

Executive Summary

ES 1. Introduction

In 2020, Metrolinx completed the Dundas Bus Rapid Transit Initial Business Case, which recommends a preferred Bus Rapid Transit alignment, and supportive service concept along Dundas Street between Kipling Station, in the City of Toronto, through the City of Mississauga and Halton Region, to Highway 6 in the City of Hamilton. AECOM Canada Limited (AECOM) was retained by Metrolinx and the City of Mississauga to evaluate the proposed 48-kilometre transit corridor. The evaluation involves the completion of the Preliminary Design, Preliminary Design Business Case and Transit Project Assessment Process.

In 2018, the Dundas Connects Master Plan (Dundas Connects) was completed by the City of Mississauga. It guides future development and intensification along the Dundas Street Corridor in the City of Mississauga. Bus Rapid Transit, cycling infrastructure, and an enhanced public realm for pedestrians were among the recommendations in the Plan. Dundas Connects is being implemented through various studies and initiatives, including this Transit Project Assessment Process.

The Dundas Bus Rapid Transit Mississauga East Project (the Project) includes the planning and design of a 7-kilometre Bus Rapid Transit corridor from Confederation Parkway to the City of Toronto boundary at Etobicoke Creek, within the City of Mississauga (**Figure ES-1**). This Environmental Project Report has been prepared to support the Dundas Bus Rapid Transit – Mississauga East Transit Project Assessment Process.

Figure ES-1: Dundas Bus Rapid Transit – Mississauga East Project Area



ES 2. Study Process

The Project has followed the Transit Project Assessment Process under Ontario Regulation 231/08: *Transit Projects and Metrolinx Undertakings* of the Environmental Assessment Act. The Transit Project Assessment Process is a proponent driven process that provides a framework for public transit projects to follow which accelerates the environmental assessment process involving a pre-planning phase followed by a regulated (up to 120 days) consultation and documentation period. These phases include consultation, assessment of impacts, development of measures to mitigate negative impacts, and documentation. Consultation occurs with the public, stakeholders and Indigenous Nations throughout the process. Following these phases, there is a 30-day public review period where the public has the opportunity to review the Environmental Project Report and provide additional comments, followed by a 35-day Minister's review period.

ES 3. Project Description

The Project is part of Metrolinx's bigger picture for an integrated, multi-modal regional transportation system that will serve the needs of residents, businesses and institutions. It supports Ontario's Growth Plan for the Greater Golden Horseshoe, 2017, which sets out a broad vision for where and how our region will grow and identifies policies on transportation planning in the Greater Toronto and Hamilton Area.

As noted earlier, the Project corridor's western limit is at Confederation Parkway. The corridor continues eastward down Dundas Street towards Hurontario Street, where it will interface with the Hurontario Light Rapid Transit project currently under construction. Continuing east from Hurontario Street, the Project will cross over Cooksville Creek Culvert located at Jaguar Valley Drive and the Hensall Circle and Canadian Pacific Railway overpass located between Burslem Road to the west and Cawthra Road to the East, and then cross over the Cawthra Road overpass and continue along Dundas Street crossing over another two structures, the Little Etobicoke Creek Culvert and the Etobicoke Creek Bridge which represents the eastern limit of the Project corridor.

To meet design requirements, including those of the City of Mississauga, the Transportation Association of Canada, Metrolinx and others, the design will generally establish a roadway cross section of four general-purpose traffic lanes, two in each direction, two dedicated median Bus Rapid Transit lanes and an enhanced boulevard space. Through lanes will be 3.5 metres in width as standard and 3.35 metres in width at the minimum, while curb lanes will be 3.5 metres in width as a minimum. The road will be designed with a design speed of 90 km/h and a posted speed of 60 km/h.

In the median, between each set of general-purpose traffic lanes, will be the Bus Rapid Transit guideway consisting of two 3.5 metre dedicated bus lanes (one in each

direction), raised median between the bus lanes and general-purpose lanes, 3.6 to 4.2 metre wide by 70 metre long far-side platforms at all stops and a 0.3– 0.5 metre buffer between the platform backwall and adjacent general-purpose lane. This configuration can be seen in **Figure E-1**.

Figure E-1: Rendering of Dedicated Median-Running Bus Lane Corridor Section



The boulevard space will consist of a 2 metre wide sidewalk, a 0.6 metre to 2.0 metre pole/furniture zone and a 2.0 metre protected cycle track. Where constraints exist, the sidewalk and cycle track will be replaced with a Multi-use path with a minimum width of 3.0 metres.

The following Project components are included:

Bus Rapid Transit Components

- Identification of a preferred design alternative for the length of the corridor.
- Implementation of Bus Rapid Transit along the Dundas Street corridor in dedicated median-running bus lanes.
- Retention of a local bus service overlay with integration of existing curbside stop locations, with enhanced amenities, while allowing the Municipal Transit Service Providers (MSP) use of the dedicated Bus Rapid Transit corridor.

- Transit priority measures including signage, traffic signal phasing, as well as queue jump lanes.
- An Intelligent Transportation Systems Strategy including stop design, fare system and traveller information coordinated with municipal and regional service providers.
- Accommodation of Bus Rapid Transit on Dundas Street by respecting corridor characteristics.
- Transitions between the dedicated median-running bus lanes and the existing corridor at the eastern and western limits of the corridor improvements to ensure seamless transition and connectivity.
- Implementing design considerations for protection of future technologies, i.e., electrification, autonomous vehicles, etc.

Bus Rapid Transit Stop Components

- Eight (8) Bus Rapid Transit stops (generally averaging one Bus Rapid Transit stop per kilometre) are being introduced at the following locations:
 - Wharton Way
 - Dixie Road
 - Tomken Road
 - Cawthra Road
 - Grenville Drive / Cliff Road
 - Kirwin Avenue / Camilla Road
 - Hurontario Street
 - Confederation Parkway
- Bus Rapid Transit stops will consist of two platforms, one far side platform for each direction of travel at each of the designated stop locations. Stops will accommodate two articulating buses and accommodation for service vehicles.
- Stop amenities will generally consist of Accessibility for Ontarians and Disabilities Act features, including ramps, railings tactile and warning strips, wayfinding signage including location and stop name, next bus information, fare collection, benches and seating, service maps, weather protection, garbage and recycling receptacles and arts and cultural heritage elements.

Road and Active Transportation Components

- Maintenance of four general purpose traffic lanes along Dundas Street.

- Turning lanes provided at key intersections (to accommodate left turns and U-turns). Creation of a street for all users that connects to the broader transportation network.
- Addition of active transportation facilities including protected cycle tracks, multi-use-paths and widened sidewalks.
- Addition of pedestrian lighting to supplement street lighting.

Utility Infrastructure Components

- Stormwater management system improvements to be introduced.
- Utility impacts and relocations to be carried out to allow for the widened corridor and introduction of station platforms.
- Utility relocations to accommodate and ensure Bus Rapid Transit is scalable for future transit solutions, i.e., electrified fleet, future Light Rail Transit.

Bridge and Culvert Components

- There are five existing bridge and culvert structures within the Study Area which are as follows:
 - Dundas Street East over Etobicoke Creek Bridge
 - Dundas Street East over Little Etobicoke Creek Culvert
 - Dundas Street East over Cawthra Road Bridges
 - Dundas Street East over Hensall Circle and Canadian Pacific Bridge
 - Dundas Street East over Cooksville Creek Culvert
- The existing structures were assessed based on their current condition state and structural capacity. For the structures at watercourse crossings, the structures were also assessed for hydraulic capacity.
- The five existing bridge and culvert structures within the Study Area require replacement as a result of the widening of the corridor, as well as their current state and/or hydraulic capacity. Below is a summary of the assessments for each of the structures:
 - Dundas Street East over Etobicoke Creek Bridge
 - Existing structure is in generally fair-to-poor condition requiring major rehabilitation within three years
 - Based on bi-annual inspection findings some elements of the existing structure appear to not have sufficient capacity to carry the live loads in accordance with the latest bridge design code

- A structural evaluation was not necessary given that it was concluded that bridge replacement is the only feasible alternative based on the condition of the structure and the need for its widening and realignment
- Dundas Street East over Little Etobicoke Creek Culvert
 - Existing structure is in generally fair condition requiring only minor repairs to the northeast approach sidewalk
 - Under current conditions Dundas Street at the structure is overtopping during a 100-year flood event. In addition to watercourse channel constraints, the hydraulic opening in the structure is insufficient
 - A structural evaluation was not necessary given that it was concluded that replacement of the structure is the only feasible alternative given that the structure has insufficient hydraulic capacity
- Dundas Street East over Cawthra Road Bridges
 - Existing structure is in generally good-to-fair condition requiring minor rehabilitation including replacement of asphalt and waterproofing system and approach slabs, replacement of longitudinal deck joint and localized concrete patch repairs on the bridge and associated retaining walls
 - A structural evaluation was not necessary given that it was concluded that bridge replacement is the only feasible alternative based on the condition of the structure and the need for its widening
- Dundas Street East over Hensall Circle and Canadian Pacific Bridge
 - Existing structure is in generally fair-to-poor condition requiring major rehabilitation including deck replacement (incl. sidewalks, median and parapet walls), replacement of approach slabs, repairs and recoating of structural steel, bearing replacement and localized concrete patch repairs on the pier, abutment walls and wingwalls
 - A structural evaluation was not necessary given that it was concluded that bridge replacement is the only feasible alternative based on the condition of the structure and the need for its widening
- Dundas Street East over Cooksville Creek Culvert

- Existing structure is in generally fair-to-poor condition requiring rehabilitation including waterproofing of the exterior surfaces of the culvert barrels and installation of creek down protection at the downstream end of the culvert
- Under current conditions Dundas Street at the structure is overtopping during a 100-year flood event. In addition to watercourse channel constraints, the hydraulic opening in the structure is insufficient
- A structural evaluation was not necessary given that it was concluded that structure replacement is the only feasible alternative based on the condition of the structure and it having insufficient hydraulic capacity

ES 4. Existing Conditions

Both desktop research, agency consultation and field work was undertaken to inform the existing conditions of the Project. The following is a summary of the Project's existing conditions, a detailed description of which can be found in **Section 4**.

Natural Environment

Several permanent watercourses occur within the Study Area, including Mary Fix Creek, Cooksville Creek, Little Etobicoke Creek, and Etobicoke Creek.

The Project is situated in the Lake Erie-Lake Ontario Ecoregion (7E) dominated by developed lands making it the most urbanized ecoregion in Ontario. The Study Area consisted largely of heavily disturbed vegetation communities, with some remnant natural communities found in proximity to Etobicoke Creek. No rare vegetation communities or species were observed in association with the Study Area.

Although field investigations resulted in few wildlife sightings, the natural environment Study Area is known to include the following significant wildlife habitat:

- Colonially – Nesting Bird Breeding Habitat (Cliff Swallow)

A total of eight active (in addition to several partial or older) Cliff Swallow nests were documented under the Etobicoke Creek bridge. These nests were in close proximity to several active Barn Swallow nests.

The following Species at Risk were identified within the Study Area during field investigations:

- Barn Swallow
- Chimney Swift

Additionally, suitable habitat for Species at Risk bats (i.e., Little Brown, Northern, and Eastern Small-footed Myotis, and Tricolored Bat) is present within the Study Area and it is presumed that these species may be present. Based on Fisheries and Oceans Canada Species at Risk Mapping, no aquatic Species at Risk are known to occur within the Study Area.

Tree Inventory

In support of the Dundas Bus Rapid Transit Mississauga East Project an in-field tree inventory and a desktop-based tree impact analysis were conducted, in order to assess and quantify the existing condition of onsite trees as well as determine their potential impacts due to the Project. Tree data were collected and analysed in compliance with applicable municipal tree protection by-laws and guidelines, as well as applicable conservation authority guidelines and arboricultural standards set by the International Society of Arboriculture.

One thousand, five hundred and sixty-five trees were inventoried and assessed for the Project.

Groundwater Resources

The topography and regional drainage of the Study Area is affected by the local development and is undulating in nature, with a general downward slope southerly towards Lake Ontario. However, regional drainage in close proximity to Cooksville Creek, Little Etobicoke Creek and Etobicoke Creek will occur towards the direction of respective creeks. Elevations within the Study Area range from approximately 108 to 125 metres above sea level (Ontario, 2021b).

Air Quality

Background air quality levels are predominately below respective Provincial and Federal ambient air quality criteria and standards; however, some levels show significant exceedances for benzo(a)pyrene, as well as a lesser exceedance for benzene and nitrogen dioxide. In addition, both nitrogen dioxide and fine particulate matter (PM2.5) show ambient concentrations within 73% to 87% of their respective federal standards.

Noise and Vibration

The Study Area is generally a mix between commercial and residential uses in a busy urban environment. Dundas Street is considered an arterial roadway which is intersected by other arterials (e.g., Dixie Road) and minor residential or commercial access roads. The ambient sound levels at the most impacted noise sensitive locations (e.g., dwellings) are dominated by a combination of existing Dundas Street and the intersecting roads. Existing GO rail intersecting Dundas Street near Cawthra contributes to the existing ambient sound levels at sensitive locations.

Currently, there are no known existing vibration concerns due to road traffic. However, heritage buildings have been identified in close proximity to Dundas Street.

Socio-Economic and Land Use

The Study Area features many different land use and density types. Within and adjacent to Cooksville Downtown, low-rise commercial uses are located close to the road. The street pattern is tighter in this area compared to areas outside of Cooksville Downtown. The remainder of the Study Area east of Cooksville Downtown is predominantly low-rise commercial with some mid-rise residential. Some open space and institutional land uses are sporadically located along Dundas. Additionally, some industrial land uses are present behind the uses fronting Dundas Street. The public realm east of Cooksville Downtown is dominated by parking lots separating the public right of way from commercial uses.

The following community amenities were inventoried within the Study Area:

- Institutional Uses (Schools, Libraries, Places of Worship, Hospitals and Public Medical Clinics);
- Recreational Uses (Recreation Centres and Sporting Fields, Trails and Parks and Open Spaces);
- Community Resources (Housing and Long-term Care, Neighbourhood Associations, Daycares, and other Community Resources);
- Commercial Spaces with Community Significance* (Indoor Malls and Cultural Shopping Centers); and
- Future Services and Facilities.

