

7.0 POTENTIAL ENVIRONMENTAL EFFECTS, MITIGATION MEASURES, AND COMMITMENTS TO FUTURE WORK

This section focuses on the direct and indirect environmental effects associated with the project based on the recommended plan. It also describes the proposed mitigation measures that will be implemented to minimize the effects of the undertaking and commitments to future work. Mitigation includes planning decisions, design features, construction requirements and construction constraints.

The key to ensuring effective environmental quality control and risk management during the project is the development and proactive implementation of an approach that:

- Identifies the environmental sensitivities;
- Presents the environmental protection measures in a way that can be translated into contractual requirements and for which compliance can be verified; and
- Includes a monitoring program that verifies that the environmental protection measures are being implemented and are effective.

The mitigation measures outlined in this report will be refined as the design is developed and assessed in the future design phase. Specific environmental controls based on these detailed mitigation measures will then be included in the contract documents to address specific environmental and operational concerns during the preparation of the contract documents in the subsequent design phase.

All works will be completed in compliance with applicable legislation, permits and approvals. Permits, approvals, and exemptions are typically obtained closer to construction (i.e., during detailed design) as designs are not developed to the required level of detail to obtain necessary permits, approvals, and exemptions. Any additional work or mitigation measures required to obtain necessary permits, approvals, and exemptions will be required, in accordance with the conditions of the permit / approval / exemption, prior to the start of construction.

7.1 Natural Environment

7.1.1 Designated Features

As discussed in **Section 3-1**, the only natural feature within the study area is the Lavender Creek Ravine located south of the existing Keele Street terminus, and is protected under the City of Toronto's Ravine and Natural Feature Protection By-law. Based on correspondence with the Toronto and Region Conservation Authority (TRCA), this feature is also protected by TRCA as a regulated area, and will require TRCA

approval, and associated mitigation measures for impacts to the feature. There are no provincially designated natural areas within or within the vicinity of the study area.

The extension of Keele Street will result in the removal of a portion of the Lavender Creek Ravine at its north end, as shown in **Exhibit 7-1**. This will involve the loss of 13 trees, none of which are rare, and the realignment of the watercourse. At the request of TRCA, a basal area assessment was completed for the natural feature on January 18, 2018 to determine the quantity of species and potential compensation for the anticipated impacts, which is further discussed in **Section 7.8.6**.

Given natural vegetation communities are uncommon in the vicinity of the Lavender Creek Ravine, the combination of terrestrial and aquatic habitat increases the value for wildlife. However, given the majority of the natural feature will not be impacted, it is expected that impacts on wildlife that use the habitat will be temporary and minor in extent. Among the immediate impacts on wildlife is the potential to impact nesting birds protected by the 1994 *Migratory Birds Convention Act* (MBCA) or the *Fish and Wildlife Conservation Act* (FWCA) when this vegetation is removed. The watercourse may be impacted by contaminants derived from sediment released by excavation works or fuel spilled during equipment refueling, which may impact wildlife within the natural feature and downstream.

The City of Toronto's Ravine and Natural Feature Protection By-law (City of Toronto Municipal Code Chapter 658, Ravine and Natural Feature Protection) restricts activity within a designated ravine or natural feature. A permit is required to injure, destroy or remove a tree of any species or any size, a permit is also required to dump fill or refuse or alter the grade of land within the protected area. The forest unit east of the railway corridor, south of the dead-end of Keele Street is designated as "ravine and natural feature" under this by-law.

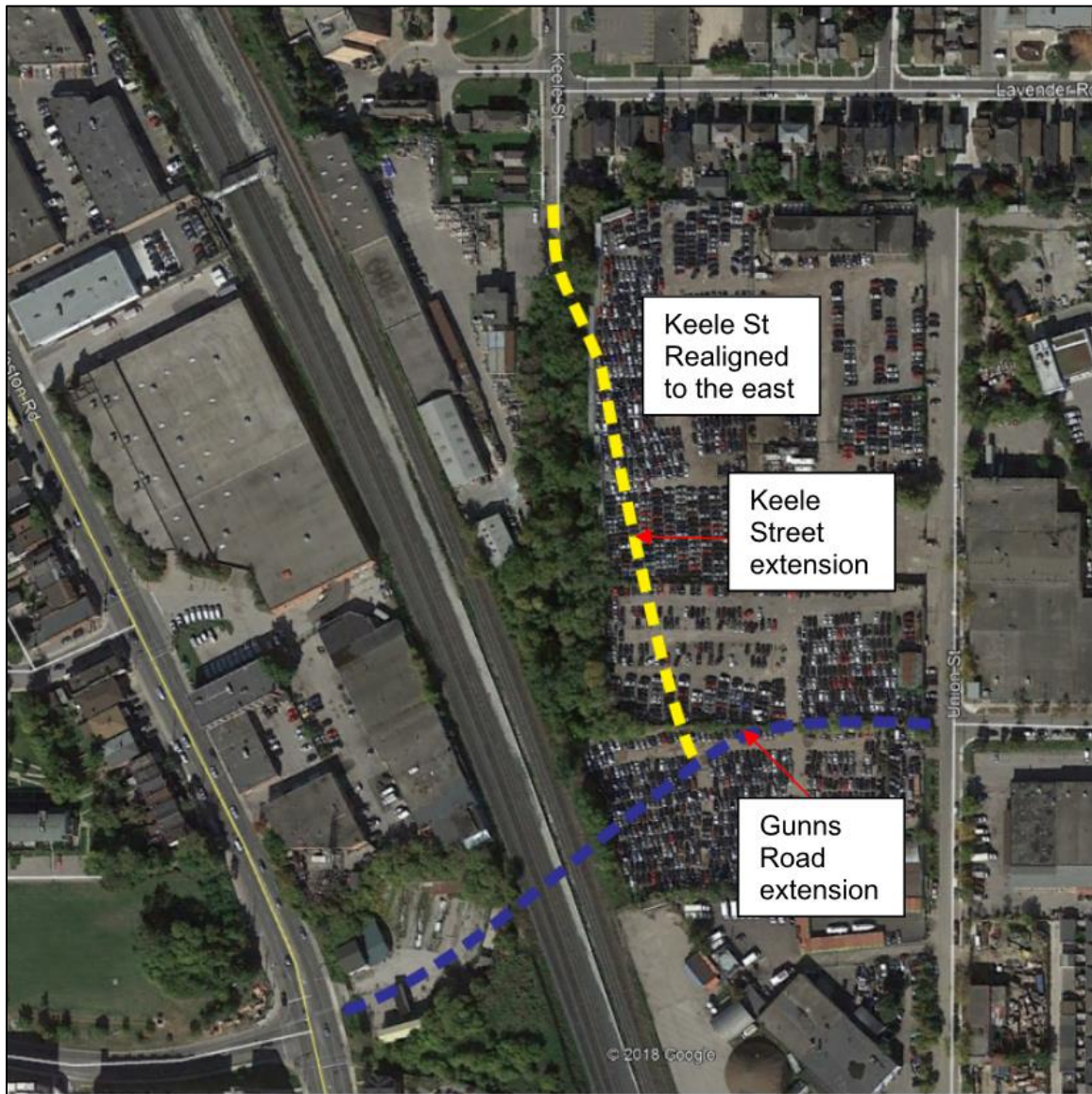
Mitigation Measures

The following mitigation measures should be applied to minimize the potential impacts to the designated feature in the study area, as well as those included in **Sections 7.1.2, and 7.1.6**:

- TRCA shall be contacted during the next design phase to discuss the potential requirement for a separate Environmental Impact Statement (EIS) to ensure community and habitat impacts are mitigated and compensated per TRCA policies;
- Mitigation measures related to the impacts to the natural feature in the study area will be refined and finalized in the next design phase, in consultation with the TRCA;

- A permit from TRCA would be required prior to any site alteration within the TRCA regulated area (O.Reg. 166/06); and
- A permit under the City of Toronto ravine and Natural Features Protection By-law is required.

Exhibit 7-1: Preliminary Impacts to Lavender Creek Ravine and Natural Feature



7.1.2 Vegetation

The widening of St. Clair Avenue, and extension of Davenport Road is anticipated to result in minor impacts to woody, landscaped features (trees or shrubs). The extension of Gunns Road will result in impacts to two semi-natural vegetation communities (CUW1 and CUM1-1), and the extension of Keele Street will result in the removal of the northern portion of the natural vegetation feature (FODM7-7), in addition to the impacts associated with the extension of Gunns Road. Impacts to the natural feature is further discussed in **Section 7.1.1**.

Mitigation Measures

The following mitigation measures should be applied to minimize the potential impacts vegetation:

- Vegetation clearing shall be conducted outside the period when most birds in the area breed (April 1 to August 31) to minimize impacts on nesting birds.
- Potential compensation for tree loss was calculated at 116 trees based on basal area data collected at four sampling points within a 20 m radius using a vegetation feature size of 1256 m² per sampling point (WSP 2018).
- Consultation with the City of Toronto shall be conducted to confirm actions related to the protection of the Black Oak specimen.
- Obtain a permit to injure, destroy or remove trees under the City of Toronto's Trees By-law will be required to injure, destroy or remove City street trees and private trees measuring 30 cm diameter or more at 1.4 m above ground level
- Comply with the Tree Protection Policy and Specifications for Construction Near Trees to protect trees that will not be removed.

7.1.3 Wildlife

Given the study area's urban setting, impacts to wildlife and wildlife habitat is limited to the impacts to the natural feature south of the existing Keele Street terminus, and the semi-natural vegetation communities along the back of the abandoned ABC lumber yard at 153 Weston Road.

