade difference exceeds space limitations. Therefore, switchback / scissor ramps were designed for the two ramps on the south side of St. Clair Avenue West. Stairs are also proposed featuring bicycle troughs.

5.3 Gunns Road Extension

The plan and profile design drawings of the Gunns Road extension between Weston Road and Union Street at Turnberry Avenue are shown in **Appendix L**, with the alignment and context of the extension shown in **Exhibit 5-4**. The cross-section is shown in **Exhibit 5-5.** The extension features one traffic lane in each direction, along with a centre left-turning lane. AODA compliant sidewalks are proposed on both sides of the street, and a multi-use trail on the south side. It should be noted that this improvement includes the extension of the Lavender Creek Trail from the current terminus to the north-west corner of the Gunns Road and Weston Road intersection.

Exhibit 5-4: Gunns Road Extension

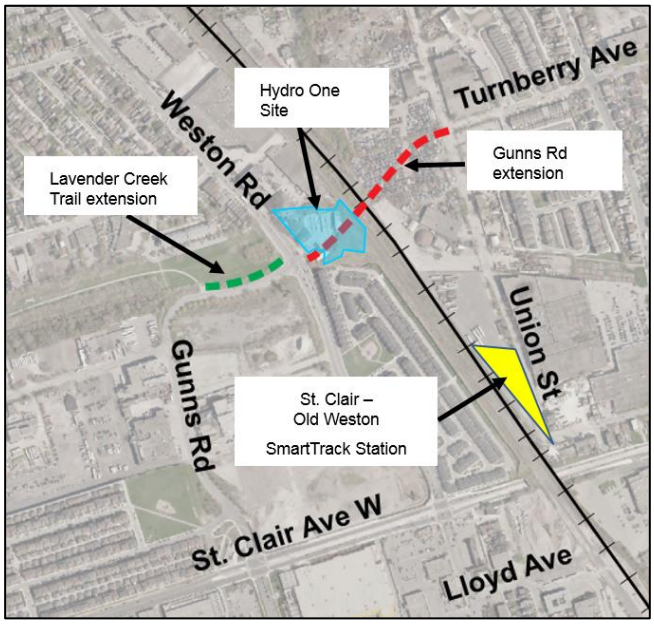
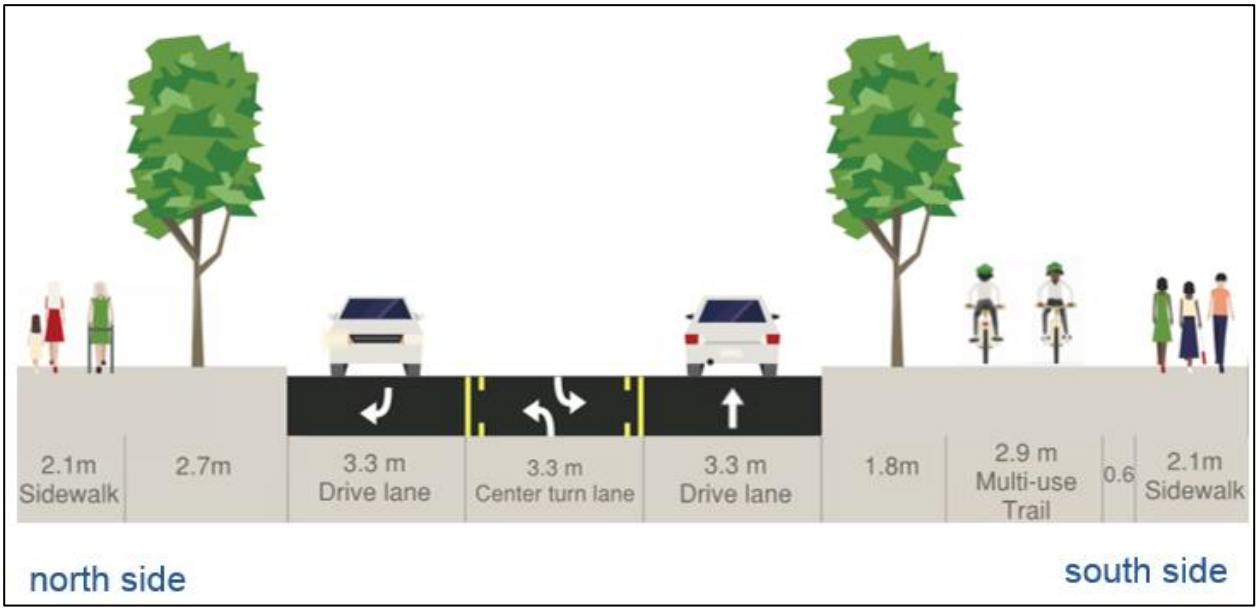


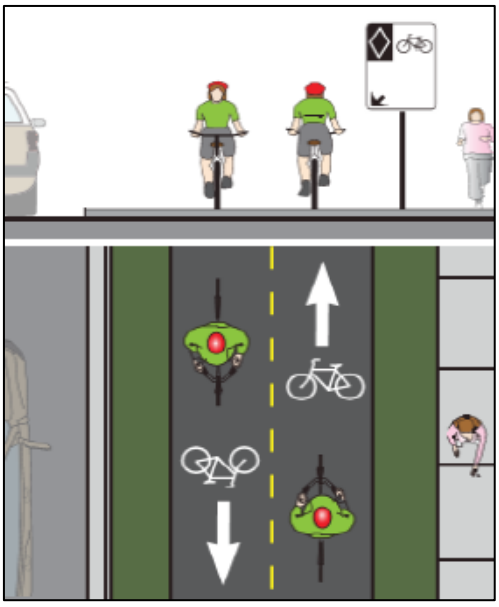
Exhibit 5-5: Typical Cross-section of Gunns Road Extension



The following design concepts were evaluated in order to develop the recommended Gunns Road extension design:

- **Cycling**: The cycling facility on Gunns Road was designed as a multi-use trail on the south side rather than bike lanes because it is logical to continue the configuration of the Lavender Creek Trail located just west of the Gunns Road / Weston Road intersection, to which the Gunns Road facility will connect. **Exhibit 5-6** illustrates a typical cross-section of a multi-use trail. The Lavender Creek Trail is being extended from its current terminus 130 m west of Weston Road to the Gunns Road / Weston Road intersection. Alternative design concepts were also considered that located the multi-use trail on the Gunns Road extension directly adjacent to the curb. However, on consideration of the broader trail network configuration and safety, the recommended design features the multi-use trail situated between the landscaped boulevard and the sidewalk. At the intersection of Weston Road and Gunns Road, a cross-ride will need to be incorporated during the detailed design phase following the TMP, along with the provision of a bike box to facilitate cyclist turning movements at the north-east corner of the intersection. Further discussion of the future cycling network in the study area is provided in **Section 5.9**.

Exhibit 5-6: Cross-Section of a Typical Multi-use Trail



- **Hydro One maintenance access**: Hydro One has requested the design and provision of two access driveways leading to the Hydro One facilities north and south of the Gunns Road extension, west of the Kitchener Corridor and east of Weston Road. The design specifications from Hydro One are reflected in **Appendix L.** The two new hydro poles being proposed as part of the St. Clair-Old Weston SmartTrack Station are also shown in the design of the Gunns Road extension.

