4.0 Evaluation of Alternatives

4.1 Alternative Planning Solutions to the Undertaking

The Municipal Class Environmental Assessment (MCEA) process requires Schedule 'C' projects to consider alternative planning solutions to the undertaking in order to provide reasonable justification to proceed with the improvements and to clearly demonstrate the need for the Transportation Master Plan (TMP) project(s).

Accordingly, alternative planning solutions were evaluated for their ability to address the problem and opportunity statement, which focuses on improving traffic conditions and connectivity along St. Clair Avenue West between Keele Street and Old Weston Road for all modes of travel.

The alternative planning solutions that were considered, along with the high-level screening, are as follows:

- **A**: **"Do Nothing"**: This alternative assumes no improvements will be made beyond those already planned and approved for the study area. This planning alternative was evaluated for comparison purposes only, since it does not address the problem and opportunity statement.
- **B**: **High Occupancy Vehicle Lane**: High Occupancy Vehicle (HOV) is the concept of dedicating a lane of traffic to motorists that are non-single occupant, as an incentive for carpooling. However, there is only one traffic lane in each direction along St. Clair Avenue West at and in proximity to the Kitchener Corridor rail bridge underpass. Moreover, there is no established HOV facility upstream or downstream along St. Clair Avenue West in the study area. This alternative would also not improve pedestrian or cyclist mobility. Therefore, the HOV concept would not address the problem and opportunity statement and is not carried forward.
- **C**: **Mixed Streetcar and General Purpose Lane**: This option would involve general traffic sharing the centre Toronto Transit Commission (TTC) streetcar right-of-way through the study area. There are operational and safety challenges associated with this option (merging issues due to speed differentials, turning movement delays, operational delays to transit) that would have a negative impact on the overall service of the TTC 512 streetcar route along St. Clair Avenue. This planning alternative was reviewed in greater detail in the 2015 Functional Planning Study (FPS). Due to the negative impact this alternative will have on the transit mode, and also because this alternative would not improve pedestrian or cyclist mobility, the alternative of mixed traffic within the TTC streetcar right-of-way is not carried forward.

- **D**: **Build New Road Connections:** This alternative represents the construction of new road links within the study area that would contribute to the movement of pedestrians, cyclists and vehicles across the Kitchener Corridor and alleviate traffic congestion along St. Clair Avenue West. This planning alternative is carried forward for its potential to address the problem and opportunity statement.
- **E**: **Widen Existing Road:** This alternative would increase road link capacity along St. Clair Avenue West for pedestrians, cyclists and vehicles, since it is the only road crossing the Kitchener Corridor in the study area. This planning alternative is carried forward for its potential to address the problem and opportunity statement.
- **F**: **Build New Pedestrian and Cycling Facilities:** This alternative represents the addition of connections specifically for pedestrians and cyclists through the study area – particularly crossing the Kitchener Corridor. This planning alternative is carried forward for incorporation with Alternative D (build new road connections) for its potential to address the problem and opportunity statement. A new road connection creates the opportunity for new sidewalks and cycling facilities to be provided as part of a complete streets concept.
- **G: Transit Improvements:** This alternative represents enhancement to the transit services within the study area. This planning alternative is carried forward for incorporation with Alternative D (build new road connections) for its potential to address the problem and opportunity statement. A new road connection creates the opportunity for surface transit vehicles to better serve the study area.

Based on the high-level screening, Alternative Planning Solutions A, D, E, F and G were carried forward in the evaluation.

4.2 Alternatives Background

By way of background, the 2015 Functional Planning Study (FPS) developed and evaluated a comprehensive set of short and long-term alternatives. The short-term alternatives were identified as Schedule A or A+, and are recommended for internal review by the City and the TTC. The objective of the FPS for the long-term alternatives was to identify solutions that were both feasible and effective. Five long-term alternatives were developed, along with sub-options, as summarized below. These long-term alternatives address the Alternative Planning Solutions carried forward from **Section 4.1**.

- **Option 1**: Widen St. Clair Avenue West at underpass.
- **Option 1A(i)**: Replace existing St. Clair Avenue West underpass and widen both sides.

- **Option 1A(ii):** Replace existing St. Clair Avenue West underpass and widen to the south side.
- **Option 1B(i):** New underpass structure south of St. Clair Avenue West for eastbound traffic lanes.
- **Option 1B(ii):** New overpass structure south of St. Clair Avenue West for eastbound traffic lanes.
- **Option 2:** Construct additional rail crossing north of St. Clair Avenue West.
- **Option 2A(i):** Extend Gunns Road to Union Street with underpass.
- **Option 2A(ii):** Extend Gunns Road to Turnberry Avenue with underpass.
- **Option 3**: Construct additional rail crossing south of St. Clair Avenue West.
- **Option 3A(i)**: Extend Davenport Road to Lloyd Avenue with overpass.
- **Option 3A(ii)**: Extend Davenport Road to West Toronto Road with overpass.
- **Option 4**: Extend Keele Street to the south.
- **Option 5**: Extend Keele Street to a Gunns Road extension and Union Street crossing over St. Clair Avenue West to connect with Davenport Road.

The feasibility and effectiveness of the five long-term alternatives along with the sub-options were evaluated in the FPS based on these criteria: property impacts, transportation planning, archaeology/built heritage, natural environment, transportation / operations / engineering / constructability, and estimated construction cost. The detailed evaluation tables from the FPS are provided in **Appendix J** of the TMP.

Based on the evaluation of the long-term alternatives, the following three alternatives had been recommended in the FPS to be carried forward for the TMP Environmental Assessment (EA) process:

- **Option 1A(ii):** Replace existing St. Clair Avenue West underpass and widen to the south side.
- **Option 3A(i):** Extend Davenport Road to Lloyd Avenue with overpass.
- **Option 5:** Extend Keele Street to a Gunns Road extension and Union Street crossing over St. Clair Avenue West to connect with Davenport Road.

Accordingly, the three long-term alternatives were evaluated in the TMP, along with other options which are identified in the following section.

4.3 Planning Alternatives Analyzed

As noted in **Section 2.0**, the Kitchener Corridor running north-south through the study area constrains the number of east-west transportation crossing opportunities. This results in high traffic demands relative to capacity and limits connectivity for all road users (pedestrians, cyclists, transit, and motorists). As such, the development of alternatives for the road-based solutions was focused on the following key objectives:

- Develop a plan for future capacity improvements to relieve traffic congestion, while ensuring the efficient movement of people and goods;
- Create additional connections for all transportation modes; and
- Implement a construction plan that allows for road works to be coordinated with the rail bridge replacement to minimize traffic disruption.

With consideration of the recommendations from the FPS, consultation with the City team, and feedback received during Public Event (PE) #1, a total of eight alternatives were established as follows:

- **Alternative 1:** Widen St. Clair Avenue West between Keele Street & Old Weston Road.
- **Alternative 2:** Extend Gunns Road from Weston Road to Union Street
- **Alternative 3:** Extend Davenport Road to Lloyd Avenue.
- **Alternative 4:** Extend Keele Street to connect to the Gunns Road extension.
- **Alternative 5:** Extend Davenport Road to improved Union Street, extend Keele Street and extend Gunns Road.
- **Alternative 6:** Extend Davenport Road to West Toronto Street.
- **Alternative 7:** Extend Gunns Road to connect to the extension of Davenport Road between the Kitchener Corridor and Union Street.
- **Alternative 8:** Extend Keele Street to connect to the extension of Davenport Road between the Kitchener Corridor and Union Street.

The rationale, concept and sub-options of each of the eight alternatives are discussed in the following sections. **Exhibit 4-1** illustrates Alternatives 1 to 5, which were presented at PE #1, and **Exhibit 4-2** illustrates Alternatives 6 to 8, which were developed based on input from PE #1.