Though limited in quality and extent, vegetation features are uncommon in the area and wildlife may depend on them for foraging, breeding or shelter. Migratory birds and their nests, eggs and young are protected under the *Migratory Bird Convention Act* (MBCA) (1994) and Regulations (2014) under that Act. No work is permitted to proceed that

would result in the destruction of active nests (i.e., nests with eggs or young birds), or the wounding or killing of bird species protected under the MBCA.

Mitigation Measures

The following mitigation measures should be applied to minimize the potential impacts to wildlife:

- Any wildlife (e.g., bird, snake, mammal) incidentally encountered during construction will not be knowingly harmed. Animals within the construction zone will be allowed to move away from the area on their own, if at all possible. In the event that an animal encountered during construction does not move from the construction zone, or is injured, the Contract Administrator will be notified immediately.
- No nests will be removed or birds or nests disturbed in accordance with the MBCA. If a nesting migratory bird is identified within or adjacent to the construction site and the construction activities are such that continuing construction in that area might result in a contravention of the MBCA (i.e., potential harm or stress to nests, birds, eggs or young), all activities will stop and the Contractor Administrator will be notified immediately. The Contract Administrator will then contact Environment Canada for direction.
- The Contractor will be advised that all temporary brush and loose soil piles should be tarped or otherwise inspected regularly to prevent nesting as they provide potentially suitable nesting sites for some species.
- Prior to initiating bridge works, the underside of the bridge shall be inspected for bird nests during the appropriate breeding bird window. If a nest is present, it should be examined by an avian specialist to determine if it belongs to a protected bird and if this is the case and the nest is active, construction will be delayed until the young birds have left the nest.

7.1.4 Species of Conservation Concern

As outlined in **Section 3-1**, the Ministry of Natural Resources and Forestry (MNR) indicated there are limited species-at-risk (SAR) that may occur within highly developed streetscapes. The MNR noted that known occurrences of SAR in the general project area include Barn Swallow and Queensnake, and recommended detailed site assessment, including a survey for distinctive natural features on site, be completed.

WSP completed a site-specific field survey at 153 Weston Road on July 24, 2018, for barn swallow nests on the wooden structures on the property. The field survey confirmed Barn Swallow nesting on the wooden structures, and Barn Swallows were observed flying within the vicinity of the site. There may additionally be potential for SAR bat roosting in the abandoned buildings within the study area; however, no evidence of bat SAR was observed during the July 2018 survey.

Mitigation Measures

The following mitigation measures should be applied to minimize the potential impacts to species of conservation concern:

- Under Ontario Regulation 242/08 of the Endangered Species Act (2007) (ESA), any proposed activities that result in the removal of Barn Swallow nests require the submission of a Notice of Activity (NOA). The proposed extension of Gunns Road from Weston Road to Union Street would result in the permanent loss of nesting habitat for Barn Swallow and would, therefore, require registration of the activity under the ESA, 2007, including the provision of alternative nesting habitat before the breeding season.
- The City of Toronto shall be responsible for analyzing habitat loss and identifying appropriate habitat compensation as required as per ESA, 2007 legislation. Confirmed Barn Swallow nesting habitat shall be removed outside of the Barn Swallow Active Season (May to August) as per Section 23.5 (1) O.Reg 242/08 of the ESA. The City will provide alternative housing structures (i.e. nesting kiosks) to the resident Barn Swallow population prior to the removal of the barn structures. A qualified avian ecologist shall inspect the structures that have been confirmed as Barn Swallow nesting habitat prior to removal. Should birds be found nesting on/within the wooden building structures (e.g., if structure was partially still standing in nesting season), construction shall cease immediately and MNRF will be contacted to determine the appropriate follow-up actions.
- An additional bird nest survey should be completed during the next design phase during the appropriate breeding bird window to confirm bird nesting on the structures within the study area. It is recommended that the Ministry of Natural Resources and Forestry (MNRF) be contacted during detailed design to confirm additional SAR have not been 'up-listed'.
- Prior to structure removals, the structure should be inspected for evidence of use by SAR birds or bats. If SAR birds or bats use the buildings, actions under the ESA (registration or permit) will be required.

- If a SAR or possible SAR is encountered during construction, and the construction activities are such that continuing construction in that area would result in a contravention of the ESA, 2007, all activities shall stop, and the MNRF shall be contacted.

7.1.5 Fish and Fish Habitat

Since it has been confirmed that the watercourse within the Lavender Creek Ravine adjacent the proposed Keele Street extension does not support fish within the study area and only conveys nutrients and allochthonous inputs to downstream watercourses that support a fishery, the potential impacts associated with the enclosure of an additional 25 m of channel will be limited to indirect or secondary impacts of the construction which can be mitigated following the measures outlined in **Section 7.3**, such that serious harm to fish and fish habitat can be avoided. If flow is maintained to downstream fisheries, it is anticipated that, at the permitting stage of the project, a Self-Assessment under the *Fisheries Act* will be sufficient to meet the requirements of the *Fisheries Act*. The risk categorization will be reviewed and finalized during the next design phase, once the designs are finalized, however project risk is not expected to increase based on the final design details.

Mitigation Measures

The following measures for mitigating impacts to fish and fish habitat are listed below:

- Any temporarily stockpiled soil, debris or other excess materials, and any construction related materials, will be properly contained (e.g. within silt fencing) in areas separated at least 30 m from the watercourse. All construction materials, excess materials and debris should be removed and appropriately disposed of following construction.
- Standard erosion / sediment control and spill control practices shall be implemented to protect the watercourse and the Humber River system.
- All construction-related activities will be controlled to prevent entry of any petroleum products, debris or other potential contaminants/deleterious substances, in addition to sediment as outlined above, to the watercourse.
- In-stream construction (i.e., work below the high-water mark) will take place within the permissible in-water construction timing window of July 16 to March 14 (no in-water works from March 15 to July 15).
- The Contractor will follow the erosion and sediment control measures identified in the contract and prevent/control potential for erosion and sediment caused by their

construction methods and operations to prevent entry of sediments into the watercourse.

- Appropriate ‘temporary flow passage’ measures will be developed, implemented and supported by all appropriate erosion and sediment control measures to isolate the temporary instream construction zones to maintain clean flow downstream. (Note: if there is no flow during construction, temporary flow passage measures will still be in place as a contingency in the event of a storm and associated runoff to prevent potential conveyance of sediment-laden flows downstream.
- No equipment should be allowed to ford or otherwise enter watercourses except as specified in the contract or unless authorized by the appropriate environmental agencies/permits.
- Review if serious harm to fish is anticipated and finalize the risk categorization during the next design phase, once the final designs are finalized.

7.1.6 Tree Inventory

It is anticipated that the recommended plan for the St. Clair Avenue West TMP will result in impacts to vegetation and street trees. Trees identified within the limits of work for the recommended improvements were assessed for condition and potential to be retained during the detail design stage and during construction. A detailed inventory of the existing trees within the study area, and recommendations for tree protection, is provided in the Arborist Report in **Appendix B**.

The recommended improvements will potentially result the removal of ±238 trees and require ±225 replacement trees based on applicable City of Toronto Urban Forestry tree compensation by-laws. The full extent of tree impacts and injury as a result of the recommended improvements will be determined at the detail design stage.

Compensation and recommendations for replacement planting will also be determined at this stage based on applicable City of Toronto by-laws and TRCA regulations:

- Ravines and Natural Features Protection By-law: Trees <5cm DBH, compensation is based on a 1:1 replacement ratio
- Ravines and Natural Features Protection By-law: Trees >5cm DBH, compensation is based on a 3:1 replacement ratio
- Private Trees By-law: >30cm DBH, compensation is based on a 3:1 replacement ratio
- City trees, any size: Compensation is based on a 1:1 replacement ratio;
- Tree Injury compensation is based on a 1:1 replacement ratio

- TRCA replacement ratios vary per size of tree.

The City of Toronto's *Trees on City Streets By-law* (Municipal Code, Chapter 813, Article II – Trees on City Streets) and *Private Tree By-law* (Municipal Code, Chapter 813, Article III) requires a permit for trees meeting specific criteria prior to injury, destruction or removal of any tree. The City of Toronto City Streets By-law requires a permit to injure or remove any tree on a City street of any size, while the Private Tree By-law requires a permit for trees that has a diameter measurement of 30 cm or more, measured at 1.4 m above ground within 6 m of the study area.

The potential tree impacts for each of the recommended improvements based on the design drawings is detailed in the Arborist Report in **Appendix B**, and is summarized below.

Widening of St. Clair Avenue West

There are 28 individual trees and 40 trees located on private and City properties within the vicinity of the St. Clair Avenue West bridges. Based on the preliminary concepts, approximately 55 trees will be impacted by the widening of St. Clair Avenue West, as well as the bridge reconstruction and installation of retaining walls. Of these 55 trees, 31 trees are protected under the City of Toronto's Urban Forestry By-law and will require 48 replacement trees, based on applicable City by-laws. The tree replacement plan for the widening of St. Clair Avenue West will be further developed as part of the next design stages, and in consultation with the City of Toronto's Parks, Forestry and Recreation, and TRCA.

The City's standard tree planting arrangement is recommended for the replacement trees, which specifies an average of one tree every nine metres. The replacement trees may be planted along the boulevards on both sides of St. Clair Avenue which has varying width between 2 m to 2.7 m which tapers down towards the bridge section. Tree planting on the north side of St. Clair west of the St. Clair bridge is not recommended due to alignment and property constraints.

Extension of Gunns Road

There are 19 individual trees and ±155 trees located on private, City of Toronto, and Hydro One properties. The potential implementation of toe walls will likely have the greatest impact to trees located within the vicinity of the ABC Lumber yard, and a hedgerow on the east side of the tracks. Approximately 137 trees will be removed to facilitate the Gunns Road extension, of which, 13 trees are protected under the City of Toronto's Urban Forestry By-law. Based on the tree compensation ratio under applicable City by-laws, it is recommended that 39 replacement trees be planted. The tree replacement plan for the extension of Gunns Road will be further developed as part

of the next design stages, and in consultation with the City of Toronto's Parks, Forestry and Recreation, and TRCA.