  Since the completion of the Gunns Road extension and the Hydro One access road designs as part of this TMP, Metrolinx, Hydro One, and the City of Toronto have collaborated to develop a new configuration to apply to the south side of the Gunns Road extension that accommodates both active transportation access to the SmartTrack station and the Hydro One maintenance access. Hydro one provided approval in principal for the maintenance access road designs on December 14, 2018, which is valid for 24 months. The reference concepts are provided in **Appendix L**. This design features an at-grade Metrolinx path to the west SmartTrack station platform,

with the grade differential at the rail tracks accommodated through the provision of a stair and elevator. As shown in **Appendix L**, there are different options to pursue this arrangement, which are to be refined during the next design phase.

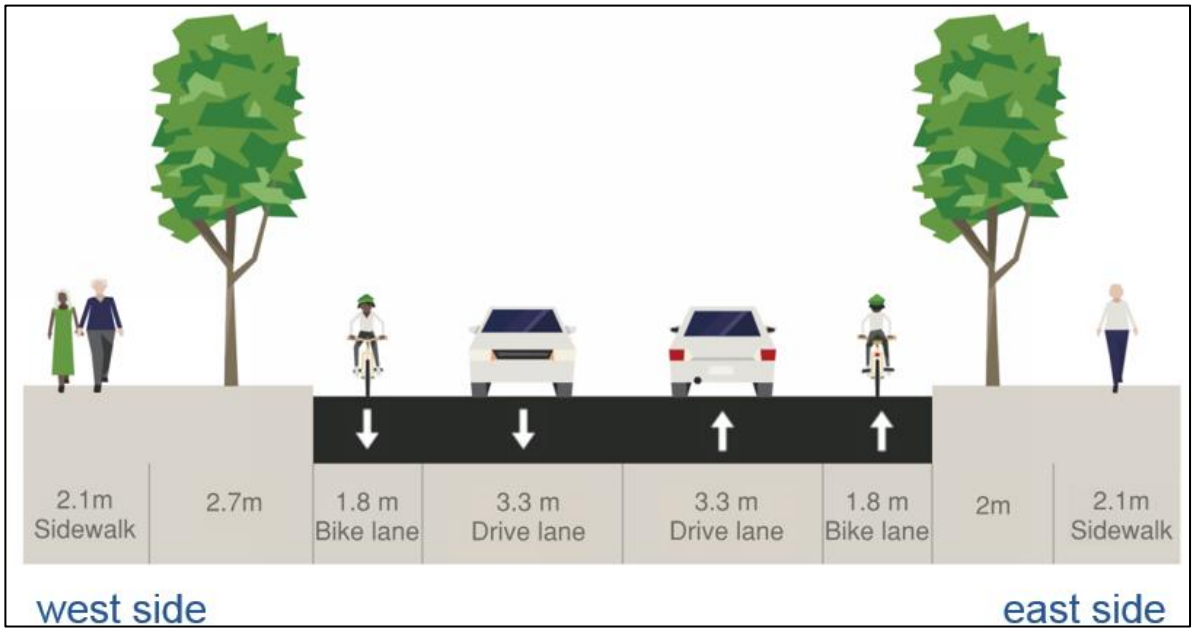
- **Bridge clearance**: The proposed vertical clearance at the Gunns Road underpass through the Kitchener Corridor was reviewed with Canadian Pacific Railway (CPR) and Metrolinx to ensure the propose d5m vertical clearance is acceptable.

5.4 Keele Street Extension

The plan and profile design of the Keele Street extension between the southerly terminus of Keele Street and the Gunns Road extension are shown in **Appendix L**, with the alignment and context of the extension shown in **Exhibit 5-7**. The cross-section is shown in **Exhibit 5-8**. The extension features one traffic lane in each direction, along with an auxiliary turning lane at Gunns Road. AODA compliant sidewalks are proposed on both sides of the road, as are bike lanes.

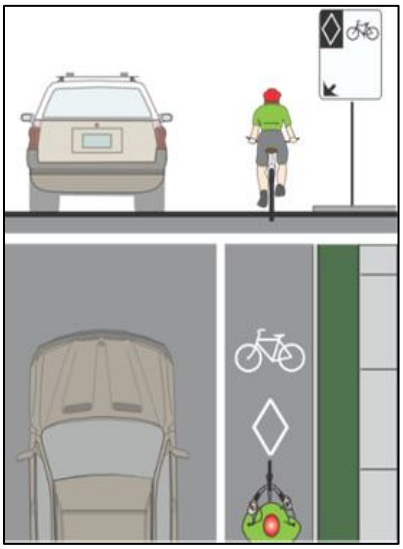
Exhibit 5-7: Keele Street Extension

Exhibit 5-8: Typical Cross-section of Keele Street Extension



The following design issues were evaluated in order to develop the recommended Keele Street extension design:

Exhibit 5-9: Cross Section of a Typical Street and Bike Lane



- **Cycling**: Based on consideration for Keele Street's role in the study area street network, the cycling facility on the Keele Street extension was designed as uni-directional bike lanes as shown conceptually in **Exhibit 5-9**. The southbound bike lane transitions from the curbside to in between the southbound right-turn and left-turn lanes. This design was implemented based on City staff input to reduce the level of cyclist and motorist conflict at the intersection. At the intersection of Keele Street and Gunns Road, a cross-ride will need to be incorporated during the detailed design phase following the TMP. Further discussion of the future cycling network in the study area are provided in **Section 5.9**;
- **Grade of Keele Street**: The profile of the Keele Street extension was designed considering the Lavender Creek ravine to the west and the grade of Gunns Road to which Keele Street will connect. The resulting profile of Keele Street will have a higher elevation by design to minimize the magnitude of grade control measures required on the slope between the ravine and the street along the length of the extension of Keele Street to Gunns Road; and

- **TRCA**: The alignment of the Keele Street extension, as discussed in Section 4.3.4, was selected it resulted in the least impact on the natural environment and most feasible in terms of constructability and cost. TRCA has also provided their support for this alignment.

5.5 Davenport Road Extension

The plan and profile design of the Davenport Road extension between the existing terminus at Old Weston Road and Union Street are shown in **Appendix L**, with the alignment and context of the widening shown in **Exhibit 5-10**. The cross-section is shown in **Exhibit 5-11**. The extension features one traffic lane in each direction, along with an auxiliary southbound left-turn lane at Old Weston Road. *AODA*-compliant sidewalks are proposed on both sides of the road.