Exhibit 4-1: Map Illustrating Alternatives 1 to 5

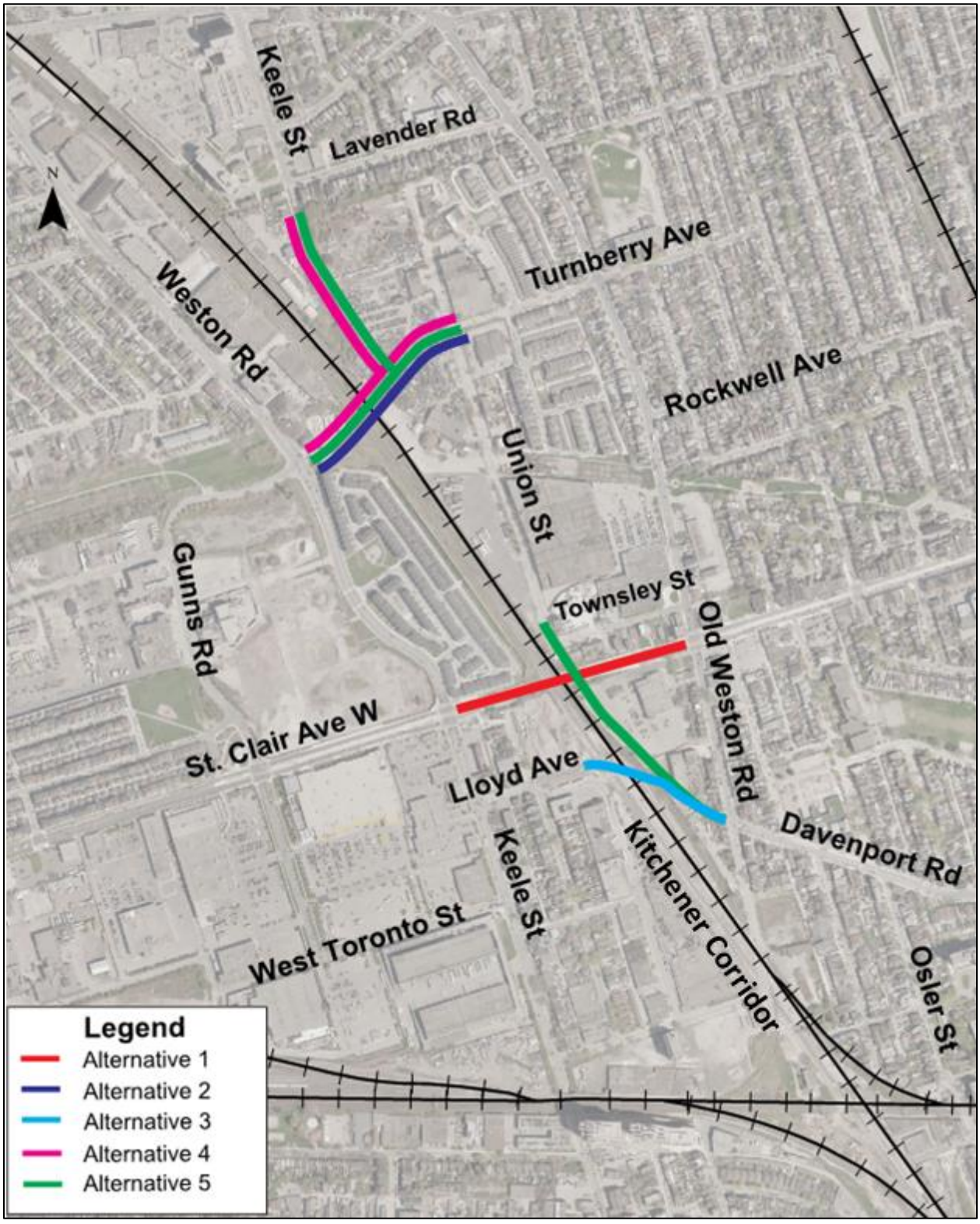
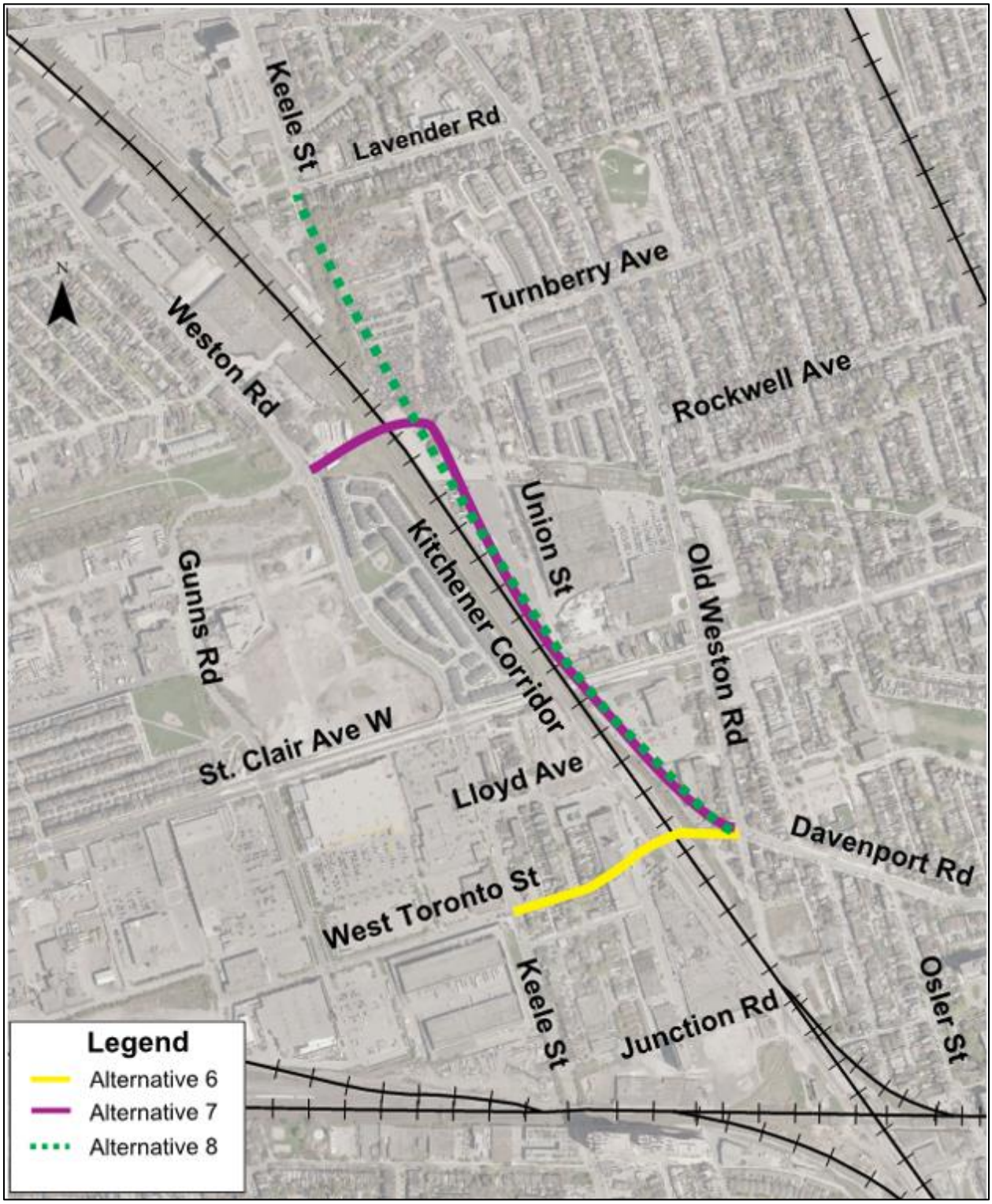


Exhibit 4-2: Map Illustrating Alternatives 6 to 8



4.3.1 Alternative 1: Widen St. Clair Avenue West between Keele Street and Old Weston Road

Alternative 1 proposes to widen St. Clair Avenue West across the Kitchener Corridor, to two eastbound traffic lanes and two westbound traffic lanes. This was considered because it would be the most direct way of increasing traffic capacity through the Kitchener Corridor. The streetcar would continue to operate in its exclusive centre right-of-way. The concept of the widening of St. Clair between Weston and Old Weston Roads is shown in **Exhibit 4-1**. The sub-options for Alternative 1 are:

Profile

i) St. Clair Avenue West as a new road over rail at the Kitchener GO Rail corridor; and

ii) St. Clair Avenue West as road under rail at the Kitchener GO Rail corridor.