The City's standard tree planting arrangement is recommended for the replacement trees required for the Gunns Road extension. There are boulevards on both sides of Gunns Road with a varying width of 1.8 m to 2.7 m which tapers down towards the bridge section. Replacement tree planting will be limited to the 153 Weston Road property, which is expected to be purchased by the City in its entirety. It is anticipated that full tree compensation for the tree removals required for the Gunns Road extension will not be feasible on 153 Weston Road due to utility constraints and needs (i.e. Metrolinx and Hydro One facilities, and buried utilities), and local cultural heritage interest on existing buildings on the property. As such, 153 Weston Road does not represent a site which would allow for significant tree replacement planting. Other suitable locations will be determined in the next design stages as part of the tree replacement plan.

Extension of Keele Street

There are 121 trees located within the Lavender Creek Ravine. The proposed design for the realignment of the Keele Street extension curves to the east and extends through the auto parts property connecting to the Gunn's Road extension. As there is a grade difference between the Keele Street and the Auto parts property, significant grading is anticipated. Based on the design plans for the extension of Keele Street, approximately 43 trees will be removed, depending on final grading limits. Removals have been approximated based on the results of the tree inventory, commencing at the terminus of Keele Street and completing at the southern end of the naturalized feature. Impacts to the regionally rare Black Oak specimen within the natural feature is not anticipated, but may be injured through indirect impacts, and compensation may be necessary. The tree replacement plan for the extension of Keele Street will be further developed as part of the next design stages, and in consultation with the City of Toronto's Parks, Forestry and Recreation, and TRCA.

At the request of the TRCA, a basal area assessment was completed for the natural feature on January 18, 2018. The purpose of the basal area assessment was to determine the quantity of species and potential compensation for the anticipated impacts. Data was collected at four sampling points within a 20 m radius for the basal area assessment which determined the vegetation feature size for each sampling point is 1256 m². Based on the basal area calculation for the applicable compensation ratios (i.e. 3:1), approximately 116 replacement trees will be required to compensate for impacts per TRCA requirements. Based on the City of Toronto Urban Forestry By-law,

129 replacement trees are recommended. The Project Team, TRCA, and City of Toronto Urban Forestry shall correspond during the next design phase to determine appropriate tree compensation. The full extent of tree impacts / injury, and associated compensation and recommendations will be determined at the detailed design phase, in consultation with TRCA and the City of Toronto's Ravine and Natural Feature Protection Office.

There are boulevards on both sides of Gunns Road with a varying width of 2 m to 2.7 m which are potential locations for the replacement tree plantings. Based on discussions and coordination with the TRCA, restoration planting is required to offset the impacts to the natural feature and Lavendar Creek. The location for the tree compensation planting, and number of compensation required will be determined during detail design in consultation with TRCA and the City of Toronto's Urban Forestry Unit. However, it is anticipated that there are opportunities for tree compensation to be planted along the along the Lavender Creek Trail extension along the north side of Gunns Road given there are minimal utilities located along the proposed trail extension, and the property is owned by the City of Toronto.

Extension of Davenport Road and Union Street Improvement

The extension of Davenport Road to Union Street would impact trees as previously mentioned in the widening of St. Clair Avenue West, as well as 3 additional trees located at the Union Street and Townsley Street, which are protected under the City of Toronto's Private Tree By-law. Based on applicable City of Toronto by-laws, it is recommended that 9 replacement trees be planted. The tree replacement plan for the extension of Davenport Road and Union Street improvements will be further developed as part of the next design stages, and in consultation with the City of Toronto's Parks, Forestry and Recreation, and TRCA.

As part of the Union Street improvement, the existing boulevard and trees on the east side of Union Street will generally be maintained. A 2 m wide continuous boulevard is being proposed on the west side between Townsley Street and Turnberry Avenue, and is a potential location for the tree replacement. Standard tree planting is expected based on the standard City rate.

Mitigation Measures

The following mitigation measures are recommended for all improvements to minimize impacts to vegetation during and following construction. A more detailed list of specific tree protection mitigation measures can be found in the Arborist Report (WSP, 2018) in **Appendix B**.

- Tree condition/health is subject to change in response to environmental conditions and weather. Trees should be re-assessed prior to tree removals to assess changes in conditions or risk.
- Preliminary tree preservation plans have been developed and should be refined during the next design phase.
- Prior to the commencement of construction, tree protection barriers shall be installed in accordance with the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees, and in accordance with the approved tree protection plans and arborist reports, and must be approved by Urban Forestry.
- Tree protection barriers shall be maintained in good condition and shall not be altered, moved or removed unless and until authorized by Urban Forestry.
- The owner shall notify all contractors and other parties working on site of approved tree protection plans and arborists reports, and shall ensure that all contractors and other parties adhere strictly to the requirements of the tree protection plan.
- The permit shall be posted in a conspicuous location visible from the street, for a period of one day prior to the commencement of the approved tree impacts and until such time as the approved impact to the tree(s) has been completed in accordance with the permit.
- If a permit to injure or remove trees is issued, the work shall be carried out by or under the supervision of an arborist.
- Tree protection fencing establishes minimum distances required to protect trees from construction activities. Prior to construction, a site meeting shall be held with the Contractor and Contract Administrator to review the clearing limits and confirm the installation location for the temporary tree protection fence.
- Tree protection barriers shall be clearly staked in the field and approved by City of Toronto Urban Forestry prior to construction to ensure correct positioning of fencing and avoid unnecessary disturbance.
- To avoid root zone impacts on trees to be retained, excavated material shall not be stored against the tree protection barrier.
- Where excavation, grading and construction will occur within reduced tree protection zones, air-spade excavation is recommended to minimize the damage to roots within a tree protection zone (TPZ).
- In select locations where the tree protection hoarding will require temporary removal or reduction to facilitate construction, horizontal root protection is recommended to be

placed within the TPZ while construction occurs, protecting the roots from compaction or damage.

- Roots outside of the TPZ will be exposed and damaged during the excavation of the roadway designs, deconstruction of the ramps and installation of curbs. It is recommended that roots be pruned cleanly and neatly utilizing the guidelines in **Appendix B** under 'Pruning Practices' and 'Branch Pruning Practices'. Should any work be required within a minimum TMZ, the Contract Administrator should be notified.
- All removals should be felled into the work area to ensure that damage does not occur to the trees within the tree preservation zone. Upon completion of the tree removals, all felled trees are to be removed from the site, and all brush chipped. All brush, roots and wood debris should be shredded into pieces that are smaller than 25 mm in size to ensure that any insect pests that could be present within the wood are destroyed.
- A permit will be required to remove trees on private and City property as part of the Private and City Tree by-laws. Exact impacts to be confirmed at detailed design stage. All trees outside of the limit of work shall be retained and protected.
- A Tree Compensation Plan shall be developed for impacted tree based on applicable City of Toronto and TRCA tree compensation ratios.

7.1.7 Contamination and Waste Management

As noted in **Section 3.1**, a Phase I Environmental Site Assessment (ESA) was completed to determine the presence and significance of any actual or potential contamination within the study area. Current land use within the study area is predominantly commercial and industrial. The land use and site activities on properties that were directly adjacent to an identified alternative were examined to determine if areas of potential environmental concern (APECs) were present within the proposed routes.

Based on the Phase 1 ESA, high and medium APECs were identified throughout the study area. These areas correspond to industrial/commercial operations that could impact soil and/or groundwater, including current automotive repair, towing, and storage facilities, current automobile wrecking yard, historic service station, storage of metal waste, and retail fuel outlet, an abandoned lumber facility, historic paint manufacturing, historic dry cleaning facility, current cement, asphalt, and rubber manufacturing facilities, and the Canadian Pacific (CP) railway line running in the north/south direction across the entire study area.

APECs with low potential for environmental contamination were also identified within the study area and generally include areas of open space/vacant areas or residential

parcels that are not suspected of using chemical compounds harmful to the environment or human health. The use of road salt along right-of-ways, roads and parking lots also represent APECs with low potential of environmental contamination.

The recommended improvements are anticipated to impact ten APECs with high potential for environmental contamination, and 4 APECS with moderate potential for environmental concern. Further details are available in the Phase 1 Environmental Site Assessment Reports (WSP, 2016, 2018) in **Appendix C**.

Several types of excess materials (asphalt, signs, street trees, planters, concrete, etc.) are anticipated to be generated during construction work which will require appropriate management and/or disposal. These materials will be sorted and either reused (if feasible), recycled, or disposed of at an approved landfill facility in accordance with applicable standards. The types and quantities of these materials will be determined during the detailed design stage.

Mitigation Measures

It is recommended that further Phase Two ESAs be completed at all impacted properties determined to be of high or medium APEC in order to determine the soil and groundwater quality at the locations of the APECs. Further soil and groundwater contaminant investigations are to be conducted in all areas adjacent to an impacted area where excavation may be required. The assessment of soil and groundwater quality may be conducted in conjunction with the geotechnical program.

7.1.8 Groundwater

As noted in **Section 3.1**, the study area is located within a highly vulnerable aquifer (HVA). HVAs are areas sensitive to contamination from activities on the land above, such as the storage of road salt or fuel. Significant drinking water threat policies do not apply within HVAs, but there may be moderate and low threat policies in the Toronto and Region Source Protection Plan that will apply. It is recommended that best management practices be implemented, particularly for the application of road salt during the operation of newly constructed roads, or directing the refueling of machinery outside vulnerable areas. Although there are no source protection policies that apply to the study area, the study should protect sensitive hydrologic features including HVAs to protect future drinking water sources, a groundwater management plan shall be developed during the next design phase, including mitigation measures for potential impacts to groundwater resources during construction and operational phases of the project.