Exhibit 5-10: Davenport Road Extension

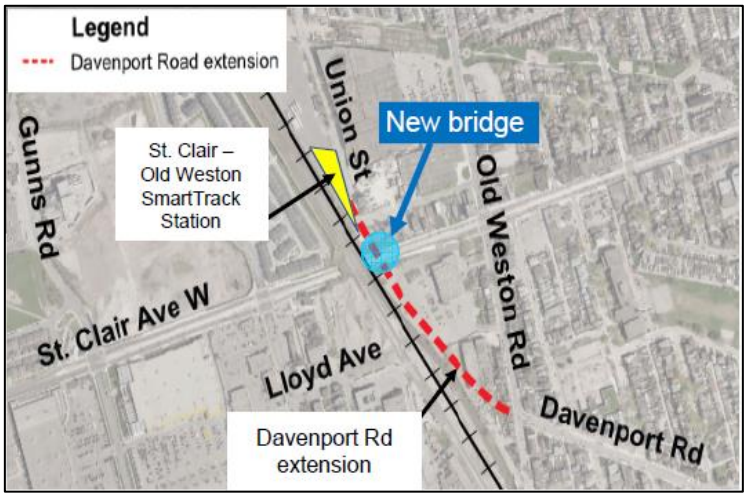
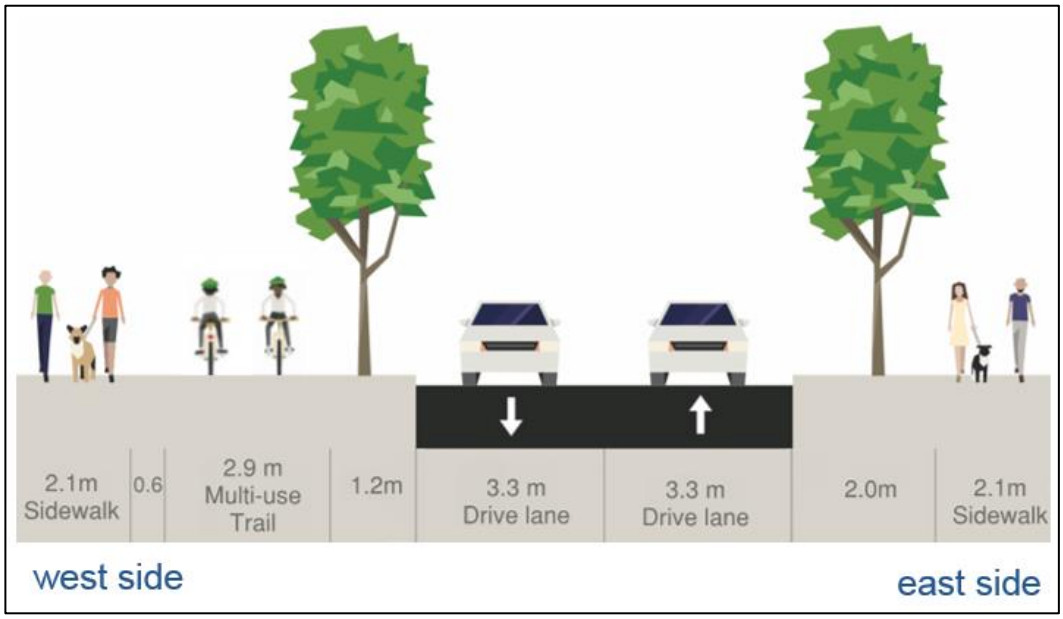


Exhibit 5-11: Typical Cross-section of Davenport Road Extension



The following design elements were evaluated to arrive at the recommended Davenport Road extension design:

- **Cycling**: The cycling facility along the Davenport Road extension was initially considered as uni-directional bike lanes since this is consistent with the existing cycling facilities on Davenport Road. Through the evolution of the TMP and the consultation process, the cycling facility on Davenport Road was changed to a multi-use path on the west side of the street, situated between the boulevard and the sidewalk. The intent of this design is to provide a connection between the existing West Toronto Railpath to the south and the Lavender Creek Trail in the northwest. Further discussion of the future cycling network in the study area is provided in **Section 5.9**; and
- **Other considerations**: With consideration of the context of the Kitchener Corridor south-west of the Davenport Road extension, the boulevard dimension on the west side of the street was reduced from typical standards. In addition, based on the understanding that a residential use may be developed at 290 Old Weston Road, the retaining wall section along the frontage of 290 Old Weston Road between the Kitchener GO Rail corridor and the Davenport Road right-of-way was designed to also function as a crash wall. Lastly, the Davenport road bridge crossing over St. Clair Avenue West will be separate from (and immediately east of) the reconstructed Kitchener GO Rail Corridor bridge. This road bridge will meet the necessary bridge code in terms of vertical clearance over St. Clair Avenue West. To provide spacing between the two bridges, the configuration of the multi-use trail and boulevard on the west side of the Davenport bridge was designed with a more space-efficient configuration.

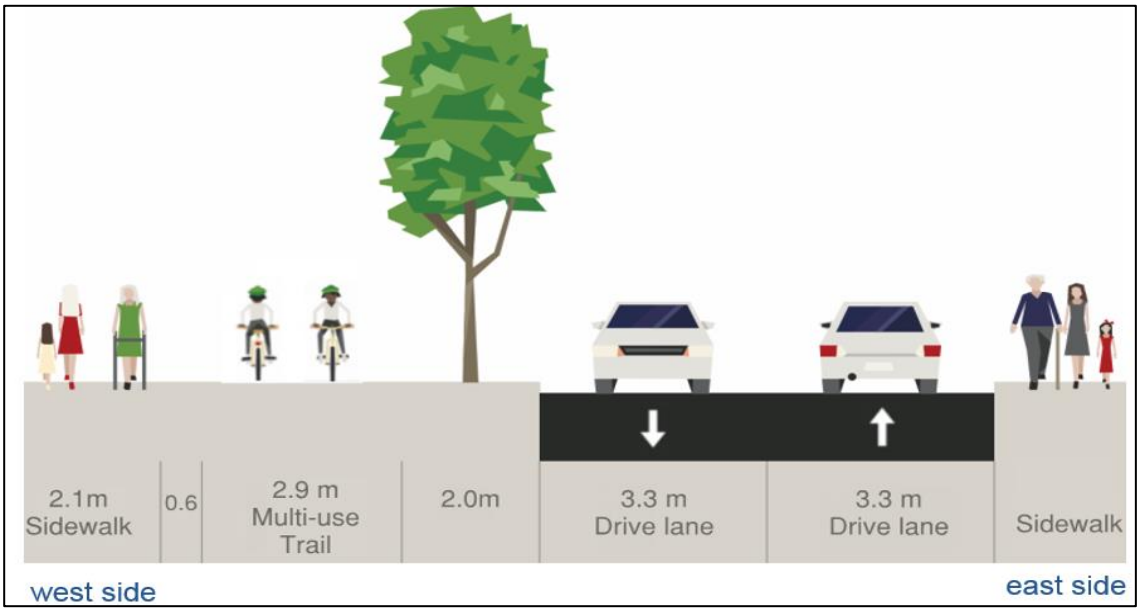
5.6 Union Street Improvement

The plan and profile design of the Union Street improvement between the Townsley Street and Turnberry Avenue are shown in **Appendix L**, with the alignment and context of the improvement shown in **Exhibit 5-12**. The cross-section is shown in **Exhibit 5-13**. It should be noted that the design of Union Street is subject to design associated with the St. Clair-Old Weston SmartTrack Station, which is currently underway. The scope of the Union Street improvement as part of the TMP is to facilitate the connection of the Davenport Road extension and Townsley Street, as well to provide a continuous active transportation link. *AODA* compliant sidewalks are proposed on both sides of the road. The recommended configuration of the sidewalk, multi-use trail and boulevard on the west side of Union Street allows for seamless travel for active transportation modes between Gunns Road and Davenport Road. One traffic lane is proposed in each direction along Union Street. Pick-up/drop-off facilities are shown on the plan, but are subject to change pending further development of the SmartTrack Station.