Traffic and Transportation

In the Study Area, Dundas Street is an east-west arterial road which traverses the southern portion of the City of Mississauga from Confederation Parkway in the west to the Etobicoke Creek in the east. Under the jurisdiction of the City of Mississauga, Dundas Street has a posted speed of 60 kilometres per hour throughout the Study Area. Two regional arterial roads (Cawthra Road and Dixie Road), one arterial road (Hurontario Street), and three major collector roads (Confederation Parkway, Kirwin Avenue, and Tomken Road) intersect with Dundas Street within the Study Area, along with numerous minor collector roads and neighborhood streets. A High Occupancy Vehicle lane is provided in the curb lane in either direction between Dixie Road and Southcreek Road, and is continuous beyond the eastern limit of the Study Area.

The Study Area road network generally operates with acceptable conditions during the weekday AM peak hour. The weekday PM peak hour exhibits more congestion and

heavier volumes than the AM peak hour. While much of the Study Area is congested in the PM peak hour, significant queuing was specifically observed in the westbound direction at Hurontario Street and at Confederation Parkway, where the cross-section only allows for four lanes of traffic.

The transit services in the Study Area are operated by MiWay with bus routes along Dundas Street and major north-south streets. The planned transit improvements include Hurontario Light Rail Transit which is currently under construction and expected to be completed in Fall 2024. A Light Rail Transit stop is planned at Dundas Street, but no special or specific provisions have been made in the Hurontario Light Rail Transit plans to date for a connection or interface with Dundas Street transit service.

Dundas Street throughout the Study Area is serviced with sidewalks and signalized intersections facilitating pedestrian crossings of major roads. Large lots and block sizes reduce pedestrian connectivity to surrounding areas and rapidly moving vehicles making right-hand turns into employment areas create potential pedestrian hazards.

The length of Dundas Street itself in the Study Area is generally not conducive to cycling due to the high volume of vehicle traffic and no dedicated bicycle infrastructure. Several north-south streets which intersect Dundas Street provide some degree of cycling connectivity through bicycle lanes and multi-use trails. These include Confederation Parkway, Kirwin Avenue/Gamilla Road, Constitution Boulevard/Stanfield Road, and Dixie Road. Furthermore, the City of Mississauga's 2018 Cycling Master Plan envisions cycling network improvements in the city and the proposes cycle track/separated bike lane on Dundas Street in the Study Area.

Built Heritage Resources and Cultural Heritage Landscapes

The Cultural Heritage review concluded four Cultural Heritage Landscapes within the Cultural Heritage Study Area including:

- Dixie Union Chapel and Cemetery
- St. John the Baptist Anglican Church and St. John's Dixie Cemetery and Crematorium
- Remains of the Dundas-Dixie Cemetery
- Credit Valley Railway Corridor

The Cultural Heritage review concluded 16 Built Heritage Resources within the Cultural Heritage Study Area including:

- 202 Dundas Street West (Commercial/Russell's Garage and All-Save Car Rental)
- 196 Dundas Street West (Residential)

- 188 Dundas Street West (Residential)
- 55 Dundas Street West (Commercial/Former Schiller Store)
- 47 Dundas Street West (Commercial/Former Cooksville Post Office and Shaver House)
- 37 Dundas Street West (Commercial)
- 14 Dundas Street East (Commercial/Copeland's General Store)
- 47 Dundas Street East (Industrial/ Bell Telephone Company Cooksville Exchange Building)
- 168 Dundas Street East (Residential)
- 172 Dundas Street East (Residential/Commercial)
- 184 Dundas Street East (Residential/Commercial)
- 775 Dundas Street East (Residential)
- 855 Dundas Street East (Residential/Chapman Residence (Barn))
- 865 Dundas Street East (Residential/Chapman Residence)
- 888 Dundas Street East (Commercial/Mississauga Chinese Centre)
- 1576 Dundas Street East (Cultural Heritage Plaque)

Archaeology

One known site which has been determined to retain further cultural heritage value or interest is located at the boundary of the Study Area. The Study Area has high potential for the recovery of Indigenous and Euro-Canadian archaeological resources. Stage 2 Archaeological Assessment is recommended for all areas identified as retaining archaeological potential.

ES 5. Potential Impacts, Mitigation Measures and Monitoring Activities

Natural Environment

Aquatic

Several permanent watercourses occur within the Study Area. Based on the preliminary design, in-water work is not anticipated at this time, however, this will need to be confirmed as the design progresses. If in-water work is required or work below the water line involving piers or bridge abutments, additional assessment inclusive of the Department of Fisheries and Oceans' review may be triggered. Vegetation removals may occur around the Etobicoke Creek bridge. The current design outlines an approximately 25 metre vegetated buffer being maintained from the watercourse on all four quadrants of the Etobicoke bridge based on this grading limit. The function of riparian vegetation is anticipated to remain similar based on the current design, minimal

vegetation removal and no larger individual trees (over 35 centimetres diameter at breast height) being removed.

No in water work is anticipated at the other two watercourse crossings present within the Study Area. Grading is proposed within 30 metre of Little Etobicoke Creek, both within and outside the exiting right-of-way, which will require removal of riparian vegetation adjacent to the watercourse. Removal of vegetation within the grading limits will result in the removal of trees and shrubs which currently provide function as overhead cover (i.e., shading) and production of terrestrial insects etc. Given the highly urban area, removal of this vegetation is anticipated to result in impacts to these functions, however, they may be offset by the re-planting of suitable species within the limits of grading following construction (i.e., temporary provided site restoration to restore function is completed).

No impacts are anticipated to Cooksville Creek, as no grading or other work is currently planned in this location.

At this time, the Department of Fisheries and Oceans' review is not anticipated, however, a more detailed scope of work is required to determine if this may be required.

Terrestrial

No Species at Risk or regionally rare plant species or communities were identified within or adjacent to the Study Area. Therefore, adverse impacts to Species at Risk or regionally rare plant or vegetation communities are not anticipated to result from the proposed project works.

Tree Inventory

Based on the results of the tree impact analysis it is recommended that 922 trees will have to be removed in order to accommodate the construction of the Project whilst a further 133 trees are recommended for injury with protection. A further 430 trees are recommended for protection without injury and the remaining 80 trees are considered to be potential hazard trees, due them being dead, in poor condition or classed as a hazard tree upon field assessment but are being retained. In terms of tree compensation 1,535 replacement trees and a monetary value of \$377,419.29 is required to replace trees being removed or injured (tree injuries in City of Toronto only), whilst a cash-in-lieu amount of \$120,376.50 is required as an alternative to tree replacement.

Wildlife

Migratory birds are known to nest within vegetation and on structures present within the Study Area; the period when a bird is actively nesting is considered its most critical life

stage. Timing windows allow vegetation removal activities to avoid periods when birds are actively nesting.

Cliff and Barn Swallows, which are protected under the provincial Endangered Species Act and the federal Species at Risk and Migratory Bird Convention Acts, were observed nesting under the Etobicoke Creek bridge. At the current design phase, it is unknown what impact the proposed works will have on the underside of the structure, however it is not anticipated that the works will significantly impact the colony in a long-term manner as the structure will remain available to nesting Cliff and Barn Swallows and other migratory birds once construction activities are complete.

Any required removal of vegetation should be completed prior to or after the bird nesting period of April 1 to August 31 of any given year to ensure migratory birds or their nests are not adversely impacted. In the event that vegetation removal will be required prior to August 31, but later than April 1, a visual inspection of the areas to be cleared should be conducted by a qualified avian specialist before disturbance to ensure that no birds are using the area for the purposes of nesting. If migratory bird breeding and/or nesting activity is encountered at any time of year within the Study Area, an appropriate setback distance should be maintained from the nest/nesting birds. Works should not continue in the location of the nest until after it has been determined by an avian specialist that the young have fledged and vacated the nest and work areas. Provided that the appropriate mitigation measures are implemented during construction, it is not anticipated that the proposed works will negatively impact migratory birds or other wildlife species.

Mitigation measures will be employed as needed to minimize impacts to the species nesting in the structure. The final design should be re-evaluated to determine the extent of anticipated impacts and final mitigation measures to be employed. To avoid killing, harm and harassment to these species, exclusionary measures (i.e., exclusionary bird netting) should be used when possible to prevent nesting on the structure. These measures must be installed prior to the bird nesting period. If nesting activity of this species occurs prior to installation of the exclusionary measures, then the project works for the bridge must be delayed until it has been determined that nesting is completed, and the species has vacated or under approval from the Ministry of the Environment, Conservation and Parks. If these mitigation measures are followed, the project works are not anticipated to cause negative impacts to individual nesting Barn and Cliff Swallows.

Field surveys also documented Barn Swallow and Chimney Swifts within the project area, both of which are Species at Risk. Suitable habitat was also found for Species at Risk bats (i.e., Little Brown, Northern, and Eastern Small-footed Myotis, and Tricolored Bat) and so it is presumed that these species may be present. Otherwise, given that much of the Study Area is urban, industrial, or suburban in nature, habitat for Species at Risk is limited within the Study Area.

No Significant Wildlife Habitat is known to occur within the Study Area, and no designated areas (including Areas of Natural and Scientific Interest).

Air Quality

Assessment of Air Quality impacts identified the potential for increased Nitrous Oxides, Carbon Monoxide, and Sulfur Oxide, particulate, and Volatile Organic Compounds impact levels at nearby receptors from vehicular emissions during construction as well as operation.

To mitigate these impacts during construction, on-site construction vehicle activity shall be managed to control emissions of odorous contaminants and diesel exhaust, including benzene and benzo(a)pyrene emissions from exhaust. An Air Quality Management Plan will be developed to ensure consistent attention to mitigation of dust and particulates, including silica, from the construction site. Applicable mitigation measures from Environment Canada are to also be followed. During operation, continued promotion of increased electric vehicle purchase and infrastructure within Ontario and implementation of vegetation within the Project Study Area to decrease ground level dispersion of particulates are suggested mitigations to reduce air quality impacts.

Recommended monitoring activities include the establishment of baseline conditions prior to construction and active air quality monitoring and reporting during construction.

Noise and Vibration

The acoustic modelling results indicated that Receptors are located within the Zone of Influence for noise and vibration during Project construction and operation activities. A detailed analysis of construction and operation noise at Receptor locations confirmed that several exceedances were anticipated during construction and operation activities. Therefore, some Receptor or activity specific mitigation measures were incorporated in the acoustic model to reduce the Project impact and determine the feasibility of compliance with the defined limits for noise. These mitigation measures were selected with the objective of having the least possible impact on the Project (e.g., construction schedule) while also considering the technical, operational, administrative, and economic feasibility for each. The mitigations incorporated in the acoustic modelling included barriers (construction and operation) and the replacement of tonal backup alarms with broadband type alarms (construction).

Additional general mitigations or best practices as well as recommended monitoring and follow up activities are also provided that would further reduce the potential Project noise and vibration impacts. Examples of these best practices include public engagement, acoustic enclosures, and no idling policies.

Socio-Economic and Land Use

A number of potential indirect and direct impacts to adjacent land uses were documented subject to final design. These include temporary and permanent property takes to support the construction and operation of the project; light, noise, vibration and dust spillage; and temporary or permanent alterations or restrictions to movement through the corridor during construction and operation for pedestrians, cyclists, public transit and drivers which could impact both through-travel and access to properties along the corridor. Temporary utility shut-offs are also possible during construction, although this would typically be for end-of-life or precautionary replacement as most utilities are located away from the guideway already.

Mitigations are proposed to minimize the effects of these impacts. These include consultation with affected property owners, the placement of barriers, fences or other mitigation measures to reduce light, dust, and noise impacts, and employing utility shut-off best practices (such as advanced notice of utility shut offs). Maintaining access to properties and throughfare for all users to the extent possible is paramount during construction. It is recommended that an Access Management Plan is developed to guide access in the corridor through construction and operation, while consultation with affected agencies (emergency services, transit, etc.) will be important to support continuity of service in the corridor.

Cultural Environment

Built Heritage Resources and Cultural Heritage Landscapes

The potential for adverse impacts from the Project on the built heritage resources and cultural heritage landscapes was identified within the Cultural Heritage Study Area. It is recommended that construction activities and staging areas should be suitably planned in detailed design to avoid any adverse impacts to the identified known, previously identified and potential built heritage resources and cultural heritage landscapes.

Three locations within the study area contain cultural heritage plaques. If avoidance of these locations is not feasible or is directly adjacent to construction activities then the plaques are to be noted for protection on design drawings, plaque protection is to be installed during construction (or store the plaques), and protection of plaques is to be monitored.

Given that buildings of built heritage resources and cultural heritage landscapes are within the Cultural Heritage Study Area it is anticipated that in some locations vibrations limits will be exceeded and therefore, the mitigation measures for vibration impacts should be implemented. Construction and post-construction monitoring may be required for historic buildings that were determined subject to vibration damage.

Archaeology

There is one registered archaeological site located within the Study Area boundaries, Cherry Hill (AjGv-18), that has been recommended for further work. Based on limited geographic references, it appears to be within an area of documented previous extensive disturbance. Once the land to be impacted by infrastructure improvements has been identified further Archaeological Assessment must be completed prior to ground disturbing activities if construction impacts are anticipated at this location.

Since it is not clear what further work is required here based on sparse information available, Stage 2 testing of the area in an attempt to relocate the site is required. The Stage 2 work must follow the requirements set out in the *Standards and Guidelines for Consultant Archaeologists*.

Special consideration must be made for the two cemeteries located within the Study Area, St. John's Dixie Cemetery & Crematorium/Dixie Union Cemetery, and the remains of the Dundas-Dixie Cemetery. Due to expansion northward, any unmarked graves are unlikely to exist within the Dundas Street right-of-way at St. John the Baptist Anglican Cemetery or St. John's Dixie Cemetery, but a cemetery investigation may be required should impacts be proposed on the property within the marked cemetery limits.

Although unlikely, it is unclear if any grave shafts exist below the current commercial structures on the property of the former Dundas-Dixie Cemetery. However, it is recommended that should any development impacts to the property outside of the right-of-way be proposed as part of the Project, additional Stage 2 assessment for deeply buried archaeological materials will be undertaken.