Groundwater sampling was completed in 2016, and are considered out-dated due to the extension of the Transportation Master Plan study timeframe. Therefore, further fieldwork and assessment will be required in the next design phase. Based on discussions with the City, and TRCA, future work to confirm geological and hydrogeological conditions within the study area, including detailed excavation specifications (i.e. area and depth) will be completed in the next design phase to determine the impacts and amount of groundwater to be taken during construction.

Preliminary dewatering estimates were completed based on the hydrogeological analysis of the study area from monitoring completed in May 2016. From these estimates, the projected volumes of water would not require dewatering greater than 50,000 L/day, as such, a Category 3 permit-to-take-water (PTTW), or registration on the Ministry of Environment, Conservation and Parks' Environmental Activity Sector Registry (EASR) is not required. However, dewatering estimates must be reviewed in the next design phase once detail design plans and more recent hydrogeological information becomes available.

As noted in **Section 3.1**, results from the groundwater sampling noted groundwater exceedances in several parameters based on Ministry of Environment, Conservation and Parks guidelines. Based on the groundwater data collected in 2016, the potential impacts to the local groundwater system include, but are not limited to, the following:

- Changes to recharge / discharge regimes resulting from the disturbance of the ground surface, ground clearing, compaction, road cuttings, placement of fill and the presence of the completed impervious layers of road surface.
- Potential dewatering impacts that include a reduction in groundwater level and reduced flow to the nearby private wells and groundwater-dependent water bodies.
- Application of commercial fertilizers during seeding activities to re-establish vegetative cover.
- Potential spills of hydrocarbons and other chemicals used during construction activities that could impact the groundwater aquifer and groundwater-dependent water bodies.
- The future use of salt for road de-icing in winter seasons.

Mitigation Measures

Based on the results of the groundwater sampling program, groundwater generated through the earthwork activities should be managed in accordance with the requirements found in the Soil and Groundwater Management Plan Report in **Appendix D**:

- Additional groundwater and geotechnical work will be required during the next design phase to confirm geological and hydrogeological conditions within the study area and identify potential impacts to groundwater during and following construction.
- A Groundwater Management Plan should be developed and, based on the recommendations in the Soil and Groundwater Management Plan, developed as part of this TMP Study and implemented during construction.
- Contractor shall be responsible for treatment of contaminated groundwater prior to release and in accordance with applicable local and provincial regulations during construction, including but not limited to the City of Toronto Municipal Code, and *Environmental Protection Act*.
- If groundwater management is required during construction activities, a minimum of one water sample should be collected for laboratory analysis to determine appropriate disposal options.
- Daily records should be completed including weather and site conditions, tracking of soil placement, dust control measures, groundwater management, personnel involved in site activities and any unexpected site conditions or incidents along with any complaints received about the work. Copies of the daily reports should be provided by the Contractor to the Owner and their Consultant weekly during the construction work.
- The Contractor must be prepared for spill response in the event of an uncontrolled release associated with site activities (e.g., fuel). As a contingency, the Contractor shall maintain onsite sufficient materials that are suitable for the liquid contaminants that may be under the Contractor's control (fuels in trucks and equipment, hydraulic fluid, etc.).
- Obtain a permit-to-take-water (PTTW) from the Ontario Ministry of the Environment, Conservation and Parks (MECP) or register the works under MECP's EASR for any construction activities requiring the diversion of surface water or the extraction of groundwater in excess of 50,000 litres per day.

7.1.9 Soil

As described in **Section 3.1**, the comparison of the analytical results of the soil samples within the study area with the applicable MOECP's 2011 Standards identified one or more metals and inorganics parameters exceeding the standard at six locations.

Mitigation Measures

Proper management of excess soils will be required to be implemented by the contractor, as described in the *Soil and Groundwater Management Plan Report* (WSP, 2018) in **Appendix D**:

- Supplemental sampling may be conducted as required during excavation works, to support field observations or receiving site specific requirements. Soil generated during construction that is determined to be contaminated through chemical analysis will require disposal off-site at a licensed waste receiving site. Prior to transporting any soil off-site for disposal, a representative soil sample for analysis of the toxicity characteristic leaching procedure for metals, polycyclic aromatic hydrocarbons, petroleum hydrocarbons, volatile organic compounds, and polychlorinated biphenyl should be analyzed to determine possible off-site disposal options.
- To support the removal of impacted soil, the Contractor is required to prepare, submit, and implement a soil management plan based on the recommendations within the Soil and Groundwater Management Plan in **Appendix D**.
- Measures must be taken to prevent contamination of the land upon which any stockpiled soil is placed to prevent surface runoff of soil and dust.
- Prior to importing any soil for backfilling for this project, the soil must be sampled at its source, and analyzed by an accredited laboratory for any contaminants that may reasonably be expected to be present in the soil, taking into consideration the property from which the soil originated; the handling, transport and storage of the material; and other relevant factors such as potentially contaminating activities.
- All excess materials and wastes generated during construction must be managed in accordance with the Environmental Protection Act and all applicable legislation.

7.2 Socio-Economic Environment

7.2.1 Land Use and Property Impact

The recommended street network improvements require additional right-of-way to accommodate the proposed infrastructure. Some of the impacts involve the acquisition of a portion of a property, while others require the acquisition of an easement that will allow

the use of private property during construction or other specific purposes such as maintaining retaining walls. In other cases, it will be necessary to acquire the entire property parcel to implement the recommended infrastructure. In all cases, the City has consulted with the property owners on a number of occasions as noted in the consultation section of the TMP, which include:

- Letter notifications by registered mail;
- Invite to meet in person with City staff; and
- A special property group session at PE #2.

Based on the recommended designs the following private properties may be impacted. This list is exclusive of properties already owned by the City.

- 113 Ford Street;
- 1791 St. Clair Avenue West;
- 1795 St. Clair Avenue West;
- 1797 St. Clair Avenue West;
- 1799 St. Clair Avenue West;
- 1885 St. Clair Avenue West;
- 1900 St. Clair Avenue West;
- 6 Lloyd Avenue;
- 159 Mulock Avenue;
- 185 Mulock Avenue;
- 192 Mulock Avenue;
- 195 Mulock Avenue;
- 0 Old Weston Road;
- 236 Old Weston Road;
- 238 Old Weston Road;
- 240 Old Weston Road;
- 242 Old Weston Road;
- 244 Old Weston Road;
- 246 Old Weston Road;
- 248 Old Weston Road;
- 250 Old Weston Road;

- 252 Old Weston Road;
- 254 Old Weston Road;
- 290 Old Weston Road;
- 2 Union Street;
- 80 Union Street;
- 100-100A Union Street;
- 117 Union Street;
- 126 Union Street;
- 144 Union Street;
- 160 Union Street;
- 200 Union Street;
- 153 Weston Road; and
- 0 Weston Road.

City Properties

The recommended designs require ownership transfers of four city properties including:

- 625 Keele Street;
- 0 Union Street;
- 141 Weston Road; and
- 1821 St. Clair Avenue West.

Mitigation Measures

The recommended street network improvements have been designed, where possible, to minimize property impacts and maintain private access points. The following locations warrant further refinements and mitigation evaluations in the detailed design stage:

- From an access perspective, the increase in vertical profile of the Union Street and Townsley Street intersection results in some access impact to the properties near the intersection. Through a grading evaluation, it was determined that the profile along Union Street and Townsley Street can be refined through the detailed design stage to maintain access to the impacted properties. It should also be noted that with the planned St. Clair-Old Weston SmartTrack Station, the intended operation of Union Street will evolve. The City has consulted the owners of the industrial and business

properties along Union Street and aspects such as accommodating truck movements were considered. All of these aspects will be refined in the detailed design stage with input from Metrolinx and stakeholders.

- With the widening of St. Clair Avenue West to the south, the previous vehicular access between Mulock Avenue and St. Clair Avenue West will be displaced. As such, Mulock Avenue is planned to terminate as a cul-de-sac design based on the City of Toronto Development Infrastructure Policy & Standards (DIPS) requirements. The design of the cul-de-sac, along with the potential for integrating retaining walls along St. Clair Avenue West with future development concepts may be evaluated at the detailed design stage.
- The design aspects of private accesses that front onto roads influenced by this TMP will be refined through further consultation and consideration of the applicable City standards at the detailed design stage.

7.2.2 Noise and Vibration

Traffic Noise

A noise impact assessment was completed to assess the potential noise impacts associated with the traffic generated by the improved street network in the study area. The detailed noise assessment was completed in accordance with Ministry of Environment, Conservation and Parks' (MECP) (*formerly Ministry of Environment and Climate Change*) and is provided in **Appendix E**. Based on the results of the noise modelling, the greatest change in sound levels is 4 dBA. As per MEPC, noise level increases less than 5 dBA do not require permanent noise mitigation measures. Therefore, no noise mitigation measures are recommended in the TMP. There are no vibration concerns associated with the recommended street network improvement, since there is minimal vibration generated by the rubber tires of automobiles, surface transit vehicles or cyclists.

Construction Noise

With respect to the noise impacts during construction of the project, the following measures should be specified during the preparation of detailed design drawings and adhered to during construction:

- The Contractor will be required to comply with the City of Toronto's noise by-law (Toronto Municipal Code, Chapter 591, Noise) regarding noise emission standards

for construction equipment that may be in place at the time of construction. A copy of the noise by-law is attached in **Appendix E**.