Alignment

iii) St. Clair Avenue West widened to the north;

iv) St. Clair Avenue West widened to the south; and

v) St. Clair Avenue West widened to both north and south.

Active Transportation

vi) Consider providing cycling facilities on St. Clair Avenue West;

vii) Maintain access between St. Clair Avenue West and Townsley Street and Mulock Avenue via vertical connections; and

viii) Provide accessible, vertical access between St. Clair Avenue West and future road(s) crossing St. Clair Avenue West.

Transit

ix) Add a TTC streetcar stop at the overpass/underpass at the Kitchener GO Rail corridor.

Key considerations related to the sub-options are as follows:

- Based on the established profile of St. Clair Avenue West relative to the Kitchener Corridor, it is logical to maintain the existing road under rail configuration in the future;
- There are multiple residential properties along the north side of St. Clair Avenue West, and a building with heritage significance at the northwest corner of Old

Weston and St Clair. Therefore, consistent with the 2015 FPS, it would be less impactful to widen St. Clair Avenue West to the south;

- The condition and design of the Kitchener Corridor rail bridge; and
- The feasibility of adding a new TTC streetcar stop under the Kitchener Corridor overpass was evaluated as a means of providing a better connection between the TTC streetcar route and the future St. Clair-Old Weston SmartTrack Station, which is to be located immediately north of St. Clair Avenue west of Union Street. An assessment indicated that there are several operational and safety challenges associated with the additional streetcar stop along with limited improvement in access which would result from the new streetcar stop. In addition, TTC is not in favour of the addition of the streetcar stop because of its impact on service. In particular, the location of the potential new streetcar stop would not meet the TTC streetcar stop spacing requirement, which is important for route efficiency. In addition, there would be significant challenges in the safe crossing of TTC patrons between the new stop and the sidewalks along St. Clair Avenue West, since it operates as a midblock condition. Furthermore, the sidewalks along St. Clair Avenue West are at a different elevation than the road, therefore, it is difficult to place a pedestrian crossing at this location. Relative to the existing streetcar stops, the potential streetcar stop below the Kitchener Corridor overpass represents a transfer time saving (to the St. Clair-Old Weston SmartTrack Station) of only one to two minutes per passenger. The detailed evaluation of the TTC streetcar stop under the Kitchener GO Rail overpass is documented in **Appendix K**.

The above considerations led to the following Alternative 1 concept: Widen St. Clair Avenue West to the south and crossing the Kitchener GO Rail corridor as road under rail. The existing TTC streetcar stops will be maintained, along with accessible vertical connections to Townsley Street and Mulock Avenue. Future cycling facility and vertical connections will be considered along St. Clair Avenue West.

4.3.2 Alternative 2: Extend Gunns Road from Weston Road to Union Street

Alternative 2 proposes to extend Gunns Road from Weston Road to Union Street with one lane in each direction. This alternative was considered because it could function as an east-west link through the Kitchener Corridor. The concept of the extension is shown in **Exhibit 4-1**. The sub-options considered for Alternative 2 are:

Profile

i) Gunns Road as road under rail at the Kitchener GO Rail corridor; and

ii) Gunns Road as road over rail at the Kitchener GO Rail corridor.

Active Transportation

iii) Consider providing cycling facilities along the Gunns Road extension.

Connection to Union Street

iv) Gunns Road extended to Union Street at Turnberry Avenue; and

v) Gunns Road extended to Union Street as a 'T' intersection south of Turnberry Avenue.

Based on the existing profile of Gunns Road at Weston Road relative to the Kitchener GO Rail corridor, it is necessary to extend Gunns Road across the rail corridor as road under rail.

To address the question of the eastern terminus at Union Street, the extension of Gunns Road to either Union Street at Turnberry Avenue, or Union Street south of Turnberry Avenue, were evaluated, focusing on neighbourhood traffic impacts. Regardless of the extension terminus at Union Street, similar increases in volumes along Turnberry Avenue between Union Street and Old Weston Road are projected. Having two offset intersections in close proximity is not desirable. Therefore, from a traffic safety and operations perspective, it would be more efficient to extend Gunns Road to Union Street at Turnberry Avenue. The evaluation of the sub-options is documented in **Appendix K**.

The above consideration led to the following Alternative 2 concept: extend Gunns Road from Weston Road through the Kitchener GO Rail Corridor as an underpass to connect to Union Street at Turnberry Avenue. Cycling facility will be considered along the Gunns Road extension.

4.3.3 Alternative 3: Extend Davenport Road to Lloyd Avenue

Alternative 3 proposes to connect Davenport Road from Old Weston Road to Lloyd Avenue, with one lane in each direction. This alternative was considered because it could function as an additional east-west link through the Kitchener GO Rail corridor. The concept of the extension of Davenport Road to Lloyd Avenue is shown in **Exhibit 4-1** and the sub-options are:

Profile

i) Davenport Road as road under rail at the Kitchener GO Rail corridor; and

ii) Davenport Road as road over rail at the Kitchener GO Rail corridor.

Based on the profile of Davenport Road relative to the Kitchener GO Rail corridor and Lloyd Avenue, it is necessary to extend Davenport Road through the rail corridor as road over rail, which is consistent with the FPS.

Active Transportation

iii) Consider providing cycling facilities along the Davenport Road extension.

The above considerations led to the following Alternative 3 concept: extend Davenport Road to Lloyd Avenue, crossing the Kitchener GO Rail corridor as road over rail. Cycling facility will be considered along the Davenport Road extension.

4.3.4 Alternative 4: Extend Keele Street to the Gunns Road extension (in conjunction with Alternative 2 – Gunns Road extension)

Alternative 4 proposes the extension of Keele Street, from its terminus just south of Lavender Road, to connect to the Gunns Road extension (Alternative 2) as a 'T' intersection. Keele Street would be one lane in each direction. Alternative 4 is considered in conjunction with Alternative 2 because combined they would provide a more robust connectivity option and will help reduce traffic volumes along Turnberry Avenue. **Exhibit 4-1** shows the proposed alignment for Alternative 4 that is based on the FPS, and presented at PE #1.

Active Transportation

Consider providing cycling facilities along the Keele Street extension.