ES6. Climate Change and Sustainability

The Climate Change and Sustainability risk assessment revealed 52 interactions showing risks out of 66 possible interactions, between 11 climate indicators and the six project components. Risk treatment and adaptation measures for each of the interactions have been developed in three types of measures, Design, Operations and Maintenance, and Policy.

In addition, within this 7.2 kilometre section of the Dundas Bus Rapid Transit Mississauga East Project there are three areas of significant riverine flooding which could impact the construction and future operation. Areas of riverine flooding are likely beyond the scope of the Dundas Bus Rapid Transit Project as they are a result of the upstream development of the watershed. As such operational procedures may need to be developed to ensure the safe operation of the Dundas Bus Rapid Transit.

ES 7. Consultation Process

The communication and engagement process followed by Metrolinx for the Dundas Bus Rapid Transit Mississauga East Project is described in **Section 7** of this Report and all engagement materials are included in **Appendix E**.

The overall approach to communication and engagement for the Project is outlined in Section 7.1 of this Report. To share information and collect feedback related to the Dundas Bus Rapid Transit Mississauga East Project, Metrolinx has undertaken the following communication and engagement activities prior to the publication of the Draft Environmental Project Report:

- Two virtual rounds of engagement (April 2021 and September 2021) and a Metrolinx Live meeting (September 22, 2021);
- Mississauga East-specific updates on the Project Engagement webpage (www.metrolinxengage.com/dundasbrt);
- Technical Stakeholder Committee meetings;
- Elected Official briefings;
- Outreach to Indigenous Nations, government review agencies and other technical stakeholders; and
- Meetings with local community groups as part of the Mississauga Stakeholder Advisory Group.

In accordance with Section 8 Ontario Regulation 231/08: *Transit Projects and Metrolinx Undertakings*, the communication and engagement record summarized in **Section 7** and provided in **Appendix E** summarizes Mississauga East Dundas Bus Rapid Transit Project engagement activities carried out with Indigenous Nations, members of the public, review agencies and other technical stakeholders, elected officials, property owners and other interested parties, including a summary of feedback and comments received.

To be completed once the Transit Project Assessment Process has been initiated.

ES 8. Permits and Approvals

A review of the Canadian Environmental Assessment Act 2012 determined that this project does not constitute a designated project under this Act. No further Federal approvals or permits are anticipated at this time, however, it is recommended that screening under the Navigation Protection Program of Etobicoke Creek be carried at the start of detailed design to determine any further actions that may be required as a result of construction work at this crossing.

Provincial permits and approvals may be required from the Ministry of Environment, Conservation and Parks, the Ministry of Transportation for work around Highway 427, and a Minister's Consent from the Ministry of Heritage, Sport, Tourism and Culture for any alterations to specific properties under Ontario Regulation 10/06.

Conservation Authority approvals may be required from Toronto and Region Conservation Authority and/or Credit Valley Conservation Authority.

At the municipal permitting level, Metrolinx, as a Provincial Crown Agency, is not generally subject to municipal permitting and approval requirements; regardless, Metrolinx works in co-operation with local municipalities to adhere to the intent of the relevant permit approval requirements to the extent possible.

Approvals will be required from private entities. These include agreements to permit construction of the Project over a Trans-Northern Pipeline at Stanfield Road and across Canadian Pacific Railway tracks west of Cawthra Road. Notices or Permits may also be required from utilities and telecommunication providers include Enbridge Gas Pipelines, Alectra, Bell, Rogers and others pertaining to their respective distribution networks. Lastly, there are several timing windows that must receive attention. These include a period when breeding birds may be present in the spring and summer, and also when Species at Risk bats are active in the summer months.

ES 9. Future Studies

Air Quality

- Prior to commencement of construction, develop and implement a detailed Construction Air Quality Management Plan.
- Develop a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction.
- Develop and implement Weekly Air Quality Monitoring Reports.

Noise and Vibration

- The assessment of potential noise and vibration impacts was completed based on the 10% design of the planned Bus Rapid Transit corridor. Therefore, the assessment is recommended to be updated during detailed design to confirm the findings of this study since changes may occur design process. Further, it is recommended that an updated pre-construction vibration study and building inspections be completed for fragile or heritage buildings identified along the corridor.
- Prior to commencement of construction, develop and submit a detailed Construction Noise Management Plan.

- Develop and implement a detailed Construction Vibration Management Plan.

Built Heritage Resources and Cultural Heritage Landscapes

- Based on the preliminary impact assessment of the 10% Detailed Design, five properties (refer to Section 5.3.1 for more details) are anticipated to be directly impacted by the Project and Cultural Heritage Evaluation Reports are required to determine if the properties meet the criteria of Ontario Regulation 9/06 and Ontario Regulation 10/06 of the Ontario Heritage Act. Should the heritage evaluations conclude that any of the properties meet the criteria outlined in the regulations of the Ontario Heritage Act, a Heritage Impact Assessment should be carried out to assess the impacts of the proposed work on the identified heritage attributes of a resource.
- Based on the preliminary impact assessment of the 10% Detailed Design, 13 previously-identified built heritage resources and cultural heritage landscapes (refer to Section 5.3.1 for more details) are anticipated to be directly impacted by the Project and require Heritage Impact Assessments if they continue to be impacted by the Project in later design phases.
- During the 30% Detailed Design phase AECOM's qualified cultural heritage professional will confirm if there are any changes to impacts and will identify if additional studies and requirements are required.

Archaeology

- Prior to any ground disturbing activities, a Stage 2 Archaeological Assessment is recommended for all land identified as retaining archaeological potential.
- Develop and implement an Archaeological Risk Management Plan

Excavated Materials and Groundwater Management

- Develop a Soil and Excavated Materials Management Plan.
- Develop a Groundwater Management and Dewatering Plan to guide the handling, management, and disposal of groundwater encountered during the works.
- As project planning and design advance, recommendations for future work are included in a separate document. These recommendations will include impact assessment and will also include high-level soil and groundwater sampling strategies (e.g. based on known design details and/or acquisition requirements and focusing on risks identified in the Limited Phase I

Environmental Site Assessment), areas where soil and groundwater management plans should be completed, mitigation measures where the impact assessment identifies the Project to be a potential risk to environmentally sensitive receptors and/or where potential environmental contamination may be a potential risk to the Project.

Stormwater Management

- Prepare and implement a Drainage and Stormwater Report, an Erosion and Sediment Control Plan, detailed drainage design and erosion and sediment control drawings in accordance with the Ministry of the Environment, Conservation and Parks Stormwater Management Planning and Design Manual (2003).
- A detailed assessment of proposed ditches along the rail corridor is required to ensure adequate drainage conveyance in accordance with municipal requirements.
- A hydraulic assessment of each crossing and any proposed bridge expansions (replacements) is required to determine proposed flood levels and associated creek bed and bank treatments to prevent scour and erosion and facilitate fish passage. Where applicable, the regulatory model(s) will be obtained from the local Conservation Authority to assess the hydraulic impacts along regulated watercourses.
- Develop and implement a Spill Prevention and Response Plan.

Socio-Economic and Land Use

An access management plan will be developed and updated as needed by the constructor and operator prior to the commencement of construction. Access Management Plans are living documents that outline control measures that will be utilized during construction and operation of the Project to protect the public worker.

A Streetscaping and Urban Design Study is to be undertaken by AECOM during the 30% design stage and made under separate cover to further develop and build on streetscaping and urban design recommendations made in the Dundas Connects Master Plan and Vision Cooksville.

Environmental Mitigation and Monitoring Plan

The Environmental Mitigation and Monitoring Plan will be completed in Detailed Design by AECOM and will provide a summary of the mitigation measure required in

construction to effectively mitigate the Project's potential impacts and satisfy environmental legislation.

Tables E-1 and E-2 summarize the environmental concerns and mitigation measures and commitments to future work to be undertaken and confirmed during future phases of the Project.

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Table E-1: Summary of Environmental Concerns, Mitigation Measures and Commitments during Construction

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
<p>Aquatic Environment</p> <p>Aquatic Environments</p>	<ul style="list-style-type: none"> ■ Release of Sediment or other deleterious substances from the work zone and stabilization of riparian area during and after construction 	<ul style="list-style-type: none"> ■ When possible, schedule work to avoid wet and rainy periods that may increase the risk of erosion and sedimentation. ■ Plan access points to minimize the amount of riparian vegetation lost or disturbed. ■ Uncured concrete and other materials used for grouting culverts shall be prevented from entering water bodies using appropriate barriers and should be stored a minimum of 30 metres from watercourses. ■ Develop a spill response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance. All spills of deleterious substances (as defined by the Fisheries Act) must be reported to the Ontario Spill's Action Center (https://www.ontario.ca/page/report-pollution-and-spills) and the Department of Fisheries and Oceans (FisheriesProtection@dfo-mpo.gc.ca) if the spill results in <i>the Harmful Alteration, Damage or Destruction</i> to fish or fish habitat. An emergency spill kit shall be kept on-site at all times. ■ Erosion and sediment control measures shall be installed prior to starting work to prevent sediment from entering the watercourse and will be removed at the completion of construction as per Ontario Provincial Standards Specification 804 – Construction Specification for Temporary Erosion Control and Ontario Provincial Standards Specification 805 – Construction Specification for Temporary Sediment Control. ■ It is recommended that cover be utilized as per Ontario Provincial Standards Specification 804 - Construction Specifications for Temporary Erosion Control, as a part of the contract for areas where seeding is required. Recommended covers included in Ontario Provincial Standards Specification 804 –which should be considered for inclusion in the Contract Package include: <ul style="list-style-type: none"> – Straw mulch (where conditions permit); – Bonded Fibre Matrix or Fibre Reinforced Matrix (where conditions permit), and or erosion control blankets which are constructed of 100% biodegradable materials with non-plastic biodegradable mesh or sewn together with biodegradable thread; and – Fibre rolls which consist of an open—weave, biodegradable mesh or netting that securely contains the fibres (i.e., biodegradable material such as shredded straw, wood fibres or compost). ■ Alternatively, rock protection or rip-rap may also be used to stabilize highway embankments adjacent to the watercourse following completion of project works (anticipated to provide more rapid stabilization but little value to vegetation directly) as per Ontario Provincial Standards Specification 804 and Ontario Provincial Standards Specification 805. ■ All stockpiles of erodible construction materials and excess or surplus materials within 30 metres of a waterbody shall be protected from erosion within 48 hours of being built until they are required for construction or removed from the site as per Ontario Provincial Standards Specification 805 – Construction Specification for Temporary Sediment Control; 	<ul style="list-style-type: none"> ■ Erosion and sediment control measures shall be inspected for effectiveness regularly throughout construction and deficiencies corrected as per Ontario Provincial Standards Specification 804 – Construction Specification for Temporary Erosion Control and Ontario Provincial Standards Specification 805 – Construction Specification for Temporary Sediment Control; ■ The installation, monitoring, maintenance, and removal of temporary erosion and sediment control measures shall be according to Ontario Provincial Standards Specification 805 – Construction Specification for Temporary Sediment Control;

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ Where grubbing is required adjacent to a watercourse, temporary cover shall be applied prior to any forecasted precipitation and less than 48 hours after any grubbing as per Ontario Provincial Standards Specification 804 – Construction Specification for Temporary Erosion; ■ Temporary sediment control shall be removed, and associated excavations backfilled and compacted when the area being protected has been completely stabilized by final cover placement. When the final cover is vegetated, and placement could not be advanced to allow establishment and stabilization of the site prior to Contract Completion, temporary sediment control shall be left in place as per Ontario Provincial Standards Specification 805 – Construction Specification for Temporary Sediment Control; ■ Equipment shall not enter the watercourse as per Ontario Provincial Standards Specification 182 – General Specification for Environmental Protection for Construction in Waterbodies and on Waterbody Banks unless specified in the Contract Documents. All equipment shall be operated on or from dry land in a way that minimizes the disturbance of waterbody banks and riparian vegetation; ■ Ensure mobile industrial equipment is stored/fueled at least 30 metres away from the watercourse. In circumstances where it is not possible (e.g., non-mobile equipment), fueling and maintenance must be carried out in a controlled manner to prevent any discharge of equipment fuels and fluids onto the ground or into water bodies as per Ontario Provincial Standards Specification 182; and ■ Ensure machinery is not leaking fuels or lubricants as per Ontario Provincial Standards Specification 182. 	
<p>Wetlands and Waterbodies</p>	<ul style="list-style-type: none"> ■ Vegetation Removal and Site Rehabilitation - Removal or impacts to wetland, aquatic and riparian vegetation; erosion and sedimentation to wetlands/waterbodies from construction; risk of contamination to wetlands/waterbodies as a result of spills. 	<ul style="list-style-type: none"> ■ Construction activities will maintain the buffers established during the design phase to minimize potential negative impacts to wetlands and waterbodies. ■ Shorelines or banks disturbed by construction activities will be immediately stabilized by any activity associated with the project to prevent erosion and/or sedimentation, through re-vegetation with native species suitable for the site in adherence with the Metrolinx <i>Vegetation Guideline</i> (2020). ■ An Erosion and Sediment Control Plan, in accordance with the <i>Erosion and Sediment Control Guide for Urban Construction</i> (TRCA 2019), as amended from time to time, will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the wetland or waterbody. ■ A Spill Prevention and Response Plan will be developed before work commences and implemented during construction to ensure procedures and policies are in place during construction to minimize impacts to wetlands or waterbodies. ■ In wetland areas where vernal pooling occurs, prior to dewatering isolated work areas, wildlife will be captured and relocated to suitable habitat outside of the work area. ■ Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a License to Collect Fish for Scientific Purposes from the Ministry of Northern Development, Mines, Natural Resources and Forestry. 	<ul style="list-style-type: none"> ■ Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include alteration of activities to minimize impacts and enhance mitigation measures. ■ Equipment coming on-site shall be inspected as close to the site entrance as possible for debris, and if present debris shall be removed entirely and shall be collected and managed as specified prior to the equipment proceeding to the Working Area. ■ Equipment shall also be inspected for debris prior to leaving the Working Area. Any debris shall be removed and managed as specified and in a manner that prevents equipment from coming into further contact with standing, sprayed or cut invasive or noxious vegetation. ■ Vegetation re-seeding should be inspected during all applicable phases of the project, up to 2 years following project completion to ensure vegetation uptake. ■ Compensation trees should be inspected as per applicable tree bylaws enforced by the City of Mississauga, up to 2 years, following planting.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ Removal of riparian vegetation shall be in accordance with Ontario Provincial Standards Specification 182 and Ontario Provincial Standards Specification 804 – Construction Specifications for Seed and Cover; ■ Disturbance of riparian vegetation should be minimized; ■ Herbicides will not be used unless for the control of Invasive/Noxious plants. Herbicides shall not be sprayed where invasive or noxious vegetation is located in standing water. Locations to be sprayed with herbicide as specified in the Contract Drawings shall be visually inspected for the presence of standing water on a weekly basis and documented for the life of the Contract until or until the standing water is no longer present and herbicide spraying can commence; ■ Replace vegetative cover with topsoil and seed as per Ontario Provincial Standards Specification– 803 – Construction Specification for Vegetative Cover and Ontario Provincial Standards Specification 802 – Topsoil. ■ Though the Study Area is located within an urban area, several “natural” areas exist adjacent to the Study Area watercourses, and these areas provide direct groundwater discharge to the Study Area watercourses. As such, it is recommended that a seed mix comprised of primarily native species be utilized for all re-vegetation activities within the Study Area watercourses and riparian areas. ■ The Northern Ontario Mix, as per Ontario Provincial Standards Specification 803, offers similar qualities for re-establishment within a roadside environment (and reduced long-term maintenance). This mix contains mostly native species with some non-native legumes included to help with the establishment of the planting. ■ Alternatively though not specified in Ontario Provincial Standards Specification 803, a seed mix such as the Ontario Seed Company Rural Ontario Roadside Native Seed Mixture 8145 (https://www.oscseeds.com/product/rural-ontario-roadside-native-mixture-8145/) may also be utilized as this seed mix contains a variety of native plant species able to establish and grow within a roadside environment. ■ It is recommended that cover be utilized as a part of the Contract for areas where seeding is required, given the sensitivities associated with the Study Area wetlands in particular. Recommended covers included in Ontario Provincial Standards Specification 803 which should be considered for inclusion in the Contract Package include: <ul style="list-style-type: none"> – Straw mulch (where conditions permit); – Bonded Fiber Matrix or Fiber Reinforced Matrix (where conditions permit), and or – Erosion control blankets made of natural fiber (i.e., with no nylon or synthetic netting/materials, etc.). ■ If there is insufficient time in the growing season for the seed to sprout, the site shall be stabilized with temporary erosion and sediment control measures and seeded in the following spring. It is important to note that many of the seed mixes outlined above are best established through fall seeding to allow normal dormancy and then germination the following spring as these species are adapted to the Ontario environment; ■ Where clearing and grading is required within 30 metres of a watercourse a tree inventory should be completed prior to grading activities and any trees 	