- General noise control measures (not sound level criteria) will be referred to, or placed into the City of Toronto contract documents.
- Any initial complaint from the public will require verification by the City of Toronto to determine if the general noise control measures agreed to are in effect. The City of Toronto will investigate any noise concerns, warn the Contractor of any problems and enforce its contract.
- Nighttime construction activities should be avoided to reduce the potential impact of construction noise. Construction should be planned to minimize the number of nights where noisy nighttime construction activities may be required.
- All construction equipment used should be in good condition and properly maintained to limit noise emissions. All construction equipment should be operated with effective muffling devices that are in good working order and idling of construction equipment kept to a minimum to reduce noise from construction activities. Unnecessary noise caused by faulty or non-operating components shall be addressed by regularly maintaining all equipment.
- Noise emissions from construction equipment are to be in compliance with the limits set out in NPC-115 and NPC-118.

Traffic Vibration

Vibration from general traffic, buses and trucks are not typically evaluated because they are supported by rubber wheels. The main sources of vibration in the study area are from the streetcar operations along St. Clair Avenue and the rail operations along the Kitchener GO Rail corridor. The 512 St. Clair streetcar route will continue to operate with its centre right-of-way once the widening of St. Clair Avenue West takes place. The streetcar tracks are being shifted to the south, which helps to actually reduce the vibration for the existing residential uses north of St. Clair Avenue West. There are currently no residential uses on the south side of St. Clair Avenue West in proximity to the site. Nonetheless the separation from the streetcar right-of-way to the southerly property line on St. Clair Avenue West is increasing as a result of the widening from one eastbound lane to two. Therefore, the vibration along St. Clair Avenue West may be slightly better with the widening completed.

Construction Vibration

With respect to the vibration impacts during construction of the project, the following measures should be specified during the preparation of detailed design drawings and adhered to during construction:

- The Contractor will be required to comply with the City of Toronto’s vibration by-law No. 514-2008 regarding vibration emission standards for construction equipment that may be in place at the time of construction. A copy of the vibration by-law is attached in **Appendix E**.

7.2.3 Air Quality

Traffic Related Air Quality

A high-level air quality evaluation has been completed for the TMP based on the recommended street network improvements. The transportation evaluation completed as part of **Section 5 – Exhibit 5-14** demonstrates that the improvements result in an increase in the total people moved through the study area by 1,140 during the morning peak hour. In addition, the average stop time (minutes per km traveled) decreases by 43%. These factors indicate the increase in efficiency of movement of all modes through the study area – including private vehicles and buses. Since there will be less automobile stops and delay through the study area, the air quality is expected to improve. To further demonstrate this trend, the emission measure of effectiveness based on Synchro has been prepared at the critical intersection of St. Clair Avenue West and Keele Street / Weston Road. The comparison of the 2031 “Do Nothing” and improved scenario is summarized in **Exhibit 7-2**. All the emission measures have decreased with the improved street network, which is logical since there will be less delay at this intersection.

Exhibit 6-2: Emission Comparison at St. Clair / Keele / Weston Intersection

Indicator	2031 AM Peak Hour	
	“Do Nothing”	Improved Street Network
Fuel Consumed (L)	371	295
CO Emissions (kg)	6.89	5.49
NOx Emissions (kg)	1.33	1.06
VOC Emissions (kg)	1.59	1.27

It is also worth noting that the introduction of an improved street network in the study area supports access to the planned St. Clair-Old Weston SmartTrack Station. Similarly, the enhanced active transportation facilities through the study area will encourage walking or cycling trips. Therefore, there will be improved accessibility to non-auto modes and help reduce reliance on the private auto mode and the associated emissions.

Construction Related Air Quality

To minimize the potential for impacts to air quality during construction, the following mitigation measures are recommended:

- Excavation using methods to minimize raising dust from construction operations.
- Dust and particulate control measures during construction in accordance with Ontario regulations.
- Limit vehicle speeds onsite to reduce the generation of dust from traffic.
- Use potable water to prevent airborne dust from dispersing into atmosphere.
- Appropriate covers on trucks hauling impacted and fine or dusty material. Watertight vehicles to haul wet materials.
- Grading of truck surfaces, as required, to minimize the accumulation of surface silt. Paved surfaces on adjacent streets should be swept regularly to control dust.
- Prevent dust from spreading to adjacent property sites.
- Work may be stopped at any time when control of dust and particulates is inadequate for wind conditions present at the site, or when visual monitoring indicates that release of dust and particulates into the atmosphere is excessive. The Contractor would be required to make changes to operations prior to resuming any excavation, handling, processing, or any other work that may cause release of dust or particulates.

7.2.4 Traffic and Safety

Traffic patterns during construction and after the implementation of the recommended street network improvements will differ from existing conditions. From a neighbourhood traffic perspective, the street network improvements will help minimize cut-through traffic in residential areas, in particular:

- Widening St. Clair Avenue West provides the best way of minimizing traffic infiltration into residential neighbourhoods. Improving traffic flow on arterial roads reduces the

likelihood of cut-through traffic since it operates with higher speed and fewer stop controls than local roads.

- The proposed new road connections will provide routes from all directions that will be more direct and convenient than taking residential streets.

As noted in **Section 5.12**, construction staging of the recommended improvements have been established at a high-level, with the widening of St. Clair Avenue West proceeding before the other improvements. In addition, during the widening of St. Clair Avenue West, traffic will remain open through this link with one traffic lane in each direction. In addition, at least one sidewalk will remain open along this section of St. Clair Avenue West. A traffic management plan will be developed during detailed design to ensure the traffic impacts during construction are minimized. City of Toronto Traffic Operations and Transportation Services will also monitor the operations of the study intersections and traffic infiltration during construction. If necessary, changes to the signal timings and lane configurations to optimize traffic movement through the study area may be considered. It should also be noted that rail traffic will be minimally impacted by the construction of the St. Clair and the Gunns bridges – as detailed in **Appendix M**.

The City has conducted extensive monitoring and collision analysis of the study area over the past 3 years. These were reviewed as part of the TMP and nothing of significance was identified. A detailed review of the neighbourhood traffic and safety aspects is provided in **Appendix I**.

The Project Team has also addressed needs and opportunities for traffic calming and safety measures through the study area – in particular on residential streets. Vision Zero is a City road safety plan intended to enhance the safety of vulnerable street users. A Vision Zero perspective has been applied to this project by proactively considering the needs of cyclists and pedestrians, particularly in terms of interaction with motor vehicles. Options such as restricting turns at intersections have been considered. However, these could force residents to make longer trips, and could increase traffic on other residential streets in the neighbourhoods. Options that rely heavily on police enforcement may not be the most effective in consistently controlling issues. Following construction of the TMP improvements, the City will also monitor traffic volume, speed and collision data to determine if adjustments to local streets are needed to ensure safe and efficient transportation.

The lane width of the public roads influenced by this TMP should be reviewed and refined if necessary based on the latest City of Toronto lane width guideline that is available at the time of detailed design. Additional right-of-way gained from lane width reductions should be reallocated to enhanced active transportation environments, or treated as opportunities to reduce property impact.

As part of this TMP, the pick-up drop-off facilities for the St. Clair-Old Weston SmartTrack Station has been designed as lay-by areas on both sides of the improved Union Street. It is acknowledged that this currently differs from the Reference Concept Design of the station. As such this aspect will be refined and evaluated in the next design stage.

7.2.5 Active Transportation

Design details of the active transportation facilities need to be refined as part of the next design phase, including the following aspects:

- Details of the cross-ride designs and cycling treatments along the roads influenced by this TMP will be refined and established.
- Bike troughs are required for the three sets of stair connections along St. Clair Avenue West leading to Townsley Street, Davenport Road and Mulock Avenue.
- Pedestrian crosswalks and active transportation-related signage need to be designed at all study intersections as per the Ontario Traffic Manual.
- Opportunities to refresh pavement markings should be investigated for intersections in the vicinity of the recommended improvements.
- Opportunities to enhance the active transportation environment through roads with retaining walls and underpasses should be investigated through murals, art streetlighting placement, and railings – based on input from the City's StreetART Toronto (StART) unit.
- Along the Gunns Road extension, future Hydro access driveways that are designed through detailed design on the north and south sides of the road require curb cuts across the driveway for the sidewalk and multi-use trail facilities. Tactile warning strip indicators may also be considered.
- The proposed cycling facilities along Keele Street terminates just south of Lavender Road. Opportunities for connecting this facility to the existing facility on Rogers Road or future facility being built as part of the Eglinton Connects / Crosstown Light Rail Transit project should be considered.

- During the next design stage, TTC and relevant transit agencies should be consulted to determine whether their surface transit routes have been refined, and the type of vehicles they anticipate. This process provides the opportunity for intersection radii to be refined so they are considerate of pedestrian needs.
- Since the completion of the Gunns Road extension and the Hydro One access road designs as part of this TMP, the City, Hydro One and Metrolinx collaborated to develop a new configuration on the south side of the Gunns Road extension that accommodates both active transportation access to the SmartTrack station and Hydro One maintenance access. This information is provided in **Appendix L** under Gunns Road design.
- As part of the St. Clair-Old Weston SmartTrack Station work, enhancing pedestrian connectivity is important. Therefore, in the next design stage, opportunities to provide formal sidewalk along the north side of Townsley Street between Old Weston Road and Union Street should be evaluated.

7.3 Cultural Environment

7.3.1 Archaeological Resources

As noted in **Section 3.1**, Stage 1-2 Archaeological Assessments were completed as part of the 2015 Functional Planning Study (FPS) and the TMP study. These two Stage 1 archaeological assessments determined the majority of the areas to be free of archaeological potential, and no further assessment is required, however, there are areas with potential for deeply buried materials requiring further Stage 2 archaeological assessment, and two areas requiring Stage 3 archaeological assessment. Detailed archaeological findings are documented in **Appendix F**.