The re-grading of the westerly end of Townsley Street is required for the street to connect to the proposed Union Street / Davenport Road. Sidewalks are proposed on both sides of the regraded section of Townsley Street to connect the accessible ramp from St. Clair Avenue West to Union Street and the SmartTrack Station.

Exhibit 5-12: Union Street Improvement

Exhibit 5-13: Typical Cross-section of Improved Union Street



5.7 Traffic Operations

The changes to traffic system performance associated with the package of recommended improvements (Alternatives 1 and 5) has been evaluated with both the Aimsun and Synchro software. The Aimsun modelling tool provided a broader assessment of study area network performance, while the Synchro tool provided intersection-based results.

5.7.1 Network Performance – Aimsun Modelling

Further to the modelling discussed in **Section 4.5.1**, the combined scenario with Alternatives 1 and 5 in place was modelled to understand the net operational benefits of the recommended package of improvements. The findings from the modelling exercise are summarized in **Exhibit 5-14**. The operational performance is compared to the "Do Nothing" scenario. The detailed modelling findings are provided in **Appendix I**.

Exhibit 5-14: Traffic Performance of the Recommended Package of Improvements (2031 AM Peak Hour; Based on AIMSUN Model)

Indicator	Do Nothing	Recommended Improvement (Alternatives 1 & 5)	Net Improvement
Overall Transportation Network Metrics			
Total People Moved	15,400	16,540	+1,140
Total Delay (hr)	1,248	752	-496
Total Person Delay (hr)	1,634	1,074	-560
Total Travel Time (hr)	1,722	1,269	-453
Avg. Delay Time (min/km)	3.7	2.22	-1.48
Avg. Stop Time (min/km)	3.3	1.87	-1.43
Total Vehicle-km Travel ('000	18.1	19.66	+1.55
Vehicles Waiting to Enter	748	43	-705
Overall Intersection Vehicular Delay at St. Clair Avenue West Intersections			
St. Clair at Keele / Weston	234 seconds	129 seconds	-105 seconds
St. Clair at Old Weston	76 seconds	26 seconds	-50 seconds

Exhibit 5-14 indicates that the recommended improvement results in measurable improvements compared to the "Do Nothing" scenario. From a study network perspective, the quantity and efficiency of people and goods movement are projected to increase. The people moved includes TTC buses and streetcars. The overall delays at

the two critical intersections along St. Clair Avenue West at Keele Street / Weston Road and Old Weston Road are projected to decrease by close to half or more than half, respectively.

5.7.2 Intersection Performance – Synchro Assessment

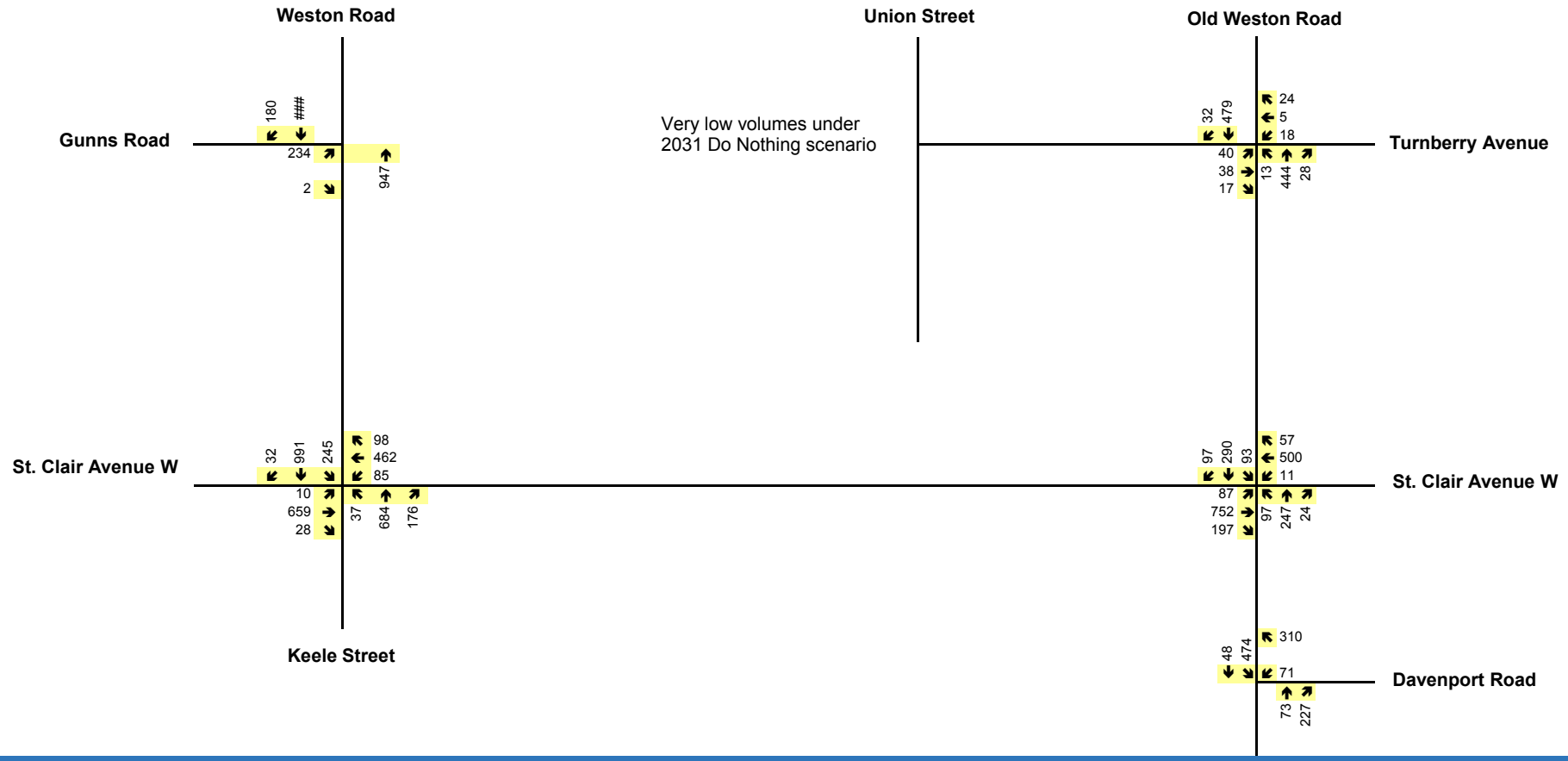
A Synchro assessment was also completed for the study intersections to understand the intersection performance and controls required. The 2031 future volumes assessed for the "Do Nothing" and the recommended improved scenario (with Alternatives 1 & 5) are shown in **Exhibits 5-15** and **5-16**. The "Do Nothing" volumes are based on the application of the forecast growth to the existing volumes, and the improved scenario volumes are based on the traffic pattern changes forecast by the Aimsun model. The intersection operations results are summarized in **Exhibit 5-17.** The proposed lane configurations for the improved scenario are shown in **Exhibit 5-18**. The intersection controls at the new / expanded intersections to be created via the TMP are:

- Gunns Road at Keele Street: All-way stop control;
- Union Street at Turnberry Avenue / Gunns Road: All-way stop control;
- Davenport Road at Old Weston Road: continue to be signalized; and
- Gunns Road at Weston Road: continue to be signalized.