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<p>removed be replaced in accordance with applicable tree compensation ratios to ensure function of riparian habitat remains. Native species should be selected which are tolerant of the urban environment to ensure function of the riparian area is maintained.</p> <ul style="list-style-type: none"> ■ Planting of native shrubs is also recommended within riparian areas disturbed during construction. Use of native shrubs may be appropriate for areas close to the traveled portion of Dundas Street (i.e., newly regraded embankment) as they will generally stay smaller to avoid conflicts with utilities etc. ■ Debris, including earth clods and invasive noxious vegetation material attached to the outside surfaces of the equipment, is prohibited from entering the Working Area. 	
Fish and Fish Habitat	<ul style="list-style-type: none"> ■ Potential for direct, in-water impacts to fish and fish habitat. 	<ul style="list-style-type: none"> ■ All requirements of the <i>Fisheries Act</i> and the <i>Endangered Species Act</i> will be met. ■ Pending confirmation from detailed design, in the event that in-water and/or near water construction works are required, the restricted construction activity timing windows and appropriate mitigation measures will be followed, as identified in Applicable Law and through consultation with the relevant authorities including the Conservation Authority, Ministry of the Environment, Conservation and Parks, Ministry of Northern Development, Mines, Natural Resources and Forestry and Fisheries and Oceans Canada. Inwater works will be planned to respect timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed. ■ Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a License to Collect Fish for Scientific Purposes from the Ministry of Northern Development, Mines, Natural Resources and Forestry. 	<ul style="list-style-type: none"> ■ Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
Terrestrial Environment			
Vegetation Removal and Compensation Plans	<ul style="list-style-type: none"> ■ Temporary vegetation disturbance and limited vegetation removal 	<ul style="list-style-type: none"> ■ Vegetation re-seeding with native vegetation, with specific emphasis on areas adjacent to Etobicoke and Little Etobicoke Creek. ■ Sediment and erosion control fencing. ■ It is recommended that any ditch line which is constructed that is not part of a watercourse (i.e., does not convey permanent flow) should be seeded with an appropriate moisture tolerating seed mix. It is important to note that none of the seed mixes included in OPSS 804 are suitable for re-seeding areas that are seasonally wet. Suitable seed mixes for this application include but are not limited to: <ul style="list-style-type: none"> ■ Seed mix containing 100% Canada bluejoint. Canada bluejoint (a native grass species) is well adapted for growth within the Dundas Street ROW in areas where moist soils are present. As a native moisture (able to grow in areas of seasonal standing water) and salt-tolerant species, Canada bluejoint has many growth properties similar to invasive phragmites and is often considered an aggressive spreading native species able to colonize sites quickly. This may also provide benefits to minimize the establishment and spread of invasive phragmites within the study area. These properties make it an ideal candidate for use within the ROW to re-seed ditch line areas following ditch cleanout or other activities which disrupt the exiting vegetation cover; 	<ul style="list-style-type: none"> ■ Vegetation re-seeding should be inspected during all applicable phases of the project, up to 2 years following project completion to ensure vegetation uptake. ■ Installation of sediment and erosion control fencing in areas requiring grading during construction. Sediment and erosion control fencing should be inspected weekly, or during precipitation events that are >10 mm.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ Creek Bank Native Seed Mixture (Wet Meadow Type) (https://www.oscseeds.com/product/bank-native-mixture-wet-meadow-type-8215/); ■ Standard OBL Wetland Native Seed Mixture (https://www.oscseeds.com/product/standard-obl-wetland-native-mix-8185/), or ■ Low Maintenance Retention Basin Native Seed Mixture 8220 (https://www.oscseeds.com/product/low-maintenance-retention-basin-native-mixture-8220/) 	
	<ul style="list-style-type: none"> ■ Tree / Vegetation removal, injury and protection. 	<ul style="list-style-type: none"> ■ If a tree requires removal or injury, compensation and permitting/approvals (as required) will be undertaken in accordance with Metrolinx's Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties (e.g., City of Mississauga's Public and Private Tree Bylaws (0254-2012)). ■ Pruning of branches will be conducted through the implementation of proper arboricultural techniques. ■ Tree Protection Zone fencing will be established to protect and prevent tree injuries in accordance with local by-law requirements. ■ Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx Vegetation Guideline (2020), will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections. ■ Compensation for tree removals will be undertaken in accordance with provisions outlined in the Metrolinx Vegetation Guideline (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties (e.g., City of Mississauga's Public and Private Tree Bylaws (0254-2012)). ■ Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and Species at Risk, and features, e.g., Designated Natural Areas and Significant Wildlife Habitat. 	<ul style="list-style-type: none"> ■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. ■ The success of vegetation compensation activities will be monitored in accordance with Metrolinx's Vegetation Guideline (2020). Outside of Metrolinx properties, compensation trees should be inspected as per applicable tree bylaws enforced by the City of Mississauga, up to 2 years, following planting. The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning. ■ Monitoring requirements will be undertaken in accordance with conditions of permits and approvals. ■ Monitoring and management of trees/vegetation within the corridor right-of-way will be undertaken in accordance with the Integrated Vegetation Management Program within the Metrolinx Vegetation Guideline (2020).
	<ul style="list-style-type: none"> ■ Disturbance, injury and/or removal of Species at Risk vegetation, including Butternut. 	<ul style="list-style-type: none"> ■ As part of the Arborist Report, all trees within or adjacent to the Project Study Area that will be removed or injured as part of the Project will be inventoried, including Butternut and any other Species at Risk vegetation. Species at Risk vegetation will be subject to permitting and approval requirements under Applicable Law, prior to the commencement of construction. ■ Each Butternut that may potentially be removed or impacted must be assessed by a qualified Butternut Health Assessor, in accordance with Ministry of Northern Development, Mines, Natural Resources and Forestry Butternut Assessment Guidelines (2014). The Assessor will prepare a Health Assessment Report for submission to Ministry of the Environment and Parks to determine the next course of action. 	<ul style="list-style-type: none"> ■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures.
<p>Integrated Vegetation Management</p>	<ul style="list-style-type: none"> ■ Footprint Impacts and potential for the establishment of invasive species and other incompatible species. 	<ul style="list-style-type: none"> ■ An Integrated Vegetation Management Plan will be developed and implemented that is in adherence with the Metrolinx Vegetation Guideline (2020) and the Integrated Vegetation Management Program. The Guideline's selection criteria will be used to assess the vegetation present as compatible or incompatible, and manage it, if necessary, in a way which 	<ul style="list-style-type: none"> ■ The presence, density, and location of compatible and incompatible species will be monitored as per the frequency and methodology established in the Bi-Annual Monitoring Program within the Metrolinx Vegetation Guideline (2020). The Bi-Annual Monitoring Program is made up of pre-treatment and post-

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
Tree Removal Strategy	<ul style="list-style-type: none"> Potential for the spread of emerald ash borer, <i>Agrilus planipennis</i> (Fairmaire) associated with removal, handling and transport of ash trees. 	<p>meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness.</p> <ul style="list-style-type: none"> Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the Emerald Ash Borer, <i>Agrilus planipennis</i> (Fairmaire) (2014), as amended from time to time. To comply with this Directive, all Ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada. Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites. 	<p>treatment monitoring events that will be carried out via field, aerial, and high-rail vehicle or train surveys conducted by qualified specialists.</p> <ul style="list-style-type: none"> On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
Tree Inventory			
Tree Protection	<ul style="list-style-type: none"> Impacts to trees (removal or injury) during construction 	<p>Tree Protection Fencing and Ground Compaction Mitigation</p> <ul style="list-style-type: none"> Tree protection fencing shall be installed around trees recommended for protection and retention, where retained trees are in close proximity to the Project Area (i.e., where a retained tree's tree protection zone is within the Study Area but is not touching or intersecting the Project Area), prior to the any work activities taking place within the Study Area. The tree protection fencing shall be installed in accordance with the City of Mississauga's and the City of Toronto's respective tree protection guidelines and standards. The tree protection fencing around the tree protection zone shall be installed with orange safety fencing and framed with lumber at 5 centimetres x 10 centimetres (2 inches x 4 inches) dimensions. Alternatively, steel T-bars can also be used to erect the orange safety fencing. All tree protection fencing shall remain in place prior to any construction activity and in good repair until construction is complete. It is recommended that tree protection zone signage be installed on the fence. Tree protection signage shall be installed by the contractor to clearly delineate tree protection zones. The sign shall be a minimum of 40 centimetres (15.75 inches) x 60 centimetres (23.5 inches), made of white gator board and outline the following: <ul style="list-style-type: none"> That no grade change, storage of materials or equipment is permitted within the tree protection zone; Contact information of the municipal forestry department; and The potential fine for contravention of disobeying by-laws in which the tree protection zone was installed. For any trees recommended for preservation there shall be no storage or movement of equipment or hoarding of materials within the tree protection zone. If work must be completed within the tree protection zone, 10 centimetres to 15 centimetres (4 inches to 6 inches) of mulch shall be spread over the area which is to be worked upon. Additionally, sheets of 2 centimetres (0.75 inches) thick plywood (minimum) or steel plating shall be applied on the mulch in order to help distribute the weight of the heavy equipment to avoid soil compaction. After construction, these measures shall be removed to allow proper aeration and water infiltration to the soil. This shall include removing the bulk of mulch so that only 5 centimetres to 10 	<ul style="list-style-type: none"> It is recommended that a Certified Arborist be retained to regularly monitor the Project's construction activities in order to ensure that all trees that are recommended for protection and retention are being maintained adequately, in relation to standard arboricultural practices and the aforementioned respective City protocols. Additionally, no grading, excavation or restoration-related activities are to occur within the tree protection zone of any protected or retained trees, if it cannot be avoided, without the supervision of a Certified Arborist. Should the limits of the proposed excavation areas change, a Certified Arborist will be retained to review trees with tree protection zones intersecting new excavation area limits in order to determine whether trees shall be recommended for removal, injury and protection or retention.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<p>centimetres (2 inches to 4 inches) remain. It is recommended that a Certified Arborist be on-site when work that could impact trees is required within the tree protection zone of trees identified for preservation.</p> <p>Vegetation Clearing and Management</p> <ul style="list-style-type: none"> ■ Vegetation removal, including tree removal will be limited to the specified activity areas and shall not commence until required permits and approvals are obtained. ■ Clearing of vegetation outside of the breeding bird season is recommended to reduce potential impacts to migratory birds and avoid contravention of the Migratory Birds Convention Act. ■ Searching for nests by a qualified biologist are not recommended within complex habitats, as the ability to detect nests is low while the risk of disturbance to active nests is high. This disturbance increases the risk of nest predation or abandonment by adults. ■ Nests searches may be completed during the nesting period (April 1st to August 31st) by a qualified biologist within 'simple habitats' (ECCC, 2018) which refer to habitats that contain few likely nesting spots or a small community of migratory birds. ■ Clearing in simple habitats during the nesting season can only occur if a qualified biologist has confirmed it would not affect the nest or young of a protected species. ■ Where works are proposed within a tree protection zone of a tree proposed for preservation, clearing of vegetation shall be performed manually to reduce soil compaction and mechanical damage to the tree. <p>Branch Pruning</p> <ul style="list-style-type: none"> ■ Where branches are likely to be damaged during construction, they shall be pruned accordingly, prior to construction activities, in order to avoid unnecessary damage to the tree. ■ Pruning should be completed in a three-step process: <ul style="list-style-type: none"> – The first step of this process is to cut through approximately one-third of the branch's diameter from the bottom side. – The second step of the process is to remove the majority of the branch and its lateral weight, through proceeding to make a cut on the top side, which is to be approximately half the diameter from the cut on the bottom side. This cut is to be made approximately 2.5 centimetres to 5 centimetres (1 inch to 2 inches) further out on the branch from the first cut in order to reduce the risk of tearing. – Once the weight (majority of the branch) has been removed, the final step of the process is to remove the remaining stub by completing the final cut at the branch bark ridge. This final cut must be a smooth surface with no jagged edges or torn bark. <p>Roots</p> <ul style="list-style-type: none"> ■ Root damage shall be minimized by restricting equipment in the vicinity of the existing tree protection zone and limiting equipment within the construction limits. This will help minimize damage if there is any excavation in the areas of a preserved tree. 	