A Stage 2 archaeological assessment was completed in October 2018 in all areas being impacted by the recommended plan. A field liaison representation from the Mississaugas of the New Credit First Nation was present for Stage 2 archaeological work. Based on the results of the Stage 2 archaeology assessment, no archaeological materials were recovered, and there is no recommendation for further work in the areas where the Stage 2 archaeological assessment was completed.

As noted in the Stage 1 Archaeological Assessment Report completed as part of the FPS, Stage 3 archaeological assessment is recommended at the following three locations and must be carried out during the next design phase and cleared of archaeological potential if they are affected by the recommended plan, prior to the start of construction:

- The south-west corner of the intersection of St. Clair Avenue West and Old Weston Road;
- Area east of the rail corridor south of the Lavender Creek Ravine; and
- The north terminus of Union Street (note: this area is not anticipated to be impacted by the proposed works, however, impacts should be confirmed in the next design phase).

The following mitigation measures are recommended:

- All lands impacted by the recommended plan shall be cleared of archaeological potential prior to the start of construction.
- Archaeological concurrence shall be obtained from Ministry of Tourism, Culture and Sport prior to the start of construction.
- Should previously unknown or unassessed deeply buried archaeological resources be uncovered during development, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act (OHA). The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act* including a field liaison representative from the Mississauga's of the Credit First Nations.
- Any person discovering human remains must immediately notify the police or coroner and the Registrar of Cemeteries, Ministry of Government Services.

7.3.2 Built Heritage and Cultural Heritage Landscapes

An assessment was undertaken to determine the potential direct and indirect impacts of the recommended plan to the built heritage and cultural heritage landscapes. A summary of the built heritage and cultural heritage landscapes within the study area is provided in **Section 3.3**.

Based on the assessment, direct and indirect impacts to built heritage resources (BHR) and cultural heritage landscape (CHL) resources are anticipated as a results of the improvements. Direct impacts involve displacement or the loss of the cultural heritage resource while indirect impacts may involve a change in the physical context through property encroachment or visual change to the context, vibration and/or in change to air, noise and dust conditions. No impacts to cultural heritage resources are anticipated for the Keele Street extension and for the Union Street improvements.

There are direct impacts to two cultural heritage resource landscapes associated with the extension of Davenport Road to Union Street:

- The extension of Davenport Road will introduce a new intersection design which will result in a contextual change to the existing character and setting of the roadscape and Carleton Village.
- On Davenport Road, on the west side of Old Weston Road, ten (10) pre-1924 residences will be directly impacted (i.e. displacement / removal) which are associated with Carleton Village.

There are indirect impacts to five built heritage resources (BHR) and cultural heritage landscapes (CHL) for the widening of St. Clair Avenue West and for the extension of Gunns Road to Union Street:

- Community of Carlton (CHL)
- St. Clair Avenue West Railway Underpass (1931-32) (BHR)
- CP and GO Transit Rail Corridor (CHL)
- Heydon House Hotel (BHR), located at the northwest corner of St. Clair Avenue and Old Weston Road, was a municipally designated property under Part IV of the *Ontario Heritage Act*, By-law 599-83
- Former ABC Lumber facility (BHR), located at 153 Weston Road, was originally a transformer station for the Toronto Suburban Railway

Mitigation Measures

A Cultural Heritage Evaluation Report (CHER) applying the criteria for evaluating cultural heritage value or interest under *Ont. Reg. 9/06* and Heritage Impact Assessment (HIA) should be completed to determine the eligibility of the indirectly and directly impacted potentially culturally significant resources for listing or designation under Part IV of the *Ontario Heritage Act (OHA)* and/or inclusion on the City of Toronto Heritage Register. An HIA will measure the direct and indirect impacts to a culturally significant resource and recommend appropriate mitigation measures for indirect, and direct impacts to any culturally significant resources. A CHER and HIA shall be completed during the detailed design phase, before construction commences

Based on the impact assessment, a CHER and HIA should be completed for the white building on the former ABC Lumber facility at 153 Weston Road, and the ten impacted resident houses on the west side of Old Weston Road at Davenport Road to determine their eligibility for listing or designation under Part IV of the *OHA* and inclusion on the

City of Toronto Heritage Register, and identify appropriate mitigation measures for indirect and direct impacts.

Based on the identified impacts, an HIA must also be completed for the Heydon House Hotel to measure indirect impacts, and determine appropriate mitigation measures for indirect impacts associated with construction activities prior to any construction activity. Vibration impacts should also be monitored during construction. The structure should be secured and protected during and after detailed design. If the property is listed or designated by the City of Toronto, vibration impacts to the building must be monitored during construction. The CHER completed by Metrolinx for the St. Clair Overpasses also recommended a HIA be completed during detail design for the St. Clair Overpasses.

7.4 Permits and Approvals

7.4.1 Municipal

Required permits and approvals must be obtained prior to construction during the detailed design phase.

7.4.1.1 City of Toronto Tree's By-Law

Obtain a permit to injure, destroy or remove trees under the City of Toronto's Trees By-laws (i.e. City of Toronto's *Trees on City Streets By-law*, and *Private Tree By-law*), and comply with the Tree Protection Policy and Specifications for Construction Near Trees to protect trees that will not be removed. Tree compensation shall also be provided as per the appropriate tree compensation ratios required by the City of Toronto Tree By-laws.

7.4.1.2 City of Toronto's Ravine and Natural Feature Protection By-law

The City of Toronto's *Ravine and Natural Feature Protection By-law* (City of Toronto Municipal Code Chapter 658, Ravine & Natural Feature Protection) restricts activity within a designated ravine or natural feature. A permit is required to injure, destroy or remove a tree of any species or any size, or to dump fill or refuse or alter the grade of land within the protected area.

The forest unit east of the railway corridor, south of the existing terminus of Keele Street is designated as a "ravine and natural feature" under this by-law. Approval in principal has been obtained from the City of Toronto Ravine and Natural Feature's Office (See **Appendix N** for the impacts to the Lavender Creek Ravine.

7.4.1.3 City of Toronto Noise Control By-Law

If it is determined during detailed design that the construction works will not adhere to the City of Toronto noise by-law (Chapter 591, City of Toronto Municipal Code), a noise by-law exemption will be sought during the next design phase.

7.4.1.4 City of Toronto City-Wide Zoning By-law 569-2013

An amendment to the City of Toronto's City-Wide Zoning By-law 569-2013 may be required for the proposed new roads.

7.4.1.5 City of Toronto Road Occupancy Permit

A Road Occupancy Permit will be required for the construction period, which will be obtained prior to the initiation of the construction.

7.4.2 Provincial

7.4.2.1 Toronto and Region Conservation Authority

Approval in principle has been obtained from the Toronto and Region Conservation Authority (TRCA) for the impacts to the Lavender Creek Ravine located south of the existing Keele Street terminus. A permit from TRCA must be sought prior to any development/site alteration within the TRCA regulated area (*O.Reg. 166/06*).

The TRCA approved Environmental Impact Statement (EIS) for the proposed extension of Keele Street is included in **Appendix N**. All recommended mitigation measures summarized in the TMP and in the EIS must be implemented.

7.4.2.2 Ministry of Natural Resources and Forestry

Due to the confirmed barn swallow nests on the wooden structures within the ABC lumber yard (153 Weston Road), an exemption to the *Endangered Species Act* (ESA) for barn swallow must be obtained prior to the start of construction. All requirements for the exemption to the ESA, including habitat creation and monitoring, will be required to be completed in accordance with the *ESA*.

Potential additional permit requirements under the *ESA* will be reviewed during the next design phase relative to known species in the context of the most current list of regulated species and results of updated field work.

7.4.2.3 Ministry of Environment, Conservation and Parks

The approval authority for activities requiring temporary water takings that exceed the threshold of 50,000 L/day is the Ministry of the Environment, Conservation and Parks (*formerly Ministry of Environment and Climate Change*). There are particular types of surface water diversion activities requiring dewatering greater than 50,000 litres per day that are exempt from the permit-to-take-water (PTTW) requirements and registration on MOECP's Environmental Activity Sector Registry (EASR). PTTW and EASR registration requirements will be confirmed in the next design phase.

7.4.2.4 Ministry of Tourism, Culture, and Sport

All archaeological fieldwork will be conducted by a consultant archaeologist holding a valid archaeological license issued by Ministry of Tourism, Culture and Sport (MTCS) under the *Ontario Heritage Act*. MTCS acts as reviewer of the investigations conducted by licensed archaeologists, manages the resources documented by those investigations, and develops and implements operational policies, technical standards, and guidelines regulating the practice of archaeological conservation in Ontario. Once archaeological resources that may be disturbed by highway design investigations, construction, operation or maintenance have been identified and conserved to the satisfaction of the MTCS, in accordance with the OHA, MTCS will provide written notification of concurrence with recommendations and acknowledgement that Provincial concerns for archaeological resources have been met. Receipt of this notification from MTCS will fulfill MTO's obligations with respect to archaeological resources under the EA process for the recommended plan.

7.4.3 Federal

Potential permitting requirements under the *Species at Risk Act* (SARA) will be reviewed during the next design phase. If required, a SARA permit will be obtained prior to construction.

7.4.4 Rail Authorities

Permits will be required for construction activities related to the recommended improvements should be established and coordinated during the next design stage. This includes rail corridor access permits, flagging, construction submittals for both Metrolinx and Canadian Pacific Rail's review.