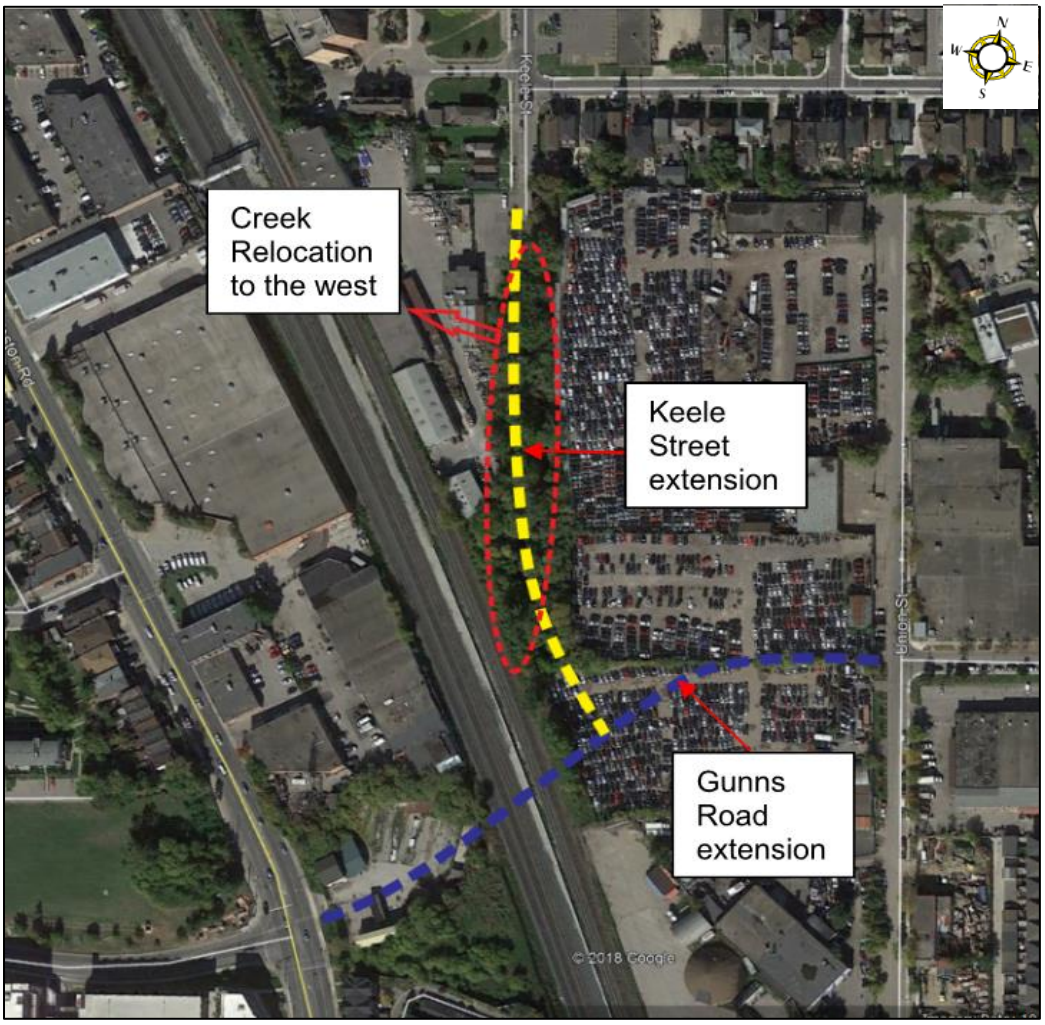
Natural Environment

After PE #1, the Toronto and Region Conservation Authority (TRCA) requested an alternative to the presented Keele Street extension that would reduce impacts to the Lavender Creek Ravine located south of the Keele Street terminus. The Keele Street extension alignment shown in **Exhibit 4-1** would have required the removal of the entire ravine and most of the natural feature.

To address the TRCA request, four alternatives for the extension of Keele Street were developed to reduce impacts to the Lavender Creek Ravine. The four alternative alignments are described as follows:

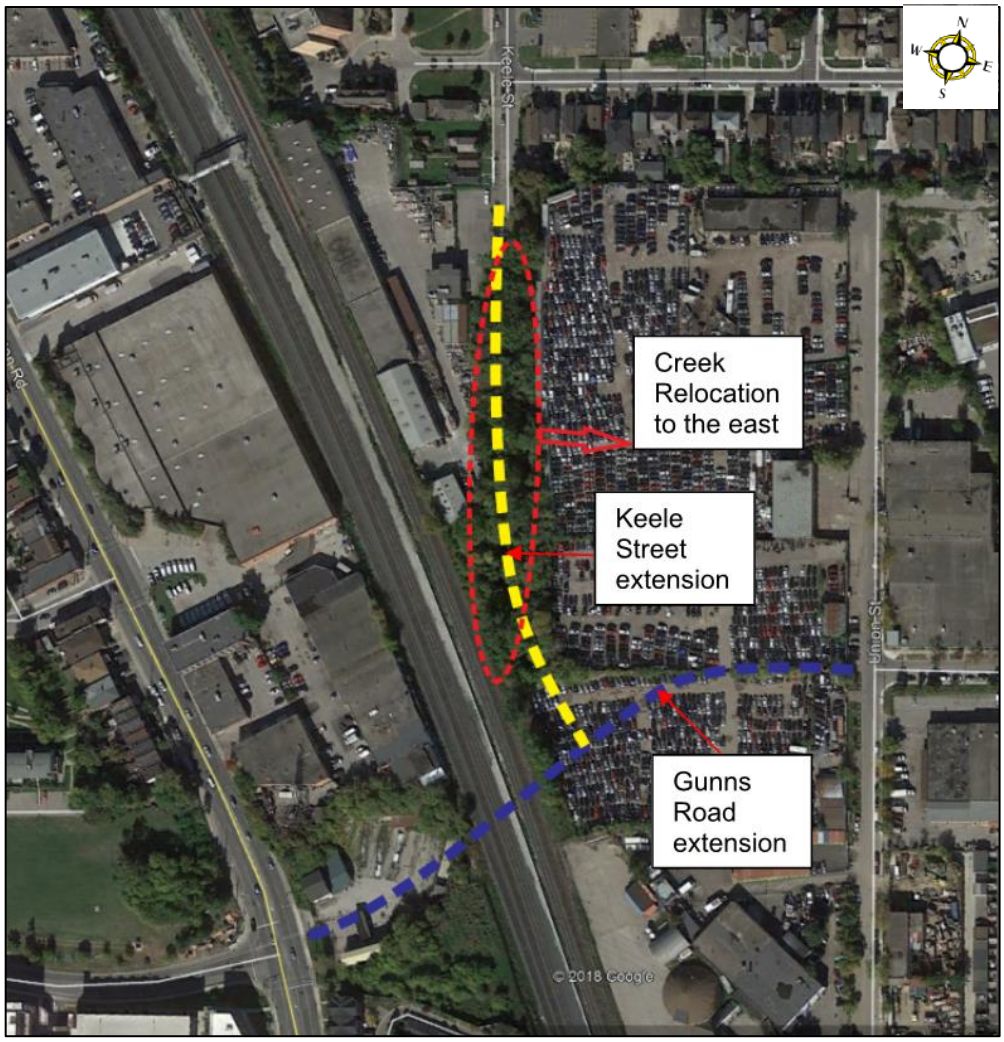
- **Alternative 1**: Relocate the Lavender Creek Ravine west of the current location and maintain the Keele Street extension alignment that was presented at PE #1, as shown in **Exhibit 4-3**. The yellow dashed line represents the Keele Street extension alignment and the blue dashed line represents the Gunns Road extension.