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ It is critical to avoid damage to the structural root plate in order to prevent affecting tree stability and thus creating a hazard tree. In general, most of the fibrous roots of the tree are contained in the top 30 centimetres (11.75 inches) of the soil and may easily be severed during excavation, whilst structural roots are located deeper. ■ Hand digging, low pressure hydro-vac or air spade exploratory digging will aid in determining the damage of the tree root system. ■ All opportunities to avoid root and grade damage within the tree protection zone shall be taken – this shall include limiting machinery within the tree protection zone as much as possible and the employment of horizontal hoarding where work is proposed within the tree protection zone of a tree recommended for preservation. ■ Any roots that are severed during construction shall be cut cleanly to minimize decay and entry points for disease. If roots will be exposed for more than a few hours, mulch, wet burlap or soil shall be applied as soon as possible and watered regularly to prevent roots from drying-out, under the supervision of a Certified Arborist. <p>Excavation</p> <ul style="list-style-type: none"> ■ Methods of excavation within tree protection zone of trees proposed for protection or retention shall include those which cause the least harm to the tree, such as pneumatic or hydraulic excavation. These methods include tools which use high-pressure air or water to remove the soil around the roots without damaging the larger roots. ■ Fill within the tree protection zone shall not be permitted unless it is mitigated in a way that maintains air and water availability for roots. ■ All grade changes within and adjacent to tree protection zones shall be undertaken in accordance with the previously specified tree protection guidelines. ■ Access routes shall be established away from the tree protection zone. The existing grades within the tree protection zone shall not be disturbed to avoid damage to trees and soil compaction. 	
Species at Risk			
General	<ul style="list-style-type: none"> ■ Habitat loss, disturbance and/or mortality to Species at Risk. 	<ul style="list-style-type: none"> ■ All requirements of the <i>Endangered Species Act</i> and <i>Species at Risk Act</i> will be met. Species-specific mitigation measures will be implemented based on any recommended studies undertaken prior to construction, and in consultation with Ministry of the Environment, Conservation and Parks / Ministry of Northern Development, Mines, Natural Resources and Forestry. ■ If Species at Risk is present and conservation strategies have been developed by Ministry of Northern Development, Mines, Natural Resources and Forestry/ Ministry of the Environment, Conservation and Parks, the commitments in the recovery strategy will be followed. ■ On-site personnel will be provided with information (e.g., factsheets) that address the existence of potential Species at Risk onsite, the identification of the Species at Risk species and the procedure(s) to follow if an individual is encountered or injured. 	<ul style="list-style-type: none"> ■ Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. ■ Species-specific monitoring activities will be developed in accordance with any registration and/or permitting requirements under the <i>Endangered Species Act</i>.
Barn Swallow	<ul style="list-style-type: none"> ■ Potential nest destruction and/or harm. Habitat loss, disturbance and/or mortality to Barn Swallow. 	<ul style="list-style-type: none"> ■ Field surveys will be undertaken prior to construction to confirm the number of nests present at the known locations and whether the nests remain active. 	<ul style="list-style-type: none"> ■ Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ Where loss or disturbance cannot be avoided (e.g., due to work on bridges or banks), all requirements under the Endangered Species Act will be met, including any registration, compensation, replacement structures and/or permitting requirements. ■ If construction activities are scheduled during the nesting season for Barn Swallow (April 1st to August 31st), a nest search will be undertaken by a qualified biologist to confirm that no Barn Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting. ■ Bridge works should be completed outside of the bird breeding season (i.e. April 1 – August 31), if possible, to ensure incidental take or harm to Barn Swallows and their nests does not occur. ■ Mitigation and sustainability measures outlined in the Operational Guidance For Migratory Bird nests Under Bridges and in Culverts, 2018 prepared by the Transportation Association of Canada should be implemented during construction. 	<ul style="list-style-type: none"> include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the Ministry of the Environment, Conservation and Parks, if required. ■ Registration to the Ministry of the Environment, Conservation and Parks under Section 23.18: Threats to health and safety, not imminent of the Ontario Regulation (O. Reg.) 242/08 – General. ■ Registration to the Ministry of the Environment, Conservation and Parks requires the preparation of a Barn Swallow mitigation and restoration record, which includes habitat compensation (if nests are removed and/or destroyed) and monitoring. ■ Registration would also be required if Barn Swallows are identified as nesting within any other structure that requires disturbance as part of the project works (e.g., structural culverts etc.).
Chimney Swift	<ul style="list-style-type: none"> ■ Habitat loss, disturbance and/or mortality to Chimney Swift. 	<ul style="list-style-type: none"> ■ If repair, maintenance or demolition of buildings/structures with suitable roosting/nesting habitat (e.g., chimneys) is to take place, targeted surveys for Chimney Swift will be completed by a qualified avian biologist as per the Bird Studies Canada Chimney Swift Monitoring Protocol (2009). ■ Repair, maintenance, or demolition of an identified roosting/nesting structure may constitute destruction of critical habitat and would be discussed in advance with the Ministry of the Environment, Conservation and Parks and requirements of the <i>Endangered Species Act</i> will be met. ■ Register activities for Chimney Swift under the <i>Endangered Species Act</i> and consult with Ministry of the Environment, Conservation and Parks to fulfil requirements the <i>Endangered Species Act</i> and its associated regulations. 	<ul style="list-style-type: none"> ■ Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the Ministry of the Environment, Conservation and Parks, if required.
Species at Risk Bats	<ul style="list-style-type: none"> ■ Habitat loss, disturbance and/or mortality to Species at Risk Bats. 	<ul style="list-style-type: none"> ■ Disturbance to bat roosting habitat, with specific emphasis on the Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland Ecosite, will be avoided during the bat roosting period of April 1st to September 30th in accordance with Ministry of the Environment, Conservation and Parks requirements. 	<ul style="list-style-type: none"> ■ Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the Ministry of the Environment, Conservation and Parks, if required. ■ Should vegetation and tree removals occur within the active period for Species at Risk bats, discussion with the Ministry of the Environment, Conservation and Parks is required to ensure contravention of the <i>Endangered Species Act</i> does not occur.
Aquatic Species at Risk¹	<ul style="list-style-type: none"> ■ Habitat loss, disturbance and/or mortality to aquatic Species at Risk. 	<ul style="list-style-type: none"> ■ Specific mitigation measures identified through the Aquatic Habitat and Fish Community Assessment, and/or any other studies, will be implemented. ■ If aquatic Species at Risk is present, design and construction will occur in accordance with Ministry of the Environment, Conservation and Parks requirements. ■ Register activities that fall under the notice of activity for aquatic species for works within habitat of certain fish or mussels. 	<ul style="list-style-type: none"> ■ Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the Ministry of the Environment, Conservation and Parks, if required.
Species at Risk Snakes¹	<ul style="list-style-type: none"> ■ Habitat loss, disturbance and/or mortality to Species at Risk snakes. 	<ul style="list-style-type: none"> ■ Please refer to the “Wildlife” environmental component within this table for applicable general mitigation measures. 	<ul style="list-style-type: none"> ■ Onsite inspection will be undertaken to confirm the implementation of the mitigation measures and identify

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the Ministry of the Environment, Conservation and Parks, if required.			
Air Quality			
<p>Human Health and Wellbeing</p>	<ul style="list-style-type: none"> ■ Construction related air pollution may pose risks to human health and wellbeing 	<ul style="list-style-type: none"> ■ Prior to commencement of construction, develop and implement a detailed Construction Air Quality Management Plan. The Air Quality Management Plan will: <ul style="list-style-type: none"> – Demonstrate compliance with the specific air quality criteria and limits in the Metrolinx <i>Environmental Guide for Air Quality and Greenhouse Gas Emissions Assessment</i> (2019). – Define the Project’s air quality impact zone and identify all sensitive receptors within this area. – Assess the baseline air quality by continuous measurement of local ambient concentrations of PM_{2.5} and PM₁₀ over a minimum period of one week, where large local sources of pollution, such as highways, directly affect the zone of influence of the Project. – Estimate and document the predictable worst-case air quality impacts of the Project on sensitive receptors within the air quality impact zone, develop appropriate mitigation measures, demonstrate their effectiveness, and commit to their timely implementation. – Monitor continuously any contaminant, in addition to PM_{2.5} and PM₁₀, which is predicted to exceed its relevant air quality exposure criterion during any phase of the Project and at any receptor. – Include explicit commitment to the implementation of all applicable best practices identified in the Environment Canada document, <i>Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities</i> (2005). ■ Develop a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction. 	<ul style="list-style-type: none"> ■ Develop and implement Weekly Air Quality Monitoring Reports that document how air quality monitoring has been conducted and compliance assessed to effectively prevent unacceptable rates of air emissions in accordance with the following guidelines: <ul style="list-style-type: none"> – The construction related air contaminants of primary concern are in the form of particulate matter, with the principal construction related fractions of PM_{2.5} and PM₁₀ - particulate matter of less than 2.5 and 10 micron in diameter, respectively. Other contaminants of concern include crystalline silica and oxides of nitrogen. The list of contaminants will be expanded with any and all air pollutants that may be produced as a result of the work. – The criteria for PM_{2.5}, PM₁₀ and crystalline silica are provided in Metrolinx’s <i>Environmental Guide for Air Quality and Greenhouse Gas Emissions Assessment</i> (2019). The applicable criteria for all other air contaminants of concern are to be found in the various schedules of <i>Ontario Regulation 419/05</i>. ■ Siting of the monitors should generally follow the guidelines provided in the Ministry of the Environment, Conservation and Parks <i>Operations Manual for Air Quality Monitoring in Ontario</i> (2018).

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
<p>Increased Traffic Congestion and Construction Vehicular Emissions Fugitive Particulate Emissions</p>	<ul style="list-style-type: none"> ■ Increased NO₂, CO, SO₂, particulate, and VOC impact levels at nearby receptors from vehicular emissions. ■ Increased particulate emissions, including dust, from construction activities. 	<ul style="list-style-type: none"> ■ On-site construction vehicle activity shall be managed to control emissions of odorous contaminants and diesel exhaust, including benzene and benzo(a)pyrene emissions from exhaust, including benzene and benzo(a)pyrene emissions from exhaust. An Air Quality Management Plan will be developed to ensure consistent attention to mitigation of dust and particulates, including silica, from the construction site. The following mitigation measures should be considered in the Air Quality Management Plan: <ul style="list-style-type: none"> – All equipment complies with Canadian engine emissions standards. – All equipment visually inspected prior to use and properly maintained. – Implement a no idling policy on site (unless necessary for equipment operation). – Use of electricity from the grid over diesel generators wherever possible. – Retrofitting of combustion engines with specific exhaust emission control measures such as particulate traps. – If applicable, follow guidelines on hot mix asphalt outlined in the Ontario Hot Mix Producers Association’s Environmental Practices Guide: Ontario Hot Mix Asphalt Plants, Fifth Edition (Ontario Hot Mix Producers Association, 2015). ■ Applicable mitigation measures from Environment Canada’s Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005) and the Ministry of Environment, Conservation and Parks’ Technical Bulletin Management Approaches for Industrial Fugitive Dust Sources, shall be followed. The following mitigation measures should be considered in the Air Quality Management Plan: <ul style="list-style-type: none"> – Complete earthwork grading within 10 days of ceased active construction. – Temporary seeding or mulching of bare soil and storage piles. – Compression or clodding of soil surfaces and storage piles to reduce erosion. – Confine storage pile activity to downwind side of piles. – Reduction of activities during high wind conditions. – Full or partial enclosure of demolition activities. – Wind screens or barriers where possible or necessary. – Scheduling certain construction activities (i.e., site preparation and earth works activities, demolition activities, unpaved surfaces with heavy equipment travel, and uncovered soil storage piles) to periods of time when exposure to dust is expected to be limited (e.g., avoid scheduling activities during dry, windy weather conditions). – Landscaping materials ordered close to time of use to reduce on-site storage. – Application of soil stabilizers or dust control polymers where feasible. – Daily removal of accumulated mud, dirt and debris deposits on-site, and regular truck washing. – Paved and unpaved roadway cleaning, watering or application of a non-chloride dust suppressant. – Minimize drop height of materials on-site. – Covering surface area of hauled bulk material. – Methods and equipment for cleanup of accidental spill of dusty materials. – Limit travel speeds on-site to a maximum of 16-24 kilometres per hour. 	<ul style="list-style-type: none"> ■ The following monitoring activities should be considered in the development of the Air Quality Management Plan: <ul style="list-style-type: none"> – Baseline conditions should be established prior to construction for longer than one week to capture representative concentrations under varying meteorological conditions. – On-site meteorological monitoring in conjunction with real-time particulate monitoring representative of receptor impacts. – Place monitors both upwind and downwind of construction activities, where possible. – Application of threshold “Action Level” triggers for implementation of specific and increasing intensity mitigation activities linked to specific construction activities. – Reporting detailed results of ongoing monitoring and mitigation activities. – Monitoring at locations where there are persistent complaints, as required. ■ In addition, relevant construction monitoring activities from the following recommended guidelines will be implemented during construction: <ul style="list-style-type: none"> – Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities (Cheminfo Services Inc., 2005); and, – Operations Manual for Air Quality Monitoring in Ontario (Ministry of the Environment, Conservation and Parks, 2018).

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none">■ If disruption of contaminated soils is anticipated at any time, ensure that contaminants are not released.■ Develop a communications protocol which includes timely resolution of complaints.	