7.4.5 Hydro One

Approval in principal has been granted by Hydro One based on the Conceptual Plan and Preliminary Design drawings (dated November 23, 2018 and May 2018) for the access road designs at 153 Weston Road provided to Hydro One for review during this study. Hydro One’s “approval in principal” is valid for a period of 24 months from the date of Hydro One’s Letter of Approval in Principal (December 14, 2018). Hydro One’s future technical approval and associated terms within the Letter of Approval will be obtained prior to construction. The City will also complete an Infrastructure Ontario (IO) Agreement of Purchase and Sale based on a full narrative appraisal report to determine land value, IO approved Environment Assessment, Duty to Consult, and IO’s coordination in receiving Minister’s Order in Council. A copy of Hydro One’s Letter of Letter of Approval in Principal is available in **Appendix M1**.

7.5 Summary of Identified Concerns and Mitigation / Commitments to Future Work

Exhibit 7-3 summarizes the identified concerns and the proposed mitigation measures, based on the identified environmental sensitivities and the proposed preliminary design plan. All of the mitigation measures identified by this study will be further detailed and finalized during detailed design based on the final design.

Exhibit 7-3: Summary of Identified Concerns and Proposed Mitigation and Commitments to Future Work

Legend:

CITY: City of Toronto	MTCS: Ministry of Tourism, Culture and Sport	TTC: Toronto Transit Commission
MNRF: Ministry of Natural Resources and Forestry	TRCA: Toronto and Region Conservation Authority	
MOECP: Ministry of the Environment, Conservation and Parks	ESP: Emergency Service Providers	
DFO: Department of Fisheries and Ocean	UTIL: Utilities	

Environmental Issue / Concern	Concerned Agencies	Proposed Mitigation Measures and Commitments to Future Work
NATURAL ENVIRONMENT		
Terrestrial Ecosystem	TRCA MNRF City of Toronto	<ul style="list-style-type: none"> TRCA shall be contacted during the next design phase to discuss the potential requirement for a separate Environmental Impact Statement (EIS) for impacts to the natural feature south of the existing Keele Street terminus to ensure community and habitat impacts are mitigated and compensated per TRCA policies. Mitigation measures related to the impacts to the natural feature in the study area will be refined and finalized in the next design phase, in consultation with the Toronto and Region Conservation Authority and the City of Toronto Urban Forestry. A TRCA Development, Interference with Wetlands and Alterations to Shorelines and Watercourses permit would be required prior to any site alteration within the TRCA regulated areas (O.Reg. 166/06). Vegetation clearing shall be conducted outside the period when most birds in the area breed (April 1 to August 31) to minimize impacts on nesting birds. The recommended improvements will potentially result the removal of ±238 trees, of which, ±90 meet the minimum requirements of the Private Tree By-law, City Tree By-Law and Ravine and Natural Feature Protection By-law: <ul style="list-style-type: none"> St. Clair Avenue Widening: 55 trees are anticipated to be removed as a result of this alternative. 48 replacement trees will be required based on applicable City by-laws. Gunns Road Extension: 137 trees are anticipated to be removed as a result of this alternative. 39 replacement trees will be required based on applicable City by-laws. Keel Street Extension: 43 trees are anticipated to be removed as a result of this alternative. 129 replacement trees will be required based on applicable City by-laws. Davenport Extension / Union Street Improvements: 3 trees are anticipated to be removed as a result of this alternative. 9 replacement trees will be required based on applicable City by-laws. Final tree removals, compensation, and mitigation will be re-assessed during the next design phase in consultation with TRCA and the City of Toronto Urban Forestry. Consultation with the City of Toronto shall be conducted to confirm actions related to the protection of the Black Oak specimen. Trees should be re-assessed prior to tree removals to assess changes in conditions or risk. Preliminary tree preservation plans have been developed and should be refined during the next design phase. Tree protection fencing establishes minimum distances required to protect trees from construction activities. Prior to construction, a site meeting shall be held with the contractor and contract administrator to review the clearing limits and confirm the installation location for the temporary tree protection fence

Environmental Issue / Concern	Concerned Agencies	Proposed Mitigation Measures and Commitments to Future Work
		<ul style="list-style-type: none"> • Tree protection barriers shall be clearly staked in the field and approved by City of Toronto Urban Forestry prior to construction to ensure correct positioning of fencing and avoid unnecessary disturbance • To avoid root zone impacts on trees to be retained, excavated material shall not be stored against the tree protection barrier. • Roots outside of the tree protection zone (TPZ) will be exposed and damaged during the excavation of the roadway designs, deconstruction of the ramps and installation of curbs. It is recommended that roots be pruned cleanly and neatly utilizing the guidelines in this report under 'Pruning Practices' and 'Branch Pruning Practices'. Should any work be required within a minimum TMZ, the Contract Administrator should be notified. • All removals should be felled into the work area to ensure that damage does not occur to the trees within the tree preservation zone. Upon completion of the tree removals, all felled trees are to be removed from the site, and all brush chipped. All brush, roots and wood debris should be shredded into pieces that are smaller than 25 mm in size to ensure that any insect pests that could be present within the wood are destroyed • Obtain a permit to injure, destroy or remove trees under the City of Toronto's Trees By-law and comply with the <i>Tree Protection Policy and Specifications for Construction Near Trees</i> to protect trees that will not be removed. • Obtain a permit under the City of Toronto's Ravines and Natural Features Protection By-law for impacts to regulated areas (<i>City of Toronto Municipal Code Chapter 658, Ravine & Natural Feature Protection</i>). • Develop a tree plan for the Lavender Creek Ravine which plots individual specimen trees and small tree groupings proposed for removal, injury and preservation. • Develop a Tree Compensation Plan for impacted tree based on applicable City of Toronto and TRCA tree compensation ratios, and in consultation with the City of Toronto Ravines and Natural Features Protection, and TRCA. • Any wildlife (e.g., bird, snake, mammal) incidentally encountered during construction will not be knowingly harmed. Animals within the construction zone will be allowed to move away from the area on their own, if at all possible. In the event that an animal encountered during construction does not move from the construction zone, or is injured, the contract administrator will be notified immediately. • No nests will be removed or birds or nests disturbed in accordance with the <i>Migratory Bird Convention Act (MBCA)</i>. If a nesting migratory bird is identified within or adjacent to the construction site and the construction activities are such that continuing construction in that area might result in a contravention of the MBCA (i.e., potential harm or stress to nests, birds, eggs or young), all activities will stop and the contractor administrator will be notified immediately. The contract administrator will then contact Environment Canada for direction. • The contractor will be advised that all temporary brush and loose soil piles should be tarped or otherwise inspected regularly to prevent nesting as they provide potentially suitable nesting sites for some species. • Prior to initiating bridge works, the underside of the bridge shall be inspected for bird nests during the appropriate breeding bird window. If a nest is present, it should be examined by an avian specialist to determine if it belongs to a protected bird and if this is the case and the nest is active, construction will be delayed until the young birds have left the nest. • Prior to building removal, the building should be inspected for evidence of use by SAR birds or bats. If SAR birds or bats use the buildings, actions under the ESA (registration or permit). • Obtain an exemption to the Endangered Species Act (ESA) for barn swallow, and develop and implement mitigation requirements associated with the exemption in accordance with the ESA. • Ministry of Natural Resources and Forestry (MNRF) be contacted during Detailed Design to confirm additional Species at Risk have not been 'up-listed'.

Environmental Issue / Concern	Concerned Agencies	Proposed Mitigation Measures and Commitments to Future Work
Aquatic Ecosystem	TRCA MNR DFO	<ul style="list-style-type: none"> Any temporarily stockpiled soil, debris or other excess materials, and any construction related materials, will be properly contained (e.g. within silt fencing) in areas separated at least 30 m from the watercourse. All construction materials, excess materials and debris should be removed and appropriately disposed of following construction. Standard erosion / sediment control and spill control practices shall be implemented to protect the watercourse and the Humber River system. All construction-related activities will be controlled to prevent entry of any petroleum products, debris or other potential contaminants/deleterious substances, in addition to sediment as outlined above, to the watercourse. In-stream construction (i.e., work below the high-water mark) will take place within the permissible in-water construction timing window of July 16 to March 14 (no in-water works from March 15 to July 15). The contractor will follow the erosion and sediment control measures identified in the contract and prevent/control potential for erosion and sediment caused by their construction methods and operations to prevent entry of sediments into the watercourse. Appropriate 'temporary flow passage' measures will be developed, implemented and supported by all appropriate erosion and sediment control measures to isolate the temporary instream construction zones to maintain clean flow downstream. (Note: if there is no flow during construction, temporary flow passage measures will still be in place as a contingency in the event of a storm and associated runoff, to prevent potential conveyance of sediment laden flows downstream. No equipment should be allowed to ford or otherwise enter watercourses except as specified in the contract or unless authorized by the appropriate environmental agencies/permits. The risk to cause serious harm to fish categorization will be reviewed and finalized during the next design phase, once the designs are finalized.
Contamination	MECP	<ul style="list-style-type: none"> Further Phase Two ESAs be completed at all impacted properties determined to be of high or medium APEC in order to determine the soil and groundwater quality at the locations of the APECs. Supplemental sampling may be conducted as required during excavation works, to support field observations or receiving site specific requirements. Soil generated during construction that is determined to be contaminated through chemical analysis will require disposal off-site at a licensed waste receiving site. Prior to transporting any soil off-site for disposal, a representative soil sample for analysis of the toxicity characteristic leaching procedure (TCLP) for metals, PAHs, PHCs, VOCs, and PCBs should be analyzed to determine possible off-site disposal options. To support the removal of impacted soil, the contractor is required to prepare, submit, and implement a soil management plan based on the recommendations within the Soil and Groundwater Management Plan. Measures must be taken to prevent contamination of the land upon which any stockpiled soil is placed to prevent surface runoff of soil and dust. Prior to importing any soil for backfilling for this project, the soil must be sampled at its source, and analyzed by an accredited laboratory for any contaminants that may reasonably be expected to be present in the soil, taking into consideration the property from which the soil originated; the handling, transport and storage of the material; and other relevant factors such as potentially contaminating activities. All excess materials and wastes generated during construction must be managed in accordance with the Environmental Protection Act and all applicable legislation.
Groundwater	MECP	<ul style="list-style-type: none"> Additional groundwater and geotechnical work will be required during the next design phase to confirm geological and hydrogeological conditions within the study and identify potential impacts to groundwater during and following construction.