These results corroborate the AIMSUN results. The proposed improvements are projected to reduce delay and queuing at all arterial intersections assessed. Refinement of the intersection controls at all study intersections will be conducted during detailed design. The detailed Synchro findings are provided in **Appendix I**.

5.8 Pedestrian Access Improvements

Based on the pedestrian facilities proposed as part of the street widening, improvements and extensions, the resulting comprehensive pedestrian network is shown in **Exhibit 5-19**. There will be two east-west pedestrian crossing opportunities of the Kitchener Corridor, via St. Clair Avenue West and Gunns Road. In addition, pedestrians along St. Clair Avenue West will have improved access to Townsley Street, the St. Clair-Old Weston SmartTrack Station, Mulock Avenue, and Davenport Road via the proposed ramps and stairs. It should be noted that the ramp and stair facility on the north side of St. Clair Avenue West, east of the Kitchener GO Rail corridor, has been designed to connect to Townsley Street. The rationale for this is because there are currently stairs between St. Clair Avenue West and Townsley Street, therefore, the intent is to continue providing this function – particularly when the widening of St. Clair Avenue West occurs before the extension of Davenport Road. Further discussions of mitigation measures related to pedestrian facilities are provided in the mitigation **Section 7.2.5**.

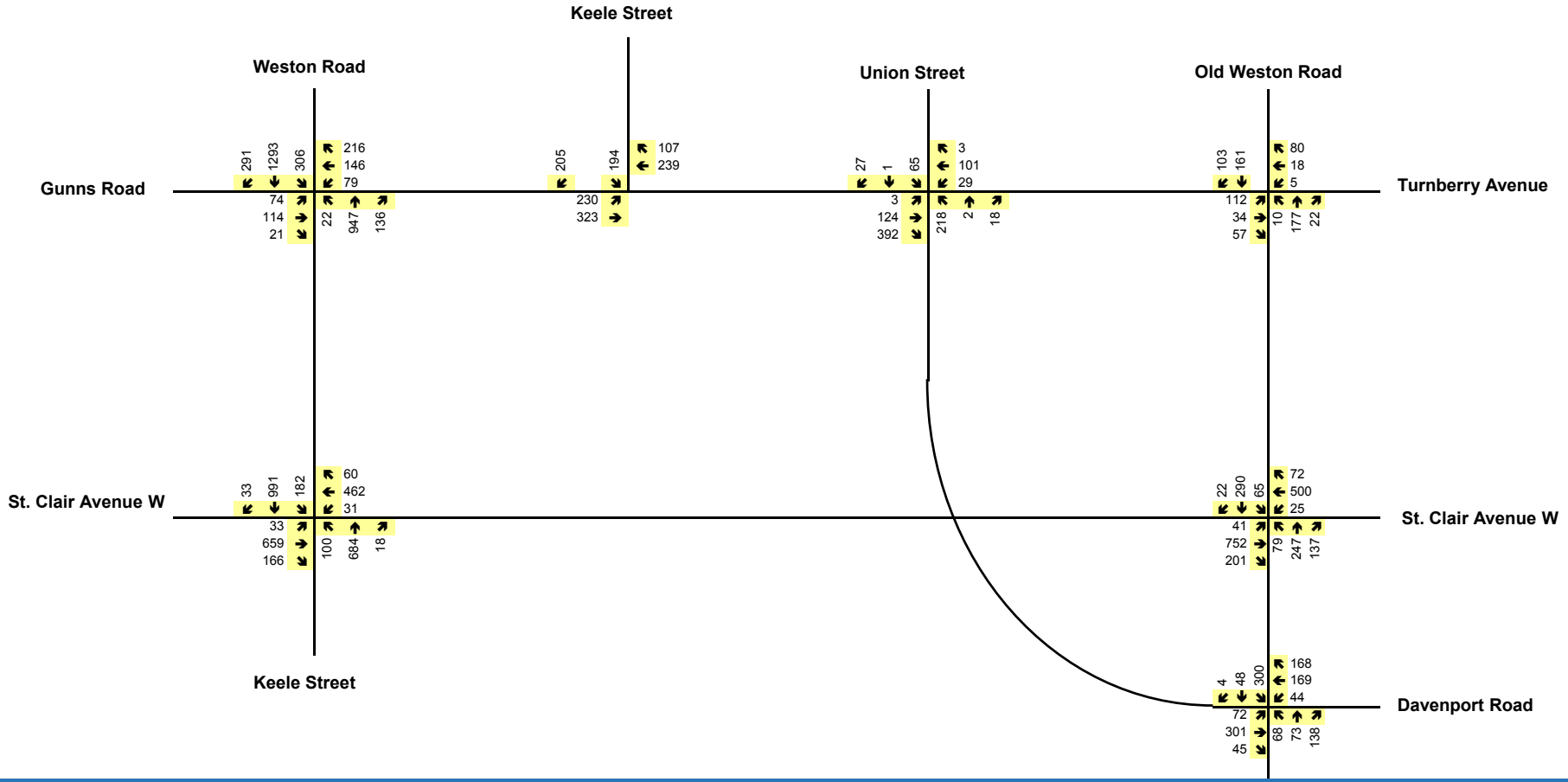


LEGEND

XX AM Peak Hour Volumes

Exhibit 5-15

Future - 2031 Do Nothing Traffic Volumes



St Clair Avenue West Transportation Master Plan

WSP

TORONTO

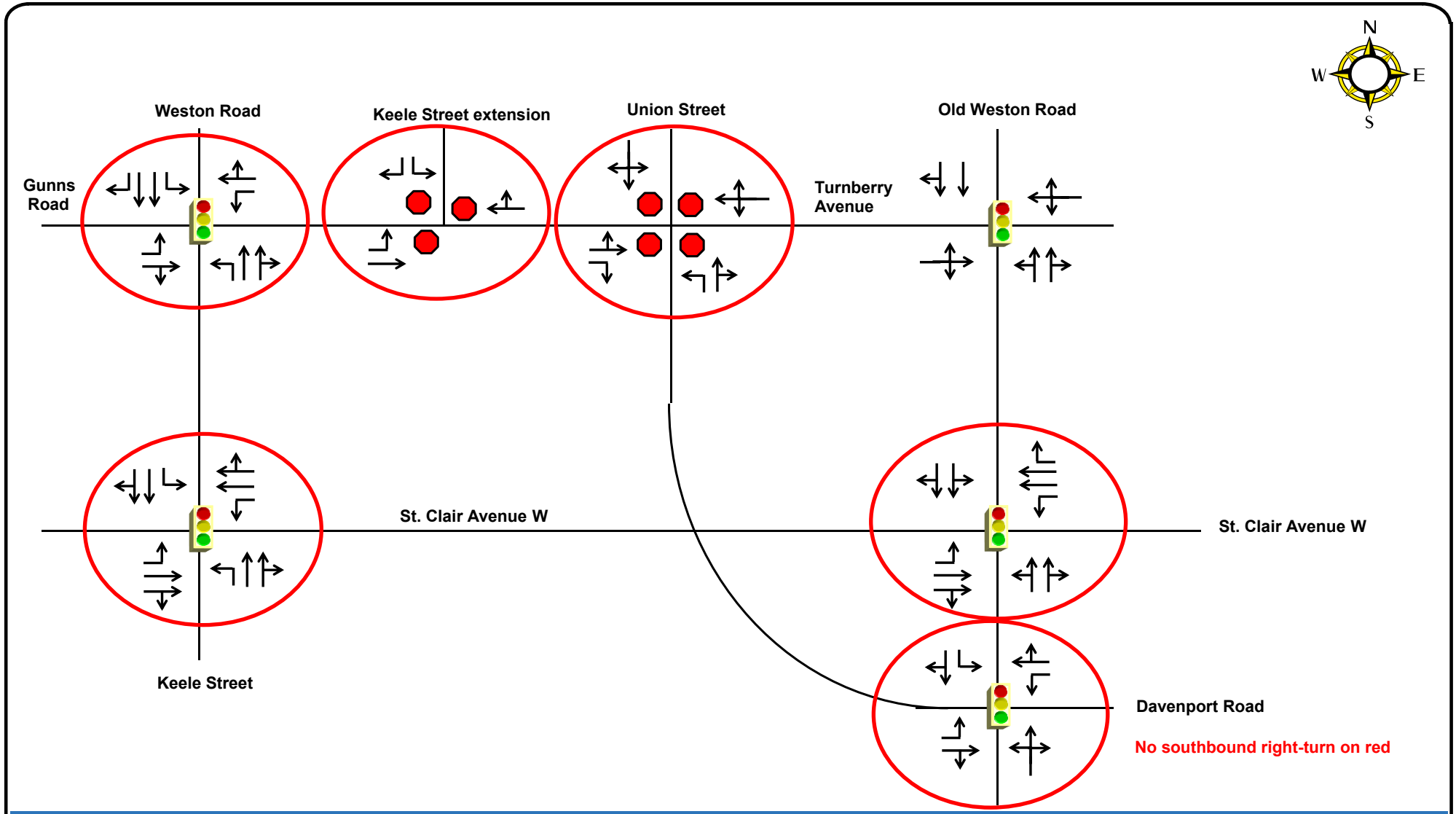
LEGEND

XX AM Peak Hour Volumes

Exhibit 5-16
2031 Future Traffic Volumes with Recommended Improvements

Exhibit 5-17: Traffic Performance of the Recommended Package of Improvements (2031 AM Peak Hour; Synchro Model)

Indicator	Do Nothing		Recommended Improvement (Alternatives 1 & 5)	
Intersection	**LOS (Avg delay per vehicle in seconds)**	**Critical Movements (v/c ratio)**	**LOS (Avg delay per vehicle in seconds)**	**Critical Movements (v/c ratio)**
St. Clair Ave W & Old Weston Rd	C (22)	--	B (18)	--
St. Clair Ave W & Keele St / Weston Rd	E (69)	EB-T (1.18) NB-T (0.97) SB-L (1.29) SB-T (0.96)	D (40)	SB-T (0.94)
Old Weston Rd & Davenport Rd	A (8)	--	C (25)	--
Old Weston Rd & Turnberry Ave	A (8)	--	B (11)	--
Weston Rd & Gunns Rd	B (13)	--	C (28)	SB-L (0.90)
Union St & Turnberry Ave / Gunns Rd	--	--	B (14)	--
Gunns Rd & Keele St	--	--	C (18)	--



St Clair Avenue West Transportation Master Plan

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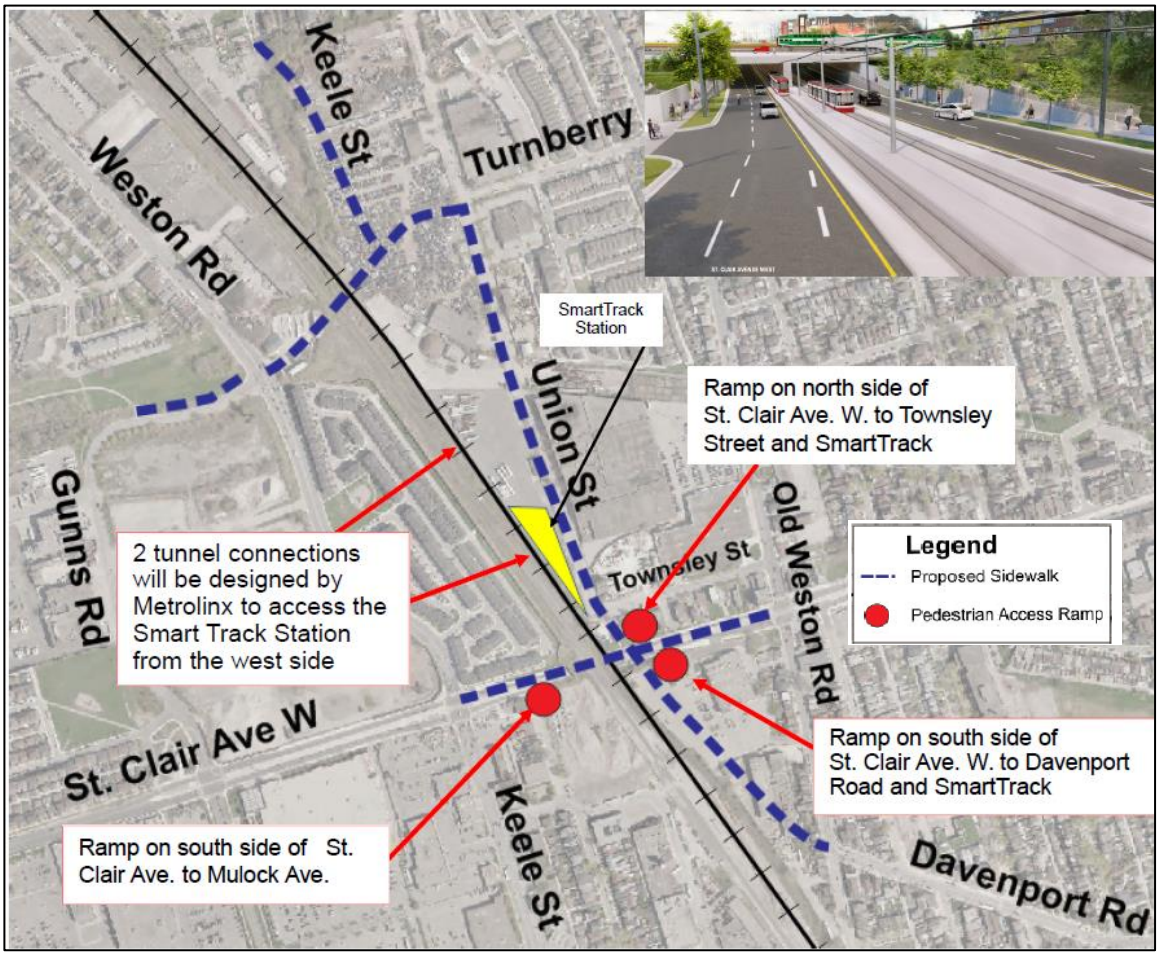
- Signalized
- Stop Controlled
- Lane Configurations
- Improved intersections