Exhibit 4-3: Keele Street Extension Alternative 1



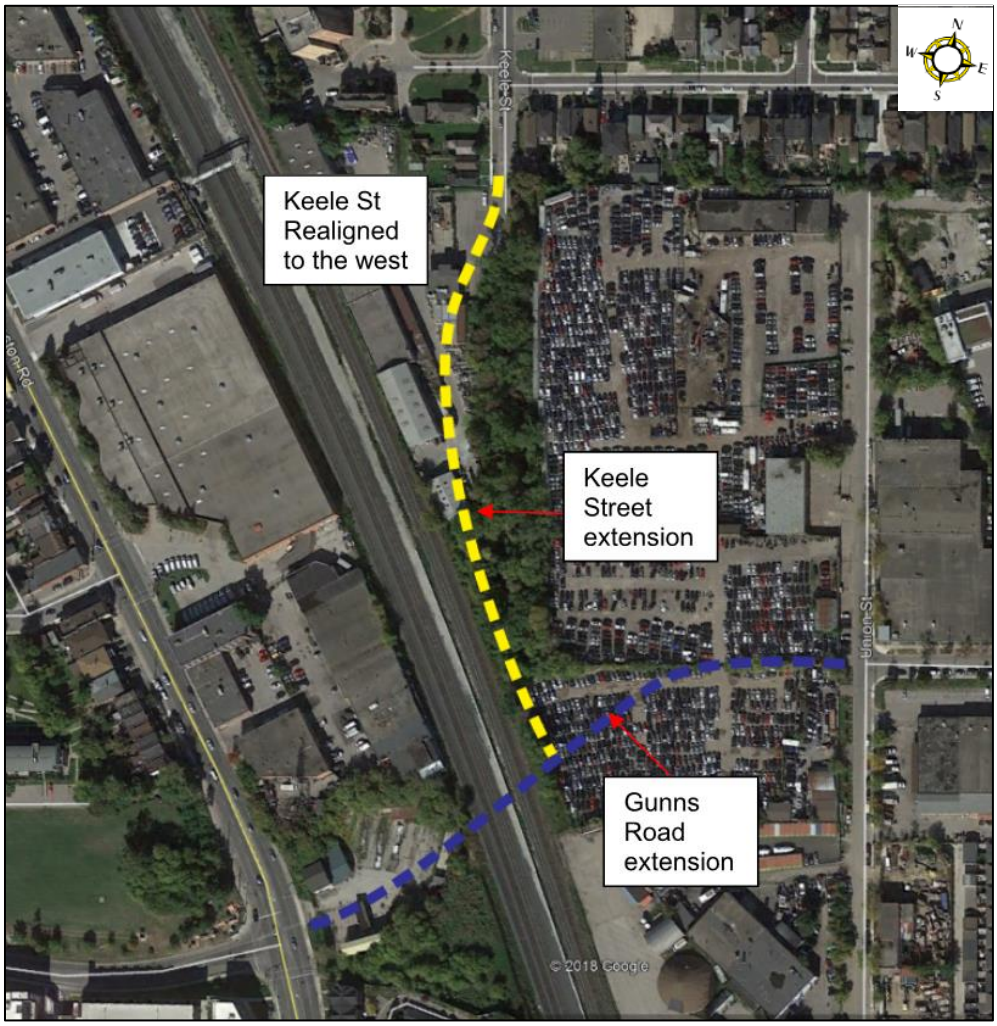
- **Alternative 2**: Relocate the Lavender Creek Ravine east of the current location and maintain the Keele Street extension alignment that was presented at PE #1, as shown in **Exhibit 4-4**. The yellow dashed line represents the Keele Street extension alignment and the blue dashed line represents the Gunns Road extension.

Exhibit 4-4: Keele Street Extension Alternative 2



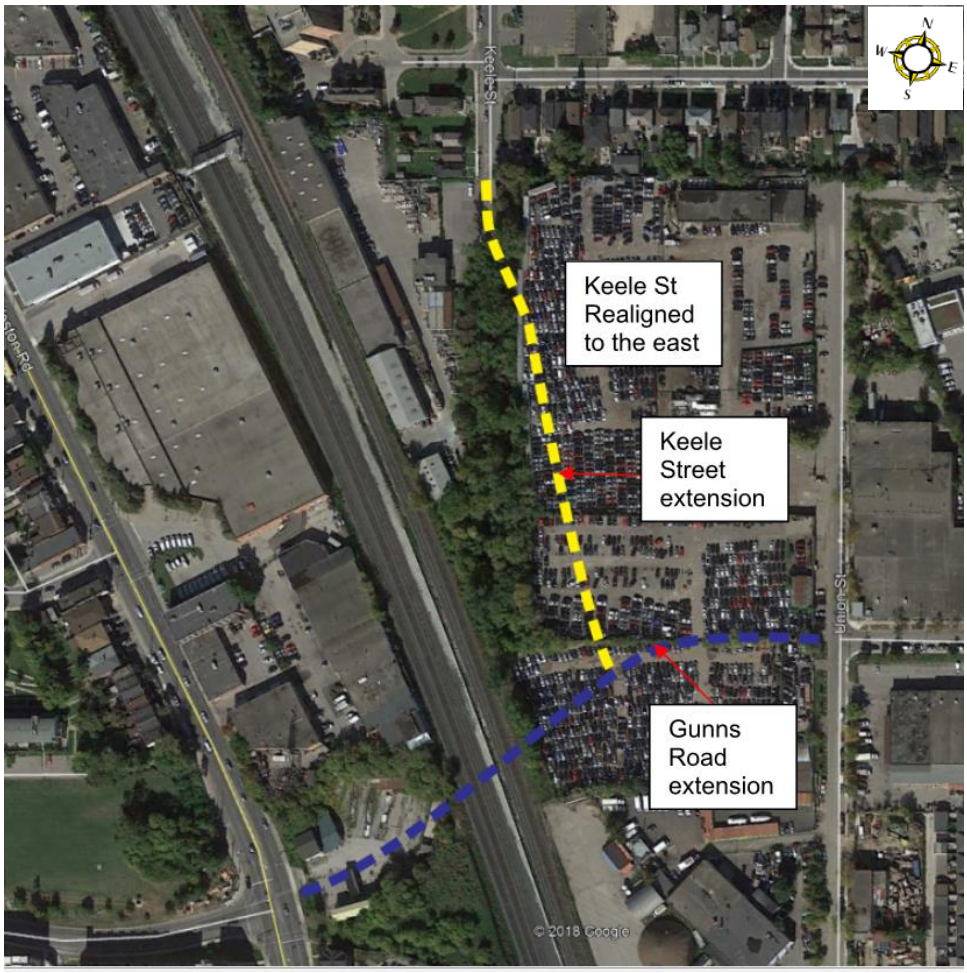
- **Alternative 3**: Maintain the location of the Lavender Creek Ravine, and shift the Keele Street extension alignment west of the Lavender Creek Ravine, as shown in **Exhibit 4-5**. The yellow dashed line represents the Keele Street extension alignment and the blue dashed line represents the Gunns Road extension.

Exhibit 4-5: Keele Street Extension Alternative 3



- **Alternative 4**: Maintain the location of the Lavender Creek Ravine and shift the Keele Street extension alignment east of the Lavender Creek Ravine, as shown in **Exhibit 4-6**. The yellow dashed line represents the Keele Street extension alignment and the blue dashed line represents the Gunns Road extension.

Exhibit 4-6: Keele Street Extension Alternative 4



The four realignment options were evaluated at a high level based on impact on the Lavender Creek ravine, utilities, design feasibility, impact on private properties, cost and impact on the environment. The evaluation is summarized in **Appendix K.**

The above considerations led to the following Alternative 4 concept: cycling facility will be considered along the Keele Street extension and realignment Alternative 4 was carried forward in the TMP because:

- It has the least impact on the natural environment;

- It is technically feasible;
- It results in the lowest number of impacted properties;
- Has the lowest capital cost to construct; and
- TRCA has indicated their support for this realignment option.

4.3.5 Alternative 5: Extend Davenport Road to Improved Union Street (in conjunction with Alternative 4 – Keele Street and Gunns Road Extensions)

Alternative 5 proposes to extend Davenport Road from its current western terminus northwest to an improved Union Street, in conjunction with the implementation of Alternative 4. Alternative 5 is considered in conjunction with Alternative 4 because combined they will provide a robust street network for all modes, better serve the planned SmartTrack station along Union Street, and reduce traffic infiltration concerns. In addition, this alternative will alleviate the congestions at the St. Clair Avenue West intersections with Keele Street / Weston Road and Old Weston Road, since motorists are provided and alternative route to bypass St. Clair Avenue West.