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Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
<p>Noise and Vibration</p> <p>Noise</p>	<ul style="list-style-type: none"> ■ Environmental noise may cause annoyance, disturb sleep and other activities, and affect human health. ■ The severity of the noise effects resulting from construction projects varies, depending on: <ul style="list-style-type: none"> – Scale, location and complexity of the project – Construction methods, processes and equipment deployed – Total duration of construction near sensitive noise receptors – Construction activity periods (days, hours, time period) – Number and proximity of noise-sensitive sites to construction area(s) 	<ul style="list-style-type: none"> ■ Prior to commencement of construction, develop and submit a detailed Construction Noise Management Plan. ■ The Construction Noise Management Plan shall: <ul style="list-style-type: none"> – Document and commit to all measures to be taken for meeting the noise exposure limits documented in the Metrolinx <i>Guide for Noise and Vibration Assessment (2020)</i> at every directly exposed sensitive receptor and throughout the entire project. – Determine the Zone of Influence for construction related noise based on the noise exposure limits outlined in the Metrolinx <i>Guide for Noise and Vibration Assessment (2020)</i> and taking into consideration the construction site, staging and laydown sites and hauling routes, each stage of the construction (including demolition), the overall construction schedule along with the schedule of each major component and associated major construction processes and equipment usage. – Identify all sensitive receptors that fall within the Zone of Influence for construction related noise. Mitigation measures will be proposed for these sensitive receptors, and the effects of the proposed mitigation measures will then be evaluated using noise modelling. If results of the modelling indicate that any sensitive receptors still remain within the Zone of Influence for construction related noise, then the following shall apply: <ul style="list-style-type: none"> ✓ Additional mitigation is proposed and subsequently modelled until the sensitive receptor does not fall within the Zone of Influence; or ✓ If mitigation strategies are not viable, receptor based mitigation will be proposed. ■ The Construction Noise Management Plan will include the temporary/permanent noise barriers indicated in the applicable noise and vibration construction impact assessment report (2020). Where additional work sites are identified which were not assessed as part of the applicable noise and vibration construction impact assessment report (2020), or where construction activities at any given site differ from those considered in this report, conduct modelling to evaluate the need for additional noise barriers as part of the Construction Noise Management Plan. ■ Replace standard vehicle backup alarms with broadband alarms ■ Inform local residents as practicable of construction activities identifying type of construction and duration ■ Use acoustic enclosures and mufflers for site power generators ■ Use activity or equipment specific noise barriers ■ Minimize simultaneous operation of equipment where possible ■ Implement no idling policy where practical ■ The replacement of tonal backup alarms for equipment to broadband type for all construction activities with the exception of culvert construction; and ■ Addition of 3.0 m high and 45 m long hoarding or barrier on the north side of Dundas for bridge construction located near Cawthra Road and Dundas Street. 	<ul style="list-style-type: none"> ■ Develop a Construction Noise Management Plan and incorporate the following requirements: <ul style="list-style-type: none"> ■ The Constructor will monitor noise where the management plan indicates that noise exposure limits may be exceeded. The Constructor will submit reports to the Contracting Authority describing the monitoring conducted and summarize the data collected for the reporting period. ■ The Constructor will make provision for monitoring for investigation of persistent complaints. ■ The Construction Noise Management Plan will incorporate the following requirements related to monitoring of noise and noise related complaints: <ul style="list-style-type: none"> ■ Monitor noise where the Construction Noise Management Plan indicates that noise exposure limits may be exceeded. At these locations, monitor noise continuously at each geographically distinct, active construction site with one monitor located strategically to capture the highest exposure level based on planned construction activities and the number, geographic distribution and proximity of noise sensitive receptors. Develop weekly reports describing the monitoring conducted and summarizing the data collected for the reporting period. The reports will include but not be limited to the number and duration of any incident during which any of the noise exposure limits documented in the Metrolinx <i>Guide for Noise and Vibration Assessment (2020)</i> were exceeded, the probable cause of each exceedance, the incident-specific measure(s) implemented, the resulting mitigated noise levels and the complaints investigation procedure. ■ Establish a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction. ■ The specifics of monitoring duration and location will depend on the activity location, type of activity, receptor location, etc. as per the Metrolinx Guide.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
<p>Vibration</p>	<ul style="list-style-type: none"> ■ Exposure to vibration may result in public annoyance and complaints. Vibration may also cause damage to buildings and other structures. 	<ul style="list-style-type: none"> ■ Adhere to the following vibration exposure limits: <ul style="list-style-type: none"> – Vibration, as a human irritant, is assessed in terms of its average level. Vibration velocity should not exceed 0.14 millimetres per second or current conditions (whichever is higher) by more than 25%. – As a threat to buildings, vibration is assessed in terms of its peak value. The Zone Of Influence for vibration shall be the area where structures are expected to experience vibration peak particle velocities that exceed 5 millimetres per second. Vibration velocity should be limited to 8 to 22 millimetres per second, depending on vibration frequency. These limits are prescribed by the most current versions of the Toronto Municipal Code Chapter 591, Noise (2020) and Chapter 363, Vibration (2019) for typical structures (not building with special needs). ■ Adhere to the ground-borne (vibration induced) noise exposure criteria in the US FTA Report No. 0123, Transit Noise and Vibration Impact Assessment Manual (2018). ■ Develop and implement a detailed Construction Vibration Management Plan for Metrolinx review and approval with minimum requirements outlined below: <ul style="list-style-type: none"> – Complete a detailed construction related vibration assessment prior to the commencement of construction that includes assessment of the vibration Zone Of Influence. The Zone Of Influence for vibration shall be established by using the methodology and input data provided in Section 7.2 of the US FTA Report No. 0123 (2018), Transit Noise and Vibration Impact Assessment Manual (2018). – Complete pre-construction condition surveys for properties within the vibration Zone Of Influence of the planned work to establish their condition and establish a baseline prior to any work beginning. – Identify any heritage structures and other sensitive structures, buildings or infrastructure vulnerable to vibration damage, assess requirements and, if necessary, develop mitigation measures. – Identify buildings, where vibration sensitive activities such as sound recording or medical image processing take place, assess requirements and, if necessary, develop mitigation measures. – Establish a 15-metre setback distance between the construction vibration source and nearby buildings, where possible, to minimize impacts. If this is not possible, then monitor the vibration levels associated with the activity. – Select construction/maintenance methods and equipment with the least vibration impacts. ■ In the presence of persistent complaints and subject to the results of a field investigation, identify alternative vibration control measures, where reasonably available. ■ Reduction in vehicle speed ■ Changes to operational sequencing ■ Changes to equipment layout or access routes ■ Utilize equipment with low vibration emissions where possible ■ Operate construction equipment on lower vibration settings where available ■ Maximize distance between equipment and Receptors where feasible 	<ul style="list-style-type: none"> ■ Develop a Construction Vibration Management Plan and incorporate the following requirements: ■ Pre-construction building inspections of the potentially impacted buildings adjacent to construction are to be undertaken. ■ The Constructor will monitor vibration where the management plan indicates that vibration limits may be exceeded. The Constructor will submit reports to the Contracting Authority describing the monitoring conducted and summarize the data collected for the reporting period. ■ The Constructor will make provision for monitoring for investigation of persistent complaints. ■ The Construction Vibration Management Plan will incorporate the following requirements related to monitoring of vibration and vibration related complaints: <ul style="list-style-type: none"> – Monitor vibration continuously at structures where the Construction Vibration Management Plan indicates that structures are deemed to be within the Zone Of Influence for construction related vibration or at additional structures as requested by Metrolinx/City of Mississauga. – The type of Vibration Monitoring Program that is established is based on the vibration Zone Of Influence, the project location, duration, presence of night-time activity, and receptor proximity. The monitoring types include: <ul style="list-style-type: none"> ✓ Type 1: Monitoring continuously throughout the project (for receptors within the Zone Of Influence). ✓ Type 2: Monitoring during most impactful phases of the project only (for receptors outside of the Zone Of Influence but within 50 metres of the boundary of the construction site). ✓ Type 3: Monitoring in response to complaints only (for receptors outside of the Zone Of Influence and beyond 50 metres of the boundary of the construction site). ■ Establish a Communications Protocol and a Complaints Protocol to respond to issues that develop during construction. ■ The specifics of monitoring duration and location will depend on the activity location, type of activity, receptor location, etc. as per the Metrolinx Guide.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ Review vibration assessment based upon refined site staging, construction areas, and equipment prior to the commencement of construction, and update if necessary 	
Socio-Economic and Land Use			
Land Use and Built Form Patterns	<ul style="list-style-type: none"> ■ Property: Temporary property effects, such as property takings for laydown areas, are unknown at this time and will be determined as design progresses ■ Nuisance effects from construction activities ■ Construction work may necessitate the temporary closure of driveways or building entrances; precise impacts are unknown at this time and will be determined as design progresses ■ Light trespass, glare and light pollution effects 	<ul style="list-style-type: none"> ■ Temporary property takings for construction of the Project will be confirmed as design progresses. Where property takings are identified, consultation and negotiation with the property owner will be initiated well in advance to secure the required property and identify site-specific mitigations. Where access to property is required, ongoing consultation with affected landowners will help identify appropriate site-specific mitigation measures. ■ Temporary property takings near residential and institutional uses should be avoided if possible. ■ The construction of the Project may cause private signs or billboards to be removed temporarily. The owner shall be consulted in advance to determine an appropriate mitigation approach. ■ Select staging/laydown areas in accordance with Metrolinx/City of Mississauga procedures. Staging/laydown areas should be located in areas that minimize adverse effects to sensitive receptors. ■ Mitigation measures related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration commitment tables. ■ An Erosion and Sediment Control Plan will be developed in accordance with the Greater Golden Horseshoe Area Conservation Authorities' Erosion and Sediment Control Guideline for Urban Construction (December, 2006), as amended from time to time, that addresses sediment release to adjacent properties and roadways. ■ Develop a Communications Protocol, which will indicate how and when surrounding property owners and tenants will be informed of anticipated upcoming construction works, including work at night, if any. ■ Develop a Complaints Protocol ■ Closures of driveways and building entrances shall be avoided whenever possible during construction and shall be kept to a minimum when required. ■ Provide well connected, clearly delineated, and appropriately signed walkways and cycling route options, with clearly marked detours where required. ■ Provide temporary lighting and wayfinding signs and cues for navigation around the construction site. ■ Access to businesses during working hours will be maintained, where feasible. Where regular access cannot be maintained, alternative access and signage will be provided. ■ Comply with all local applicable municipal by-laws and Ministry of Transportation practices for lighting in areas near or adjacent to highways and roadways regarding outdoor lighting for both permanent and temporary construction activities, and incorporate industry best practices provided in American National Standards Institute/Illuminating Engineering Society <i>RP-8-18 – Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting</i> 	<ul style="list-style-type: none"> ■ Follow Metrolinx/City of Mississauga guidance with respect to monitoring requirements at construction staging/laydown areas. ■ When applicable, monitoring related to potential nuisance effects are outlined in the Air Quality and Noise and Vibration commitment tables. ■ Erosion and sediment control monitoring to be conducted ■ Number and resolution of complaints received ■ Temporary access paths, walkways, cycling routes and fencing should be monitored. ■ Number and resolution of complaints received. ■ Construction activities will be monitored by a qualified Environmental Inspector to confirm that all activities are conducted in accordance with mitigation plans. ■ Number and resolution of complaints received.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ Light trespass, glare and pollution effects will be minimized through the implementation of best practices (i.e., full cut-off fixtures) to mitigate or avoid unnecessary and obtrusive light. ■ Perform the work in such a way that any adverse effects of construction lighting are controlled or mitigated in such a way as to avoid unnecessary and obtrusive light with respect to adjoining residents, communities and/or businesses. 	
	<ul style="list-style-type: none"> ■ Increased noise, dust and vibration emanating from construction work 	<ul style="list-style-type: none"> ■ Monitoring and mitigation of noise and vibration effects shall be undertaken as described in the Noise and Vibration Report, available under separate cover. 	<ul style="list-style-type: none"> ■ In accordance with the Noise and Vibration Report.
	<ul style="list-style-type: none"> ■ Businesses on the corridor may experience lower visitation volumes if the corridor is 	<ul style="list-style-type: none"> ■ The constructor is also encouraged to assist local businesses, such as by permitting businesses to advertise on construction enclosures (i.e., "We're still open!" signs) and coordinating the implementation of wayfinding/navigation with local businesses. 	<ul style="list-style-type: none"> ■ N/A
	<ul style="list-style-type: none"> ■ Streetscaping and Urban Design Study 	<ul style="list-style-type: none"> ■ A Streetscaping and Urban Design Study is to be undertaken by AECOM during the 30% design stage and made under separate cover to further develop and build on streetscaping and urban design recommendations made in the Dundas Connects Master Plan and Vision Cooksville. 	<ul style="list-style-type: none"> ■ N/A
<p>Visual Characteristics</p>	<ul style="list-style-type: none"> ■ Visual effects from construction areas/activities ■ Temporary degradation of aesthetic quality of the streetscape. ■ perceived to be difficult to access and navigate 	<ul style="list-style-type: none"> ■ To mitigate impact to the visual environment, screened enclosures should be considered as required, particularly for storage areas. Temporary landscaping may also be implemented, especially at the borders of the construction site between site fencing and walkways where space allows. Site enclosures should take into account wayfinding and safety considerations (particularly accidental egress onto a construction site). ■ A screened enclosure for the development site will be provided, with particular attention to the waste disposal and material storage areas. ■ Consideration will be given to providing temporary landscaping along the borders of the construction site between site fencing/enclosure and walkways, where space allows, and where necessary. 	<ul style="list-style-type: none"> ■ Construction activities will be monitored by a qualified Environmental Inspector to confirm that all activities are conducted in accordance with mitigation plans and within specified areas.
<p>Transit and Transportation Network</p>	<ul style="list-style-type: none"> ■ Construction may result in traffic flow reductions ■ Construction may result in the access restrictions to local bus routes and temporary disruptions 	<ul style="list-style-type: none"> ■ Avoid simultaneous major closures and construction activities at adjacent major intersections along the corridor. ■ Install and provide advance advisory signage, such as: <ul style="list-style-type: none"> – Installation of roadway closure information signs at least two weeks in advance of the closing; and – Distribution of notices to affected residents and business establishments to advise of the upcoming road closure(s) in their area. ■ Prepare and implement emergency response and incident management plans during construction to assist emergency service providers (i.e., Fire, Police and Ambulance) in responding to incidents and emergencies within the construction area (i.e., an incident causing closure of a crossing adjacent to the construction site where the Contractor is able to permit emergency service vehicles to cross the crossing location under construction). ■ Conduct pre-construction planning meetings with representatives of the City of Mississauga Fire, Police, and Ambulance providers, other relevant City of Mississauga and Peel Region divisions, and affected local transit authorities (e.g., MiWay); and ■ Prepare Traffic and Transit Management Plans and Traffic Control Plans for each construction stage. 	<ul style="list-style-type: none"> ■ Construction activities will be monitored by a qualified Inspector/Contract Administrator with extensive knowledge of Ontario Traffic Manual Book 7 (Temporary Conditions to confirm that all activities are conducted in accordance with mitigation plans. ■ Traffic impacts to be monitored in accordance with the Traffic and Transit Management Plans and adjust the Traffic Control Plans as necessary during the construction period. ■ Transit impacts to be monitored and mitigation measures to be adjusted as necessary during the construction period.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ The following will be done once a Contractor has been selected and a construction schedule developed: <ul style="list-style-type: none"> – Coordinate the work with other planned road projects that may impact construction, so construction may be staged to minimize traffic impacts. Prior to construction, local municipalities (i.e. Peel Region) will be consulted to coordinate with their Capital Works Programs; – Conduct a haul route analysis to confirm haul routes via public roads; – Maintain existing residential and commercial property access through the work zone to the extent practical or provide alternative temporary access or detour; and ■ Strive to accommodate local events and festivals by coordinating and consulting with local communities and event organizers to find mutually feasible options. 	
Public Transit	<ul style="list-style-type: none"> ■ Construction may result in access restrictions to local bus routes and temporary disruptions 	<ul style="list-style-type: none"> ■ Ensure that the public is notified in advance of any potential service disruptions. ■ Consult with local transit agencies to establish a suitable mitigation strategy to be implemented. 	<ul style="list-style-type: none"> ■ Traffic impacts to be monitored in accordance with the Construction Traffic Control and Management Plan and adjusted as necessary during the construction period.
Pedestrian and Cycling Network	<ul style="list-style-type: none"> ■ Bike lanes, multi-use paths and sidewalks may be temporarily restricted or eliminated ■ Temporary sidewalks/paths may have a rough or bumpy surface that creates discomfort for those with assisted mobility devices, strollers, etc. ■ Operation of construction equipment and large construction trucks in corridor may pose safety and comfort challenges for pedestrians and cyclists 	<ul style="list-style-type: none"> ■ Maintain pedestrian/cyclist access through the work zone whenever possible. ■ Where a sidewalk or path needs to be removed, provide a safe and accessible temporary path in accordance with the applicable municipal and/or provincial guidelines and standards. ■ Provide clear signage at decision points to pedestrians and cyclists informing of closures. For instance, a sidewalk closure should be indicated at an intersection and not mid-block. ■ Ensure detours can be observed through line of sight and provide adequate signage where not possible. ■ Develop a safety program that implements safety best practices in a construction zone and addresses pedestrian/cyclist movement through the corridor. 	<ul style="list-style-type: none"> ■ Temporary access paths, walkways, cycling routes and fencing should be monitored. ■ Cycling network impacts to be monitored in accordance with the Construction Traffic Control and Management Plan and mitigation adjusted as necessary during the construction period. ■ Construction activities will be monitored by a qualified Environmental Inspector to confirm that all activities are conducted in accordance with mitigation plans.
Community Amenities	<ul style="list-style-type: none"> ■ Noise, vibration and dust generated by construction activity ■ Temporary access restrictions, such as driveway, trail or entrance closures due to nearby construction 	<ul style="list-style-type: none"> ■ Construction noise is subject to the City of Mississauga Noise Control Bylaw. Where work is required outside of permitted times, an exemption shall be applied for in advance of this work. ■ Closures of driveways, trails and entrances shall be avoided whenever possible during construction and shall be kept to a minimum when required. Alternate means of access (ex. Temporary driveway) shall be provided where a driveway is temporarily removed. 	<ul style="list-style-type: none"> ■ Construction activities will be monitored by a qualified Environmental Inspector to confirm that all activities are conducted in accordance with mitigation plans. ■ Temporary access paths, walkways, cycling routes and fencing should be monitored.
Future Development	<ul style="list-style-type: none"> ■ Noise, vibration and dust generated by construction activity ■ Temporary access restrictions, such as driveways or sidewalk closures may also affect residents and visitors to the Study Area 	<ul style="list-style-type: none"> ■ Construction noise is subject to the City of Mississauga Noise Control Bylaw. Where work is required outside of permitted times, an exemption shall be applied for in advance of this work. ■ Best Management Practices regarding construction air quality will be implemented. ■ Closures of driveways, trails and entrances shall be avoided whenever possible during construction and shall be kept to a minimum when required. Alternate means of access (ex. Temporary driveway) shall be provided where a driveway is temporarily removed. 	<ul style="list-style-type: none"> ■ Construction activities will be monitored by a qualified Environmental Inspector to confirm that all activities are conducted in accordance with mitigation plans. ■ Temporary access paths, walkways, cycling routes and fencing should be monitored.
Utilities			