Exhibit 5-18
Future Lane Configurations with Recommened Improvements

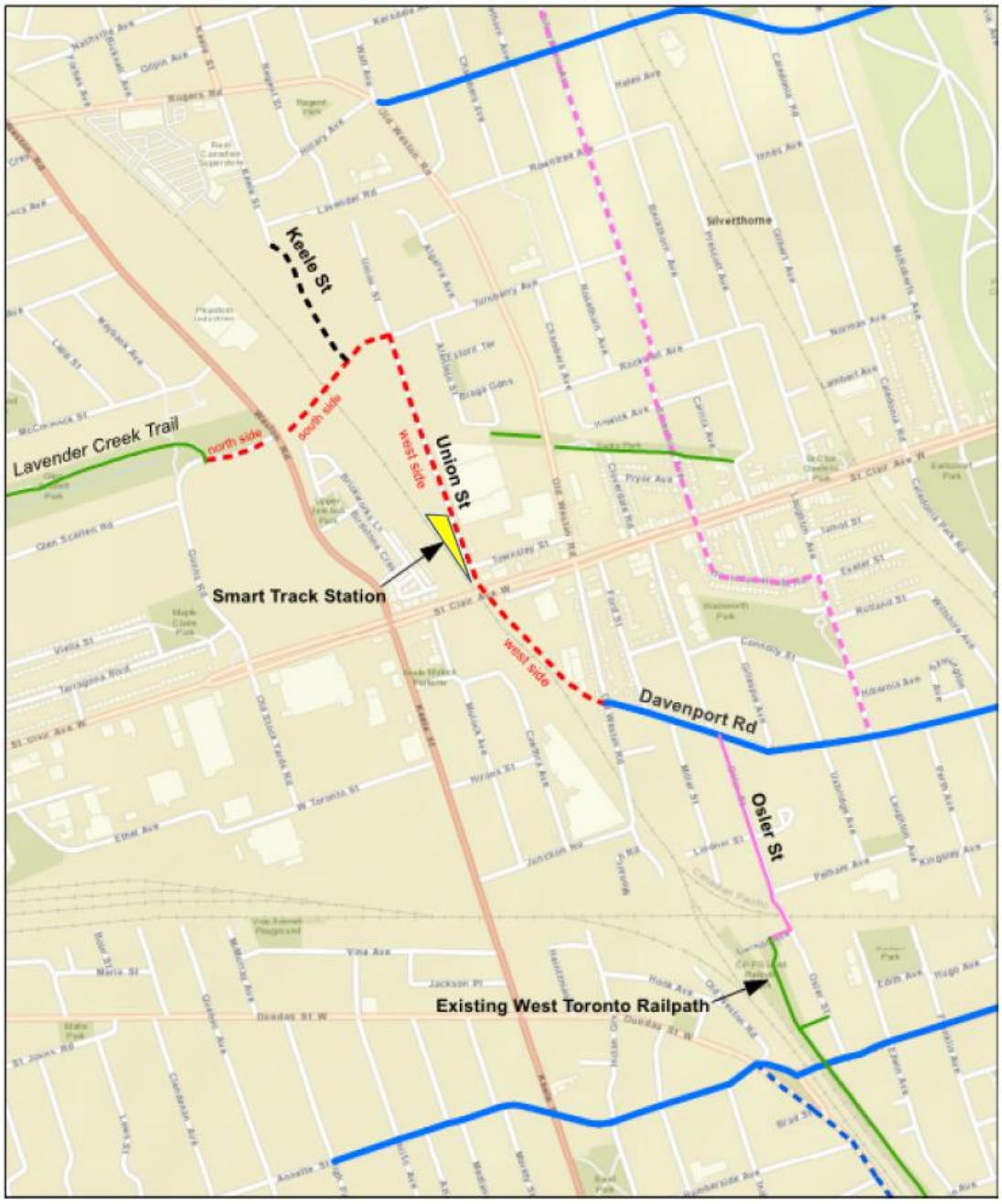
Exhibit 5-19: Proposed Pedestrian Facility Network



5.9 Cycling Access Improvements

Based on the cycling facilities proposed as part of the street network improvements, the resulting cycling facility network is shown in **Exhibit 5-20**. The proposed cycling network will be well connected throughout the study area in both the north-south and east-west directions. The proposed cycling infrastructure will provide important connections to the existing cycling facilities (the Lavender Creek Trail, West Toronto Railpath) and the SmartTrack Station.

Exhibit 5-20: Proposed Cycling Facility Network



5.10 Transit Improvements

From a transit perspective, the recommended street network improvements enhance the connectivity of the bus routes through the study area. The TTC has indicated that their intent is to adjust various bus routes to better serve the future St. Clair-Old Weston SmartTrack Station. The preliminary map of the future routes expected to be in place by 2025 is shown in **Exhibit 5-21**. The map shows that several existing bus routes will be realigned to utilize the Davenport Road, Gunns Road and Keele Street extensions, to serve the SmartTrack Station, as recommended by the TMP. With input from TTC, potential new bus stops have also been identified as stars along the expanded street network as shown in Exhibit 5-21. The location of these bus stops will be finalized during the detailed design stage. In addition, the new intersections that are forecast to serve buses have been designed to accommodate the necessary bus turning radii. No change is proposed to the 512 St. Clair streetcar service, as it will continue to operate in a dedicated centre median right-of-way.

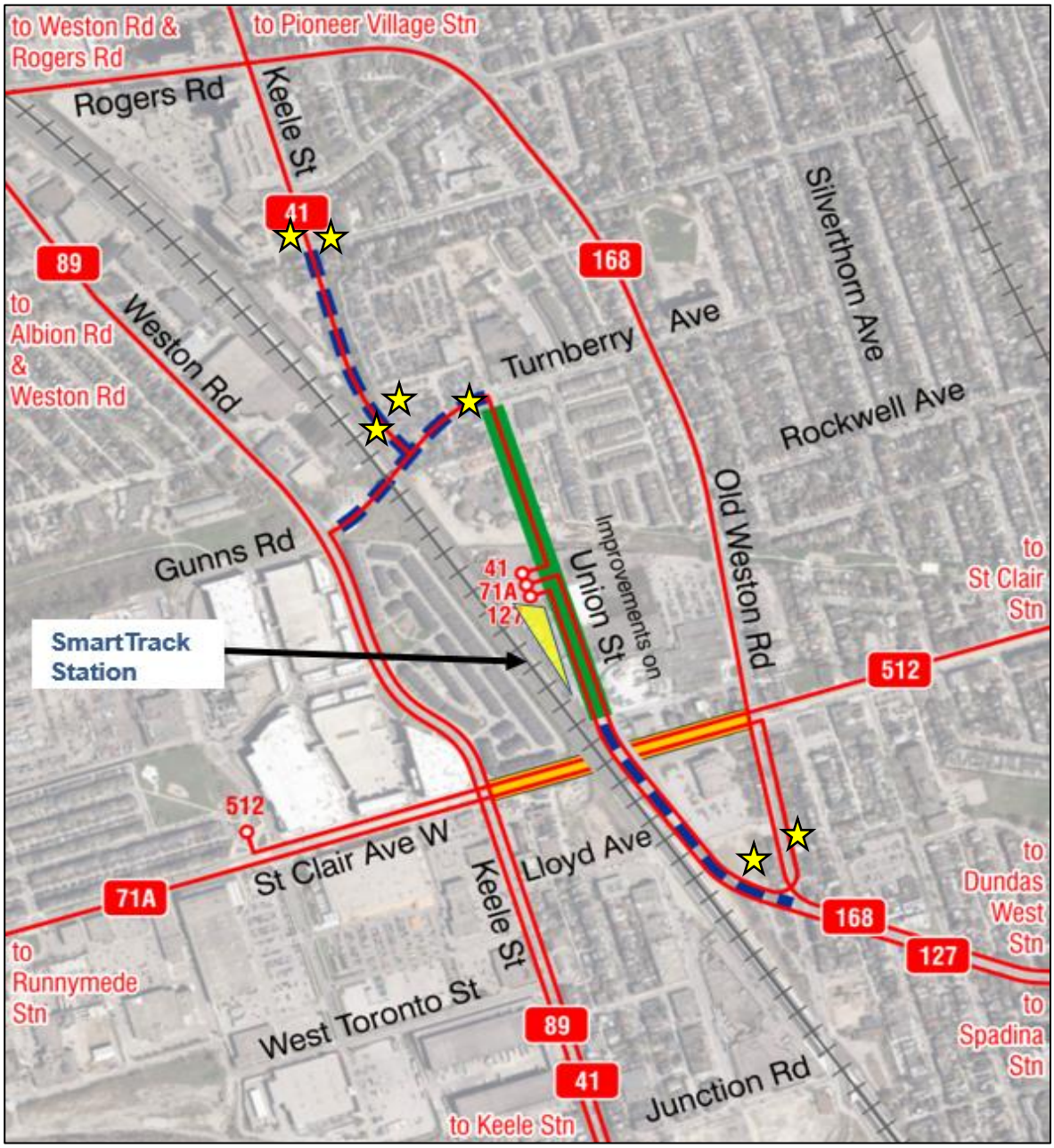
The improved vertical connections recommended along St. Clair Avenue West will also improve access to the various transit routes. Overall, the expansion of the street network plays an important role for surface transit vehicles, particularly to minimize the traffic associated with the SmartTrack Station from needing to use existing local roads. The widening of St. Clair Avenue West also provides detour flexibility during emergencies or incidents.