The extension would be one lane in each direction. The concept of the extension is shown in **Exhibit 4-1**. The sub-options for Alternative 5 are:

Profile

i) The extension of Davenport Road over St. Clair Avenue West; and

ii) The extension of Davenport Road under St. Clair Avenue West.

Based on the profiles of Union Street and Davenport Road relative to St. Clair Avenue West, it is necessary to extend Davenport Road over St. Clair Avenue West as a separate bridge structure.

Active Transportation

iii) Consider providing cycling facilities along the Davenport Road extension; and

iv) Improve Union Street to feature pedestrian and cycling facilities.

Intersection Configuration

v) Extend Davenport Road from the current terminus at Old Weston Road to form a 4-legged intersection;

vi) A jogged extension of Davenport Road via a new 'T' intersection along Old Weston Road north of the current terminus intersection;

vii) The extension of Davenport Road to Union Street, while terminating Townsley Street as a cul-de-sac; and

viii) The extension of Davenport Road to Union Street, while maintaining the connection of Townsley Street to Union Street as a 'T' intersection.

The extension of Davenport Road connecting to Old Weston Road north of the existing Davenport Road (the jogged configuration) is not desirable for a number of traffic operational reasons – this would add to queuing and congestion on Old Weston Road, as vehicles make the turns between the two sections of Davenport Road. The evaluation of the Davenport Road extension along Old Weston Road is documented in **Appendix K.**

Furthermore, it is feasible and desirable from a connectivity perspective to connect Townsley Street to Union Street as a 'T' intersection, instead of terminating as a cul-de-sac.

The above considerations led to the following Alternative 5 concept: the extension of Davenport Road from the current terminus at Old Weston Road to cross over St. Clair Avenue West and connect to Union Street, which will be improved between Townsley Street to and Turnberry Avenue. Townsley Street will connect to Union Street as a 'T' intersection. Active transportation facilities will be considered on both the Davenport Road extension and the improved segment of Union Street. The selected concept for Alternative 4 (discussed in Section 4.3.5) would also be included.

4.3.6 Alternative 6: Extend Davenport Road to West Toronto Street

Alternative 6 proposes to extend Davenport Road from its current western terminus northwest across the rail corridor to connect to West Toronto Street. This alternative was considered because it could function as an additional east-west link through the Kitchener GO Rail corridor. The extension would be one lane in each direction and the location of the extension is shown in **Exhibit 4-2**. The sub-options for Alternative 6 are:

Profile

i) The extension of Davenport Road at the Kitchener GO Rail Corridor as road over rail; and

ii) The extension of Davenport Road at the Kitchener GO Rail Corridor as road under rail.

Based on the existing profile of Davenport Road relative to the Kitchener GO Rail Corridor and West Toronto Street, it is necessary to extend Davenport Road across the rail corridor as road over rail.

Active Transportation

iii) Consider providing cycling facilities along the Davenport Road extension.

The above considerations led to the following Alternative 6 concept: the extension of Davenport Road from the current terminus at Old Weston Road to cross over the Kitchener GO Rail Corridor as road over rail and connect to West Toronto Street. Cycling facilities will be considered along the Davenport Road extension.

4.3.7 Alternative 7: Extend Gunns Road to connect to the extension of Davenport Road between the Kitchener GO Rail corridor and Union Street

Alternative 7 proposes to extend Gunns Road from Weston Road to connect to the northerly extension of Davenport Road, which will be between the Kitchener GO Rail corridor and Union Street. This alternative was considered because it could alleviate the congestion at the St. Clair Avenue West intersections with Keele Street / Weston Road and Old Weston Road, since motorists could use this newly formed link as an alternative to St. Clair Avenue West. This alternative could also function as a multi-modal link through the Kitchener GO Rail Corridor. Both extensions will be one lane in each direction and the location of this alternative is shown in **Exhibit 4-2**. The sub-options for Alternative 7 are:

Profile

i) The extension of Davenport Road at St. Clair Avenue West as an overpass;

ii) The extension of Davenport Road at St. Clair Avenue West as an underpass;

iii) Gunns Road as road under rail at the Kitchener GO Rail corridor; and

iv) Gunns Road as road over rail at the Kitchener GO Rail corridor.

Based on the profiles of Union Street and Davenport Road relative to St. Clair Avenue West, it is necessary to extend Davenport Road over St. Clair Avenue West as a separate bridge structure. Also, based on the existing profile of Gunns Road at Weston Road relative to the Kitchener GO Rail corridor, it is necessary to extend Gunns Road across the rail corridor as road under rail.

Active Transportation

v) Consider providing cycling facilities along the Gunns Road and Davenport Road extensions.

The above considerations led to the following Alternative 7 concept: extend Davenport Road over St. Clair Avenue West to connect to the Gunns Road extension, which passes through the Kitchener GO Rail corridor as road under rail. Cycling facilities will be considered along both road extensions.

4.3.8 Alternative 8: Extend Keele Street to connect to the extension of Davenport Road between the Kitchener GO Rail corridor and Union Street

Alternative 8 proposes the southerly extension of Keele Street near Lavender Road to connect to the northerly extension of Davenport Road, which would be aligned between the Kitchener Corridor and Union Street. This alternative differs from Alternative 4 in that the extension Gunns Road is not included, therefore Keele Street would not connect to Gunns Road. Both extensions will be one lane in each direction. This alternative was considered because it could help alleviate traffic congestion near St. Clair Avenue West and Old Weston Road. The location for this alternative is shown in **Exhibit 4-2**. The sub-options for Alternative 8 are:

Profile

i) The extension of Davenport Road over St. Clair Avenue West; and

ii) The extension of Davenport Road under St. Clair Avenue West.

Based on the profiles of Union Street and Davenport Road relative to St. Clair Avenue West, it is necessary to extend Davenport Road over St. Clair Avenue West as a separate bridge structure.

Active Transportation

iii) Consider providing cycling facilities along the Keele Street and Davenport Road extensions.

The above considerations led to the following Alternative 8 concept: extend Davenport Road over St. Clair Avenue West to connect to the Keele Street extension. Cycling facilities will be considered along both road extensions.

4.4 Evaluation Criteria

To evaluate the alternatives, a set of criteria was developed that considered the problem and opportunity statement and would allow a holistic review and comparison of the alternatives. The criteria were developed and reviewed at PE # 1 and in collaboration with the project's Technical Advisory Committee (TAC). The evaluation criteria selected were based on broad categories of natural environment, socio-economic environment, cultural environment, transportation, cost, and ease of construction. The criteria used for the evaluation of the alternatives are outlined in **Exhibit 4-7**.

Exhibit 4-7: Evaluation Criteria

Factor	Measures	Indicator
Socio-Economic	Impacts to Private Property	• Permanent land acquisitions • Permanent access closures • Impacts on development
	Nuisance Effects	• Construction noise & vibration • Traffic noise & vibration • Construction dust and emissions
	Public Amenities (e.g. art, furniture, trees) and Streetscape	• Impact on existing streetscape amenities (type and number affected) • Opportunity to add new streetscape amenities (type and potential for new) • Impacts to streetscape layout (incl. change to elevation – roads above/below and allocation of space)
Natural Environment	Groundwater	• Groundwater quality • Groundwater quantity
	Surface Water	• Water flow effects • Effects on drainage and stormwater management
	Aquatic Species and Habitat	• Changes to fish and fish habitat including species of conservation concern
	Terrestrial Species and Habitat	• Vegetation communities including species of conservation concern