Environmental Issue / Concern	Concerned Agencies	Proposed Mitigation Measures and Commitments to Future Work
		<ul style="list-style-type: none"> Groundwater Management Plan shall be developed during the next design phase based on the recommendations in the Soil and Groundwater Management Plan developed as part of this TMP Study and implemented during construction. The study area is located within a highly vulnerable aquifer. The Groundwater Management Plan shall identify ways to mitigate potential impacts to groundwater resources during construction and operational phases of the project (e.g. consider policies in the CTC Source Protection Region source protection Plan, directing the refueling of machinery outside vulnerable areas, etc.). The contractor shall be responsible for treatment of contaminated groundwater prior to release and in accordance with applicable regulations during construction. If groundwater management is required during construction activities, a minimum of one water sample should be collected for laboratory analysis to determine appropriate disposal options. Daily records should be completed including weather and site conditions, tracking of soil placement, dust control measures, groundwater management, personnel involved in site activities and any unexpected site conditions or incidents along with any complaints received about the work. Copies of the daily reports must be provided by the contractor to the owner and their consultant weekly during the construction work. The contractor must be prepared for spill response in the event of an uncontrolled release associated with site activities (e.g., fuel). As a contingency, the contractor shall maintain onsite sufficient materials that are suitable for the liquid contaminants that may be under the contractor's control. Obtain a Permit-to-Take-Water (PTTW) from the Ontario Ministry of the Environment, Conservation and Parks for any construction activities requiring the diversion of surface water or the extraction of groundwater in excess of 50,000 litres per day. Dewatering estimates must be confirmed in the next design phase based on detailed design and more recent hydrogeological information.
SOCIO-ECONOMIC ENVIRONMENT		
Land-Use	City Area Residents	<ul style="list-style-type: none"> The City of Toronto will continue to consult the affected property owners through the detailed design process. Any temporary property access disruptions will be minimized during construction.
Noise and Vibration	City MECP Area residents	<ul style="list-style-type: none"> The contractor will be required to comply with the City of Toronto's noise by-law (Toronto Municipal Code, Chapter 591, Noise) and vibration by-law No. 514-2008 regarding noise and vibration emission standards for construction equipment that may be in place at the time of construction. Noise emissions from construction equipment are to be in compliance with the limits set out in NPC-115 and NPC-118. Any initial complaint from the public will require verification by the City of Toronto to determine if the general noise and vibration control measures agreed to, are in effect. The City of Toronto will investigate any noise and vibration concerns, warn the contractor of any problems and enforce its contract.
Air Quality	MECP Area Residents	<ul style="list-style-type: none"> Use excavation methods which minimize raising dust from construction operations. Dust and particulate control measures during construction in accordance with Ontario regulations. Limit vehicle speeds onsite to reduce the generation of dust from traffic. Use potable water to prevent airborne dust from dispersing into atmosphere. Use appropriate covers on trucks hauling impacted and fine or dusty material. Use watertight vehicles to haul wet materials. Grading of truck surfaces, as required, to minimize the accumulation of surface silt. Paved surfaces on adjacent streets should be swept regularly to control dust.

Environmental Issue / Concern	Concerned Agencies	Proposed Mitigation Measures and Commitments to Future Work
		<ul style="list-style-type: none"> Prevent dust from spreading to adjacent property sites. Work may be stopped at any time when control of dust and particulates is inadequate for wind conditions present at the site, or when visual monitoring indicates that release of dust and particulates into the atmosphere is excessive. The contractor would be required to make changes to operations prior to resuming any excavation, handling, processing, or any other work that may cause release of dust or particulates.
CULTURAL ENVIRONMENT		
Archaeological Resources	MTCS	<ul style="list-style-type: none"> Stage 3 deeply buried survey be conducted within the areas of deeply buried archaeological potential (i.e., the vicinity of a pottery yard and the village of Carleton, and the south-west corner of the intersection of St. Clair Avenue West and Old Weston Road. There is also recommendation for Stage 3 archaeology at the north terminus of Union Street, however this area is not anticipated to be impacted by the proposed works but should be confirmed in the next design phase. Stage 2 construction monitoring be conducted within the areas of deeply buried potential that lack key defining historic elements (i.e., structures) identified along the west side of Union Street under PIF #P394-0030-2017 (4Transit 2018). The monitoring must be carried out in accordance with Section 2.1.7 Standard 4 of the S&Gs (MTC 2011:37–38). Stage 2 deeply buried survey be carried out within the areas of deeply buried potential that possess key defining historic elements (i.e., structures) identified on the south side of St. Clair Avenue West under PIF #P394-0030-2017 (4Transit 2018). The assessment must be carried out in accordance with Section 2.1.7 Standard 3 of the S&Gs (MTC 2011:37). It was previously noted that trenches should be excavated at a maximum interval of 10 m to obtain clear sedimentary profiles to assess deeply buried potential. Any additional archaeological assessments must be completed with a Mississaugas of the Credit First Nation field liaison representative present. Should any property be required outside of the assessed areas for the recommended improvements as a result of refinements to the designs, a Stage 1-2 assessment will be required for all new property that has not been assessed. All areas impacted by the recommended plan must be cleared of archaeological potential prior to the start of construction. Receive archaeological concurrence Ministry of Tourism, Culture and Sport prior to the start of construction. Should previously unknown or unassessed deeply buried archaeological resources be uncovered during development, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act. Any person discovering human remains must immediately notify the police or coroner and the Registrar of Cemeteries, Ministry of Government Services
Built Heritage and Cultural Heritage Landscapes	MTCS	<ul style="list-style-type: none"> A Cultural Heritage Evaluation Report and/or Heritage Impact Assessment shall be completed at the ABC Lumber facility at 153 Weston Road, and the 10 impacted worker houses on the west side of Old Weston Road at Davenport Road to determine its eligibility for listing or designation under Part IV of the Ontario Heritage Act and inclusion on the City of Toronto Heritage Register. If these structures are determined to be of cultural heritage significance, a Heritage Impact Assessment shall be completed for the structural with cultural heritage significance. A Heritage Impact Assessment should be completed at the Heydon House Hotel and for the St. Clair Avenue Overpasses prior to construction activity.
ENGINEERING		
Traffic Operations and Design	City Area Residents	<ul style="list-style-type: none"> Ahead of construction, advance notification will be provided to inform emergency service providers, and residents of construction, road closures, and detour routes.

Environmental Issue / Concern	Concerned Agencies	Proposed Mitigation Measures and Commitments to Future Work
	ESP	<ul style="list-style-type: none"> A traffic management plan will be developed to maintain 1 lane of traffic in each direction along St. Clair Avenue West during the road widening. Additional traffic management and construction staging plans will be prepared to minimize traffic impacts to the study area. Following construction of the TMP improvements, the City will monitor traffic volume, speed and collisions to determine if changes to local streets are needed to ensure safe and efficient transportation. The City's Vision Zero team may consult the community through town hall meetings to develop various safety and traffic calming measures.
Active Transportation Design	City TTC Metrolinx	<ul style="list-style-type: none"> Details of the cross-ride designs and cycling treatments along the roads influenced by this TMP will be refined and established. Bike troughs are required for the three sets of stair connections along St. Clair Avenue West leading to Townsley Street, Davenport Road and Mulock Avenue. Pedestrian crosswalks and active transportation-related signage need to be designed at all study intersections as per the Ontario Traffic Manual. Opportunities to refresh pavement markings should be investigated for intersections in the vicinity of the recommended improvements. Opportunities to enhance the active transportation environment through roads with retaining walls and underpasses should be investigated through murals, art streetlighting placement, and railings – based on input from the City. Curb cuts and tactile warning strip indicators along the two Hydro access roads should be provided where they intersect with the sidewalk and multi-use trail Opportunities to connect the proposed cycling facilities to existing or future facilities should be investigated. Opportunities to reduce intersection radii based on refined surface transit routes should be investigated. Active transportation facilities should be coordinated between the various stakeholders including work related to the St. Clair-Old Weston SmartTrack Station. Additional pedestrian connections such as sidewalks along Townsley Street should be investigated.
Utilities	UTL	<ul style="list-style-type: none"> Further consultation with the utility agencies will be required during detailed designs and updated utilities and legal land surveys within the expected construction limits will be required. Approval in principal has been granted by Hydro One based on the Conceptual Plan and Preliminary Design drawings (dated November 23, 2019 and May 2018) for the access road designs at 153 Weston Road provided to Hydro One for review during this study. Hydro One's "approval in principal" will be valid for a period of 24 months from the date of Hydro One's Letter of Approval in Principal (December 14, 2018). Hydro One's future technical approval and associated terms within the Letter of Approval will be obtained prior to construction. The City will also complete an Infrastructure Ontario (IO) Agreement of Purchase and Sale based on a full narrative appraisal report to determine land value, IO approved Environment Assessment, Duty to Consult, and IO's coordination in receiving Minister's Order in Council. A copy of Hydro One's Letter of Approval in Principal is available in Appendix M1.
Rail Authorities	City Metrolinx CP Rail	<ul style="list-style-type: none"> Coordinate and seek rail corridor access permits, flagging, construction submittals for both Metrolinx and Canadian Pacific Rail's review.