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
Utilities Planning and Construction	<ul style="list-style-type: none"> Utility serviceability effects due to design requirements and construction 	<ul style="list-style-type: none"> Develop and implement a detailed Utility Infrastructure Relocation Plan that identifies all utilities anticipated to be impacted by the construction works, all relevant utility agencies and authorities, and outlines the approach to the utility relocation process. Additional surveys shall be performed prior to construction to field locate and verify the existing utilities within the project area and document their condition. Perform all work identified in the Utility Infrastructure Relocation Plan to protect, support, safeguard, remove, and relocate all Utility Infrastructure. Obtain permits and consents from and with all Utility Companies with respect to the design, construction, installation, servicing, operation, repair, preservation, relocation, and or commissioning of Utility Infrastructure. 	<ul style="list-style-type: none"> Maintain regular communication and coordination through issuance of regular progress reports and updates to applicable utility agencies. Record all installation tolerances and how they are to be monitored. Perform inspection and testing to ensure successful utility relocation and safe and efficient installation. In the event of potential impacts to critical utilities, instrumentation and monitoring shall be carried out to protect the critical utilities and structures and reduce risks of damage due to construction activities.
Public Utilities	<ul style="list-style-type: none"> In general, existing public utilities are typically located at either side of the future guideway which is anticipated to significantly reduce the need for utility relocations during construction. Utility shut off is therefore mainly expected to be due to end-of-life or precautionary replacement undertaken as part of the Project. 	<ul style="list-style-type: none"> Effects of utility work on the community should be minimized through utility shut off best practices. These include minimizing the duration of shut offs, scheduling shut-offs during off-peak times (and avoiding early morning, evening, and weekend shut-offs whenever possible), and communicating shut-offs to affected residents and business in advance of the proposed shut-off. Special consideration should be given to the impact of shut-offs on sensitive locations such as schools, healthcare providers, and long-term care/seniors residences, and such locations should be identified early and engaged with in advance to minimize impacts to them. 	<ul style="list-style-type: none"> Construction activities will be monitored by a qualified Inspector to confirm that all activities are conducted in accordance with mitigation plans.
Private Utilities	<ul style="list-style-type: none"> In general, existing private utilities are typically located to either side of the future guideway which is anticipated to significantly reduce the need for utility relocations during construction. Utility shut off is therefore mainly expected to be due to end-of-life or precautionary replacement undertaken as part of the Project, or to install additional capacity at the request of a private utility service provider. 	<ul style="list-style-type: none"> Engagement with all private utility providers in the corridor should be undertaken early in and throughout the detailed design phase to ensure that their needs and requirements are taken into account in the project design. Private utility providers may wish to take advantage of construction to increase capacity in the corridor. Impacts of utility work on the community should be minimized through utility shut off best practices. These include minimizing the duration of shut offs, scheduling shut-offs during off-peak times (and avoiding early morning, evening, and weekend shut-offs whenever possible), and communicating shut-offs to affected residents and business in advance of the proposed shut-off. Special consideration should be given to the impact of shut-offs on sensitive locations such as schools, healthcare providers, and long-term care/seniors residences, and such locations should be identified early and engaged with in advance to minimize impacts on them. 	<ul style="list-style-type: none"> Construction activities will be monitored by a qualified Inspector to confirm that all activities are conducted in accordance with mitigation plans.
Utilities Post-Construction Phase	<ul style="list-style-type: none"> Future Utility Maintainability 	<ul style="list-style-type: none"> Where new utility crossings are proposed, application for a new utility crossing agreement will be required. Where modifications to an existing utility crossing takes place, updates to an existing utility crossing will be needed. Post- construction inspections of the new utility infrastructure shall be undertaken by qualified inspectors for applicable works upon completion of the construction works to document condition. Obtain as-built plans of the relocated infrastructure from utility agencies per as-built preparation standards Canadian Standards Association S250-11 – Mapping of Underground Utility Infrastructure (2011), as amended from time to time. 	<ul style="list-style-type: none"> Develop and implement tracking system for as-built deliverables.
Built Heritage Resources and Cultural Heritage Landscapes			
	<ul style="list-style-type: none"> Indirect or direct impacts to the heritage attribute(s) of a property of known or potential Cultural Heritage 	<ul style="list-style-type: none"> All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, 	<ul style="list-style-type: none"> Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
Built Heritage Resources and Cultural Heritage Landscapes	Value or Interest due to installation of new/modified infrastructure	<p>Tourism and Culture Industries <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&E) Process</i> (2014), the Ministry of Heritage, Sport, Tourism and Culture Industries guidance on <i>Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment</i> (2019) (Cultural Heritage Report), and the forthcoming <i>Standards and Guidelines for Provincial Heritage Properties: Metrolinx Identification and Evaluation (I&E) Process</i> (2020). In the event that the <i>Metrolinx I&E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013).</p> <ul style="list-style-type: none"> ■ Follow the process and recommendations outlined in the Environmental Project Reports under Transit Project Assessment Process for Proponents and their Consultants. ■ Follow the recommendations outlined in the heritage reporting completed including the Cultural Heritage Report, Cultural Heritage Evaluation Reports, and/or the Heritage Impact Assessment. ■ For known and potential properties of Cultural Heritage Value or Interest that will experience indirect or direct impacts and where no previous assessment has been completed or a Statement of Cultural Heritage Value has not been approved by Metrolinx, undertake a Cultural Heritage Evaluation Report as per the forthcoming <i>Metrolinx I&E Process</i> (2020). In the event that the <i>Metrolinx I&E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013). ■ Given the importance and location of some Cultural Heritage Resources, consultation with Municipal heritage staff and other jurisdictions will be undertaken as appropriate to determine if proposed infrastructure will be subject to specific policies within heritage districts or conservation areas (including parks). 	Resources/properties as per previously completed Metrolinx and/or City of Mississauga Environmental Project Reports and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, Cultural Heritage Evaluation Reports, Heritage Impact Assessments.
	<ul style="list-style-type: none"> ■ Direct impacts to the heritage attribute(s) of a known or potential Provincial Heritage Property or Provincial Heritage Properties of Provincial Significance due to installation of new/modified infrastructure 	<ul style="list-style-type: none"> ■ Where no previous assessment has been completed or a Statement of Cultural Heritage Value has not been approved by Metrolinx, undertake a Cultural Heritage Evaluation Report as per the forthcoming <i>Metrolinx I&E Process</i> (2020). In the event that the <i>Metrolinx I&E Process</i> (2020) is not approved, follow the <i>Metrolinx Interim Cultural Heritage Management Process</i> (2013). ■ If warranted, complete a Heritage Impact Assessment in accordance with Ministry of Heritage, Sport, Tourism and Culture Industries <i>Information Bulletin No. 3: Heritage Impact Assessments for Provincial Heritage Properties</i> (2017) to identify alternatives and mitigation and monitoring commitments to avoid or lessen impacts on the Cultural Heritage Value and heritage attributes of the Provincial Heritage Property, based on the Provincial Heritage Property's Statement of Cultural Heritage Value. Mitigation measures and alternatives should be consistent with the relevant conservation strategies established and adopted in a Strategic Conservation Plan. A Strategic Conservation Plan will be prepared and implemented for Provincial Heritage Properties and Provincial Heritage Properties of Provincial Significance. ■ Approval will be obtained from the Ministry of Heritage, Sport, Tourism and Culture Industries, for any modifications to Provincially Significant properties prior to construction. 	<ul style="list-style-type: none"> ■ Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or City of Mississauga Environmental Project Reports and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, Cultural Heritage Evaluation Reports, Heritage Impact Assessments.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ During design, the recommendations of all Heritage Impact Assessments and Cultural Heritage Reports will be followed and adhered to during design and construction, including but not limited to strategies to protect heritage attributes. ■ If the project study limits change or there is a change in impact that is not captured or documented in previously completed Metrolinx and/or City of Mississauga EPRs and/or ESRs post EA/ Transit Project Assessment Process, and which causes any additional heritage properties to be impacted by the proposed design/infrastructure, all applicable legislation will be followed to carry out additional impact assessment work and heritage studies to identify any known or potential built heritage resources and cultural heritage landscapes, and to identify potential impacts and appropriate mitigation measures. ■ Given the importance and location of some Cultural Heritage Resources, consultation with Municipal heritage staff and other jurisdictions will be undertaken as appropriate to determine if proposed infrastructure will be subject to specific policies within heritage districts or conservation areas (including parks). 	
	<ul style="list-style-type: none"> ■ Potential indirect impacts on known or potential properties of Cultural Heritage Value or Interest resulting from construction activities 	<ul style="list-style-type: none"> ■ Selection of construction staging and laydown areas will follow Metrolinx/City of Mississauga's selection procedures which include avoiding heritage attributes wherever possible or effectively mitigating impacts where not possible. 	<ul style="list-style-type: none"> ■ Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or City of Mississauga Environmental Project Reports and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, Cultural Heritage Evaluation Reports, Heritage Impact Assessments.
	<ul style="list-style-type: none"> ■ For any additional potentially affected Cultural Heritage Resources/properties not previously identified within a previous Metrolinx and/or City of Mississauga Environmental Assessment / Transit Project Assessment Process /Other Study 	<ul style="list-style-type: none"> ■ If the project study limits change or there is a change in impact that is not captured or documented in previously completed Metrolinx and/or City of Mississauga Environmental Project Reports and/or Environmental Study Reports post EA/ Transit Project Assessment Process, and which causes any additional heritage properties to be impacted by the proposed design/infrastructure, all applicable legislation will be followed to carry out additional impact assessment work and heritage studies to identify any known or potential built heritage resources and cultural heritage landscapes, and to identify potential impacts and appropriate mitigation measures. 	<ul style="list-style-type: none"> ■ Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per the recommendations contained in any/all of the following documents: Cultural Heritage Reports, CHARs, Cultural Heritage Evaluation Reports, Heritage Impact Assessment.
	<ul style="list-style-type: none"> ■ Management of Cultural Heritage Resources/Properties 	<ul style="list-style-type: none"> ■ Develop and implement a Strategic Conservation Plan that addresses built heritage resources and cultural heritage landscapes according to Ministry of Heritage, Sport, Tourism and Culture Industries <i>Information Bulletin No. 2: Preparing Strategic Conservation Plans for Provincial Heritage Properties</i> (2017) and as outlined in the Project Agreement. ■ For Provincial Heritage Properties of Provincial Significance, approval of the Minister's Consent Package and Strategic Conservation Plans by Ministry of Heritage, Sport, Tourism and Culture Industries is required. 	<ul style="list-style-type: none"> ■ Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or City of Mississauga Environmental Project Reports and the recommendations contained in any/all of the following documents: Cultural Heritage Reports, Cultural Heritage Evaluation Reports, Heritage Impact Assessments and Strategic Conservation Plans.
	<ul style="list-style-type: none"> ■ Demolition, removal, or relocation of a Metrolinx Provincial Heritage Properties of Provincial Significance (part or whole) 	<ul style="list-style-type: none"> ■ In the case of properties identified as Provincial Heritage Properties of Provincial Significance and where the proposed project infrastructure will require demolition or removal and/or transfer out of provincial control, Metrolinx will need to obtain Ministry of Heritage, Sport, Tourism and Culture Industries Minister's consent. 	<ul style="list-style-type: none"> ■ Implement and comply with monitoring requirements and commitments pertaining to Cultural Heritage Resources/properties as per previously completed Metrolinx and/or City of Mississauga Environmental Project Reports and the recommendations contained in any/all of the following documents: Cultural Heritage