Factor	Measures	Indicator
		• Wildlife and wildlife habitat including species of conservation concern
	Excess Materials Management	• Types and quantities of excess materials to be managed (incl. contamination) • Storage and/or use of excess materials
	Air quality	• Air quality effects
Cultural Environment	Archaeology	• Archaeological resources
	Heritage	• Built Heritage Resources • Cultural Heritage Landscapes
Transportation	Design	• Adherence to City of Toronto design standards and guidelines for transportation facilities • Accessibility (i.e. Compliance with City Accessibility Design Guidelines and Ontario Accessibility of Ontarians with Disabilities Act)
	Network capacity	• Average delay for traffic (peak hour) • Transit travel time and service reliability
	Transportation efficiency	• Intersection operations (existing and proposed – weekday peak hours) • Number of people that can be moved by all modes • Travel time/average speed
	Cycling connections	• Ability to introduce new cycling facilities and connections
	Pedestrian connections	• Ability to introduce new or widened pedestrian facilities and connections
	Emergency response and incident response	• Number of lanes available to bypass road incidents and respond to emergencies
	Neighbourhood traffic infiltration	• Intersection operations (existing and proposed – weekday AM peak hour) • Change in volumes on local roads

Factor	Measures	Indicator
		• Travel time on major streets
	Public Transportation Improvements	• Accommodation of additional rail track • Accommodation of the St. Clair-Old Weston SmartTrack station • Opportunities for improved TTC service
Constructability	Technical	• Ease of construction
	Impact on current transportation activities	• Ability to maintain transit, pedestrian, road, and bike mobility through the study area during construction • Ability to maintain rail services • Duration of disruptions
	Staging	• Number of stages/duration
	Utilities	• Number and scale of utilities affected
Cost	Construction Cost	• Total construction cost estimate
	Property Cost	• Property and loss of use cost estimate

4.5 Preliminary Screening

To ensure the feasibility of the alternatives, a preliminary evaluation was completed based on constructability and effectiveness in terms of addressing the traffic and connectivity components of the problem and opportunity statement.

4.5.1 Transportation Efficiency

The traffic operations performance of the eight alternatives were evaluated for a planning horizon of 2031, using the Aimsun computer model, relative to the transportation criteria outlined in **Exhibit 4-7**. The details of the Aimsun assessment are provided in **Appendix I**. The results were used to rank the eight alternatives as shown in **Exhibit 4-8**. For ease of reference, the eight alternatives being evaluated are shown in **Exhibits 4-9** and **4-10**.The performances of the alternatives were ranked from best to worst (1 to 8), with the lowest overall score representing the most efficient alternative and #1 ranking. For ease of reference, the key maps of the alternatives are presented immediately following the comparison exhibit.

Exhibit 4-8: Transportation Efficiency Ranking Within Study Area

Indicator	Alt - 1	Alt – 2	Alt – 3	Alt – 4	Alt – 5	Alt – 6	Alt – 7	Alt - 8
People moved by transit and autos	8	5	6	4	1	3	2	7
Total Person Delay (hour)	2	3	6	7	5	4	1	8
Total Travel Time (hour)	2	4	7	5	3	6	1	8
Average Speed (km/h)	2	4	6	7	3	5	1	8
Total vehicle Km Travel ('000 km)	1	3	4	2	6	7	8	5
Overall Score*	**15**	**19**	**29**	**25**	**18**	**25**	**13**	**36**
Overall Ranking*	**2**	**4**	**7**	**5**	**3**	**5**	**1**	**8**

** Lowest overall score represents the most efficient alternative and # 1 ranking.*

Exhibit 4-9: Alternatives 1 to 5

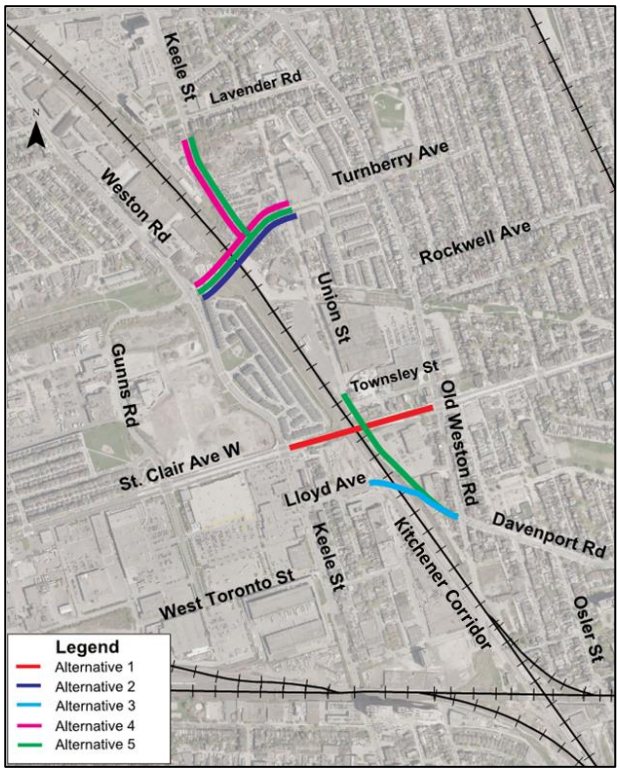
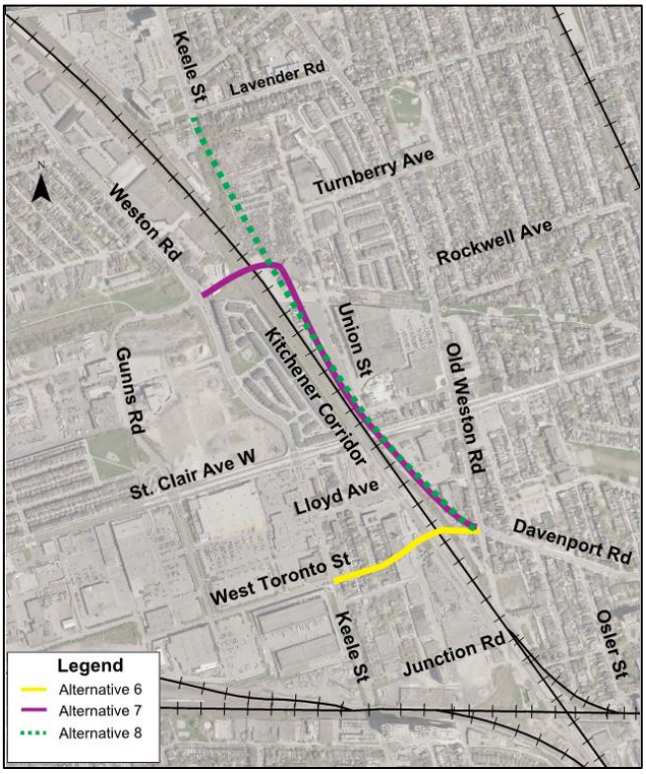


Exhibit 4-10: Alternatives 6 to 8



The findings in **Exhibit 4-8** indicate that the best-ranking alternatives from a transportation efficiency perspective are:

- **Alternative 7:** Extend Gunns Road to connect to the extension of Davenport Road between the Kitchener GO Rail Corridor and Union Street
- **Alternative 1:** Widen St. Clair Avenue West between Keele Street and Old Weston Road
- **Alternative 5:** Extend Davenport Road to the improved Union Street, extend Keele Street and extend Gunns Road

The lower ranking alternatives from a transportation performance perspective are:

- **Alternative 8:** Extend Keele Street to connect to the extension of Davenport Road between the Kitchener GO Rail corridor and Union Street
- **Alternative 3:** Extend Davenport Road to Lloyd Avenue
- **Alternative 4:** Extend Keele Street to connect to the Gunns Road extension
- **Alternative 6:** Extend Davenport Road to West Toronto Street

4.5.2 Constructability

In addition to transportation efficiency, the constructability of each alternative was also reviewed as part of the initial screening. Of the eight alternatives, Alternatives 7 and 8 were identified as not being feasible because they result in a spatial conflict with the planned St. Clair-Old Weston SmartTrack Station site. As noted in **Section 2.0**, the SmartTrack station will be located between the Kitchener Corridor and Union Street, north of Townsley Street. Therefore, it would not be feasible to extend Davenport Road north of St. Clair Avenue West between the Kitchener Corridor and Union Street.