5.11 Municipal Services and Utilities

This section provides an overview of the planned municipal services within the improved portions of the study area. The detailed utility and servicing report is provided in **Appendix H**. Anticipated changes to be required are as follows:

- **City of Toronto Watermain**: Through meetings with Toronto Water, the need to either replace, maintain or provide a new transmission watermain was identified for each of the recommended street network improvements. Of note is the need to replace the existing watermain along St. Clair Avenue West with a larger diameter specification as part of the road widening.
- **Sanitary Servicing**: As noted earlier, wherever present, existing sanitary (i.e., sewage) servicing provided through combined sewers are recommended to be replaced by separate storm and sanitary sewers. In some instances, the existing sanitary sewers need to be upsized as part of the street network improvements.
- **Other utilities**: All of the other identified utility companies, including Toronto Hydro, Bell Canada, Rogers Cable, Enbridge, and other telecom companies were contacted for relocation costs where applicable. These have been factored into the TMP recommendations.

Exhibit 5-21: Preliminary Bus Route Map with SmartTrack Station (2025)



- **Storm Servicing**: New, improved or maintained storm servicing facilities were considered for the improved street network. Of note is the existing storm servicing along St. Clair Avenue West, which is provided through a combined sewer. A combined sewer is a sewage collection system of pipes and tunnels designed to also collect surface runoff. This type of sewer is now being replaced by separate storm sewers due to environmental considerations of stormwater and sewage being discharged into waterbodies during storm events. Therefore, the widening of St. Clair Avenue West provides the opportunity to provide a separate storm sewer. It should be noted that no pumping station is required in the study area. In addition to the standard addition of storm sewers for new roads, the storm facilities of the Keele Street extension have been designed with special attention on the watercourse and natural feature known as the Lavender Creek Ravine.

5.12 Staging of Improvements

The implementation of the recommended street network improvements is proposed to occur in two stages and are described below and shown in **Exhibit 5-22**.

Exhibit 5-22: Improvement Staging Order

Stage 1: Widening of St. Clair Avenue West between Keele Street and Old Weston Road is driven by the timing of planned rehabilitation of the rail bridge over St. Clair Avenue West and opportunities to coordinate the replacement of the bridge with other adjacent infrastructure projects.

Coordinating the bridge work with the widening of St. Clair reduces neighbourhood impact and represents construction efficiencies. Moreover, this provides the most direct improvement to increasing east-west capacity across the Kitchener Corridor. A constructability plan has been prepared in consultation with the various rail authorities to ensure that one lane of traffic is available in each direction along St. Clair Avenue West for the duration of the construction, while maintaining acceptable levels of GO Rail, UP Express and CP Rail train services. In addition, at least one sidewalk will be available throughout the reconstruction of the St. Clair Avenue West section. The 512 TTC streetcar route would be replaced by TTC bus services during the road widening. Details of the how the St. Clair Avenue West widening and bridge replacement are planned are provided in **Appendix M.**

Stage 2: Remaining street network improvements including:

- Extension of Gunns Road from Weston Road to Union Street;
- Extension of Keele Street to connect to the Gunns Road extension;
- Extension of Davenport Road to Union Street; and
- Improvements to Union Street.

Combined, these improvements provide alternative connections on the transportation network for east-west travel across the rail corridor and enhance the resiliency of the network in the study area. The extension of Keele Street cannot be completed without the extension of Gunns Road. Gunns Road can be a standalone improvement, though the Davenport, Keele and Gunns extensions should be completed together to maximize the potential benefits to the area road network and to minimize the potential for traffic infiltration east of Union Street. There are also construction and staging efficiencies given the proximity of some of the infrastructure.

This package should follow the widening of St. Clair Avenue West because the widening would already address the near-term and present east-west capacity needs.

The staging of improvements is preliminary and will be determined through detailed design. The proposed stages and sequencing of the stages will be reviewed through the development of an implementation strategy during the next design phase. A number of factors will contribute to the development of a construction phasing plan, including:

- opportunities to coordinate with adjacent infrastructure projects;
- construction and staging efficiencies;
- minimizing the impact of construction on the area road network;

- minimizing the impact of construction on the Kitchener GO Transit rail corridor;
- the condition and timing of planned rehabilitation of the existing rail bridge over St. Clair Avenue West;
- the timing of required property acquisition; and
- the timing of required utility relocations.

5.13 Cost Estimates

The cost estimates for the recommended street network improvements are summarized in **Exhibit 5-23**. These costs are inclusive of the road work, active transportation, transit, utility and structural costs. These costs are exclusive of property acquisition costs, which are to be finalized through the detailed design stage, and do not include costs associated with the St. Clair-Old Weston SmartTrack Station.

Exhibit 5-23: Cost Estimates of Recommended Improvements

Improvement Component	Construction Cost	Contingency (30%)	Contract Admin and Design (10%)	Total
St. Clair Avenue West Widening	$84.5M	$25.3M	$8.4M	$118.2M
Gunns Road Extension (inclusive of Lavender Creek trail extension)	$47.6M	$14.3M	$4.8M	$66.7M
Keele Street Extension	$12.0M	$3.6M	$1.2M	$16.8M
Davenport Road Extension (inclusive of Union Street improvement and Townsley Street connection to Union Street)	$12.4M	$3.7M	$1.2M	$17.3M
Total	**$156.5M**	**$46.9M**	**$15.6M**	**$219.0M**