Based on the spatial conflict and with input from the Project Team, a sensitivity scenario of Alternative 7 was evaluated: Alternative 7A, in which Gunns Road is extended from Weston Road to Union Street to form a 'T' intersection and Davenport Road is extended to Union Street, as shown in **Exhibit 4-11**. While Alternative 7A performs wells from a transportation efficiency perspective, it has the potential to add to neighbourhood traffic east of Union Street – this is discussed further in **Section 4.5.3**. The transportation efficiency evaluation of Alternative 7A is documented in **Appendix I**.

Exhibit 4-11: Alternative 7A Concept

4.5.3 Neighbourhood Traffic

While improving traffic flow and connectivity are the central goals of the TMP, it is also important to consider safety, particularly in relation to traffic infiltrating into local neighbourhoods and residential streets. The following alternatives are forecast to generate significant increases in traffic volumes (addition of approximately 400 to 600 trips/hour) along Turnberry Avenue between Union Street and Old Weston Road:

- **Alternative 2:** Extend Gunns Road from Weston Road to Union Street
- **Alternative 4:** Extend Keele Street to connect to the Gunns Road extension
- **Alternative 7A:** Extend Gunns Road to Union Street and the extension of Davenport Road to Union Street

It was concluded that these alternatives should not be considered individually since they result in gaps in the future road network that have the potential to create traffic infiltration on Turnberry Avenue. An integrated approach to network planning is needed to address the problem and opportunity statement.

4.5.4 Summary of Alternative Screening

Exhibit 4-12 summarizes the transportation and constructability review of the alternatives and the recommended action of either carrying an alternative forward or eliminating it.

Exhibit 4-12: Summary of Alternative Screening Recommendations

Alternative	Recommended Action
Alternative 1: Widen St. Clair Avenue West between Keele Street and Old Weston Road	**Carried forward for further evaluation**. This alternative shows favourable effectiveness in addressing congestion in the study area.
Alternative 2: Extend Gunns Road from Weston Road to Union Street	**Not carried forward**. This alternative by itself creates traffic infiltration concerns for Turnberry Avenue. This alternative will be considered as part of Alternative 5.
Alternative 3: Extend Davenport Road to Lloyd Avenue	**Not carried forward**. This alternative performs poorly from a transportation efficiency perspective. In particular, this route does not reduce traffic on St. Clair Ave. W., and results in poor traffic operations on Keele St., and at the Keele St. / St. Clair Ave. W. intersection.
Alternative 4: Extend Keele Street to connect to the Gunns Road extension	**Not carried forward**. This alternative by itself creates traffic infiltration concerns for Turnberry Avenue. This alternative will be considered as part of Alternative 5.
Alternative 5: Extend Davenport Road to improved Union Street, extend Keele Street and extend Gunns Road	**Carried forward for further evaluation**. This alternative shows favourable effectiveness in addressing congestion in the study area, in particular increasing the resiliency of the study road network and access to the St. Clair-Old Weston SmartTrack Station. This alternative is also important for minimizing traffic infiltration in the local neighbourhood.

Alternative	Recommended Action
Alternative 6: Extend Davenport Road to West Toronto Street	**Not carried forward**. This alternative performs poorly from a transportation efficiency perspective. This route does not effectively reduce traffic on St. Clair Avenue West, and results in poor traffic operations on Keele Street, and at the Keele St. /St. Clair Ave. W. intersection. There are also significant property impacts associated with this alternative that would not be justifiable based on the limited transportation benefits.
Alternative 7: Extend Davenport Road to Gunns Road	**Not carried forward**. This alternative creates spatial conflicts with the St. Clair-Old Weston SmartTrack Station between the Kitchener Corridor and Union Street.
Alternative 7A: Extend Gunns Road to Union Street and the extension of Davenport Road to Union Street	**Not carried forward** This alternative by itself creates traffic infiltration concerns for Turnberry Avenue. This alternative will be considered as part of Alternative 5.
Alternative 8: Extend Keele Street & Davenport Road to Union Street adjacent to the rail corridor	**Not carried forward** due to conflicts with the St. Clair-Old Weston SmartTrack Station between the Kitchener Corridor and Union Street.

4.6 Natural, Cultural and Socio-Economic Environments Considerations

The existing natural, cultural heritage, and socio-economic features within the study area were also considered in the evaluation of all alternatives. However, transportation was the key factor in the decision-making process since the overall purpose of the Transportation Master Plan study is to recommend improvements that improves the traffic conditions within the study area.

Natural Environment

As described in **Section 3.1**, there are limited natural environmental features within the study area due to the urbanized nature of the area. Many vegetation communities and wildlife habitat are limited due to the developed nature of the study area. As such, impacts to the natural environment had medium relevance in the decision-making process given appropriate mitigation measures and compensation will be provided to

impacted areas, and appropriate permits/exemptions will be obtained, as required. Minimizing potential impacts to the natural environment is considered important, however, they must be weighed against the benefits of the road improvements which improves future transportation operations for all modes of transport. The only natural environmental feature in the study area is the Lavender Creek Ravine, which is located at the terminus of Keele Street, just south of Lavender Road, and was a key consideration in the evaluation from a natural environmental perspective, particularly in the selection of the Keele Street alignment to carry forward. Alternative 5 will have a higher impact on the natural environment than Alternative 1. The mitigation strategies are discussed in **Section 7.0** of the TMP.

Cultural Heritage Environment

Section 3.3.2 provides a summary of the existing built-heritage resources and cultural heritage landscapes in the study area. Of all the potential cultural heritage resource / landscapes within the study area, only one (1) property was designated under the *Ontario Heritage Act* (the Heydon House). The only alternative within the vicinity of the Heydon House was the widening of St. Clair Avenue West (Alternative 1). Avoiding impacts to designated heritage resources was given high consideration in the decision-making process as these resources are protected under the *Ontario Heritage Act*.

Accordingly, the St. Clair Avenue West is proposed to be widened to the south to avoid impacting the Heydon House heritage site at the north-west corner of St. Clair Avenue West / Old Weston Road. Minimizing potential impacts to cultural heritage resources is important, however, these potential impacts must be weighed against the benefits of the road improvements which improves future transportation operations for all modes of transport. As part of Alternative 5, the extension of Davenport Road from its current terminus at Old Weston Road would impact the row houses that may have heritage significance (as discussed in Section 7.0). However, the alternative arrangement of having a jogged extension via two offset intersections creates traffic operation and safety concerns.

Lastly, the Project Team also received a number of comments from members of the public expressing concerns for impact to the white building at 153 Weston Road due to its potential historical significance as a former transformer station for the Toronto Suburban Railway. With consideration of this, the extension of Gunns Road from Weston Road to Union Street as part of Alternative 5 will not impact the white building at 153 Weston Road.

A Cultural Heritage Evaluation Report (CHER) / Heritage Impact Assessment (HIA) will be completed during the detailed design stage to determine the cultural heritage significance of the cultural heritage resources, and to identify any required mitigation measures to minimize indirect or direct impacts to heritage resources. The mitigation strategies are discussed in **Section 7.0**.

Socio-Economic Environment

A summary of the existing socio-economic environment is provided in **Section 3.3**. Socio-economic consideration had a high relevance in the decision making-process, and impact to properties and businesses were minimized to the extent possible. However, while it is desirable to minimize property takings, and impacts, these potential influences must be weighed against the benefits of the road network alternatives which improves future transportation operations for all modes of transportation. From a socio-economic perspective, Alternatives 1 and 5 are similar. Both alternatives involve property impacts to either widen or extend a road and enhance the streetscape along their respective corridors. The details of the socio-economic mitigation strategies are discussed in **Section 7.0**.