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ The Minister's Consent Package will be prepared which meets Ministry of Heritage, Sport, Tourism and Culture Industries requirements and satisfy Metrolinx's obligations under the <i>Ontario Heritage Act</i>. 	Reports, Cultural Heritage Evaluation Reports, Heritage Impact Assessments.
	<ul style="list-style-type: none"> ■ Indirect Impacts to Cultural Heritage Plaques 	<ul style="list-style-type: none"> ■ If avoidance of cultural heritage plaque locations (CHL 2A, CHL 2B, BHR 16) within the Project Area is not feasible or is directly adjacent to construction activities then: <ul style="list-style-type: none"> ■ Incorporate the location on design drawings and indicate that the plaque is to be protected during construction: ■ Mark the plaque on the Detailed Design as "To be retained: Implement protection measures prior to construction" or if applicable, mark on Detailed Design as "To be retained, stored and reinstated post-construction" ■ Apply the following steps to the project construction plan: <ul style="list-style-type: none"> ■ Install plaque protection (i.e. fence hoarding), prior to construction or store during construction. ■ If applicable, during construction, monitor the protection of the plaque. Post construction remove hoarding and confirm the condition of the plaque is as was prior to construction. 	<ul style="list-style-type: none"> ■ N/A
	<ul style="list-style-type: none"> ■ Vibration Impact 	<ul style="list-style-type: none"> ■ Prior to construction, determine which built heritage resource or cultural heritage landscape documented in this Cultural Heritage Report requires vibration mitigation and monitoring. ■ Document (review and establish) the structural condition of a building to determine if it is vulnerable to vibration impacts from the Project. ■ Establish vibration limits based on structural conditions, founding soil conditions and type of construction vibration (refer to the Noise and Vibration report). ■ Implement vibration mitigating measures on the construction site and/or at the building (i.e. modify construction procedures, if required). 	<ul style="list-style-type: none"> ■ Construction and post-construction monitoring may be required for historic buildings that were determined subject to vibration damage. The following monitoring activities are recommended for vibration impacts: <ul style="list-style-type: none"> ○ Monitor vibration during construction using seismographs, with notification by audible and/or visual alarms when limits are approached or exceeded; and ○ Conduct regular condition surveys and reviews during construction to evaluate efficacy of protective measures. Implement additional mitigation as required.
	<ul style="list-style-type: none"> ■ Construction Activities 	<ul style="list-style-type: none"> ■ Construction activities and staging areas should be suitably planned in detailed design to avoid any adverse impacts to the identified known, previously identified and potential built heritage resources and cultural heritage landscapes. ■ Where required, request Minister's Consent as part of the detailed design phase, as required for demolition or relocation, for properties that were determined in the Cultural Heritage Report (found in Appendix D) to potentially to meet Ontario Regulation 10/06 and have the potential to be directly impacted by the Project. 	<ul style="list-style-type: none"> ■ N/A
Archaeology			
Archaeological Resources	<ul style="list-style-type: none"> ■ Potential for the disturbance of unassessed or documented archaeological resources 	<ul style="list-style-type: none"> ■ Develop and implement an Archaeological Risk Management Plan that addresses any recommendations resulting from Archaeological Assessments and documents all protocols for the discovery of human remains and undocumented archaeological resources. The Archaeological Risk Management Plan shall be amended to incorporate any additional actions required resulting from subsequent Archaeological Assessment Reports. ■ All work shall be performed in accordance with Applicable Law, including but not limited to the <i>Ontario Heritage Act</i>, the Ministry of Heritage, Sport, Tourism and Culture Industries, formerly the Ministry of Tourism, Culture and 	<ul style="list-style-type: none"> ■ Performance of the work will occur within land previously subject to an Archaeological Assessment. ■ Any site personnel responsible for carrying out or overseeing land-disturbing activities will be informed of their responsibilities in the event that an archaeological resource is encountered. ■ Further Archaeological Assessment may identify the need for monitoring during construction.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<p>Sport (MTCS) <i>Standards and Guidelines for Consultant Archaeologists</i> (2011), and the Ministry of Heritage, Sport, Tourism and Culture Industries document, <i>Engaging Aboriginal Communities in Archaeology: A Draft Bulletin for Consultant Archaeologists in Ontario</i> (2011).</p> <ul style="list-style-type: none"> ■ In the event that archaeological resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the Ministry of Heritage, Sport, Tourism and Culture Industries. A professionally licensed archaeologist will be consulted to complete the assessment. If resources are confirmed to possess cultural heritage value/interest then they will be reported to the Ministry of Heritage, Sport, Tourism and Culture Industries, and further Archaeological Assessment of the resources may be required. If it is determined that there is a potential for Indigenous artifacts, Metrolinx/City of Mississauga should be contacted, and Applicable Law will be followed. ■ If final limits of the Project footprint are altered and fall outside of the assessed Study Area, additional Archaeological Assessments will be conducted by a professionally licensed archaeologist prior to disturbance and prior to construction activities. This will include completing all required Archaeological Assessments resulting from the Stage 1 Archaeological Assessment (Stage 2, Stage 3 and Stage 4, as required) as early as possible, prior to the completion of design, and in advance of any ground disturbance. ■ For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional Archaeological Assessment will be conducted by a professionally licensed archaeologist prior to disturbance. ■ If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the Ministry of Heritage, Sport, Tourism and Culture Industries will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the <i>Ontario Heritage Act</i>. If the human remains are determined to be of Indigenous origin, Metrolinx/City of Mississauga should be contacted and all Applicable Law must be adhered to. ■ All Archaeological Assessment findings will be shared with Indigenous communities, as per Metrolinx's <i>Guide to Engaging with Indigenous Communities</i> (2020). 	
<p>Area of Archaeological Potential</p>	<ul style="list-style-type: none"> ■ Ground disturbing activities 	<ul style="list-style-type: none"> ■ A Stage 2 Archaeological Assessment is recommended for all land identified as retaining archaeological potential. ■ The Stage 2 Archaeological Assessment for areas retaining archaeological potential must be conducted by a licensed archaeologist and must follow the requirements set out in the <i>Standards and Guidelines for Consultant Archaeologists</i> (Government of Ontario, 2011), including: 	<ul style="list-style-type: none"> ■ Prior to any ground disturbing activities, the Stage 2 Archaeological Assessment must be completed in areas identified as retaining archaeological potential as outlined in the Stage 1 archaeological assessment. Should Indigenous Nations express interest in participating in the Stage 2 archaeological assessment, an invitation should be extended by the proponent for

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> – The standard test pit survey method at 5 metre (m) intervals is to be conducted in all areas that will be impacted by the project where ploughing is not feasible (e.g. woodlots, overgrown areas, manicured lawns); and ■ Poorly drained areas, areas of steep slope, and areas of confirmed previous disturbance (e.g. building footprints, roadways, areas with identifiable underground infrastructure) identified during the Stage 2 assessment are to be mapped and photo-documented but are not recommended for Stage 2 survey as they possess low to no archaeological potential (Section 2.1, Standard 2a and 2b). 	representatives of the Indigenous Nations to join the archaeological team during fieldwork. Additionally, the Stage 2 report should be made available to the Indigenous Nations for review prior to submission of the report to the Ministry of Heritage, Sport, Tourism and Culture Industries.
	<ul style="list-style-type: none"> ■ Potential to impact cemetery located in proximity to the Project footprint. 	<ul style="list-style-type: none"> ■ Work in proximity to known cemeteries requires completion of an Archaeological Assessment prior to any proposed ground disturbance in accordance with the Ministry of Heritage, Sport, Tourism and Culture Industries' <i>Standards and Guidelines for Consultant Archaeologists</i> (2011) and the <i>Funeral, Burial, and Cremation Services Act</i> and regulations under that Act. 	<ul style="list-style-type: none"> ■ Further Archaeological Assessment may identify the need for monitoring during construction.
St. John's Dixie Cemetery & Crematorium/Dixie Union Cemetery)	<ul style="list-style-type: none"> ■ Ground disturbing activities 	<ul style="list-style-type: none"> ■ A cemetery investigation may be required should impacts be proposed on the property within the marked cemetery limits. ■ Consultation with the Bereavement Authority of Ontario as outlined below will be required prior to any work within the cemetery limits. 	<ul style="list-style-type: none"> ■ N/A
Dundas-Dixie Cemetery	<ul style="list-style-type: none"> ■ Ground disturbing activities 	<ul style="list-style-type: none"> ■ Should any development impacts to the property outside of the right-of-way be proposed as part of the Project, additional Stage 2 assessment for deeply buried archaeological materials following Section 2.1.7 of the Standards and Guidelines for Consultant Archaeologists will be undertaken. 	<ul style="list-style-type: none"> ■ N/A
Human Remains	<ul style="list-style-type: none"> ■ Ground disturbing activities 	<ul style="list-style-type: none"> ■ If human remains are encountered during construction, work must cease immediately and the police or Regional Coroner should be contacted, in addition to the Registrar of the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services and the Bereavement Authority of Ontario 	<ul style="list-style-type: none"> ■ N/A
Structural Remains	<ul style="list-style-type: none"> ■ Ground disturbing activities 	<ul style="list-style-type: none"> ■ If historic structural remains are uncovered, a licensed archaeologist should be contacted to examine the find and determine if any documentation is required prior to its removal. 	<ul style="list-style-type: none"> ■ If historic structural remains are uncovered during construction, a licensed archaeologist should be contacted to examine the find and determine if any documentation is required prior to its removal.
Excavated Materials and Groundwater Management			
Excavated Materials	<ul style="list-style-type: none"> ■ Construction operations could expose contaminated materials and/or result in the spreading of contaminated materials 	<ul style="list-style-type: none"> ■ Develop a Soil and Excavated Materials Management Plan for the handling, management and disposal of all excavated material (i.e. soil, rock and waste) that is generated or encountered during the work. The plan will be overseen by a Qualified Person pursuant to Ontario Regulation 153/04 under the Environmental Protection Act (QP) and will comply with Ontario Regulation 406/19 (On-Site and Excess Soil Management – to be enacted into law on July 1, 2020), the Ministry of the Environment, Conservation and Parks, formerly the Ministry of the Environment and Climate Change (MOECC)'s Management of Excess Soils: A Guide for Best Management Practices (April 2019, as amended) and all Applicable Law. The plan will describe how to address the management of the excavated materials, imported materials, contaminated materials, and impacted railway ties, including handling, transportation, testing, documentation and reuse and disposal of excavated materials generated as part of the works and in accordance with applicable regulatory requirements. 	<ul style="list-style-type: none"> ■ A Soil and Excavated Material Monthly Dashboard Report will be developed by the Constructor for review that includes monitoring and performance data related to the management of excavated materials for the preceding month. ■ Upon completion of the work, the Constructor will submit a Soil and Excavated Material Management Implementation Report.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ Non-soil materials, encountered during the earthworks will also require waste classification as documented by testing where applicable to determine management and disposal requirements as per Ontario Regulation 347 (as amended) and all Applicable Law. ■ The Soil and Excavated Materials Management Plan will be reviewed and approved prior to construction. 	
<p>Groundwater</p>	<ul style="list-style-type: none"> ■ Construction operations could expose groundwater and associated contamination 	<ul style="list-style-type: none"> ■ Develop a Groundwater Management and Dewatering Plan to guide the handling, management, and disposal of groundwater encountered during the works. The Groundwater Management and Dewatering Plan will be overseen by a QP and will comply with Ontario Regulations 406/19 (On-Site and Excess Soil Management – to be enacted into law on July 1, 2020), 64/16 and 387/04, as amended under the Ontario Water Resources Act. ■ The Groundwater Management and Dewatering Plan will describe the handling, transfer, testing, monitoring, disposal of groundwater generated as part of the works and in accordance with applicable regulatory requirements. The Groundwater Management and Dewatering Plan will outline general groundwater monitoring considerations during the works and provide guidance for groundwater monitoring following the works where considered applicable. ■ The Groundwater Management and Dewatering Plan will describe the anticipated groundwater quantity and dewatering Zone of Influence that will be encountered during the works, and if approvals are needed for the water taking, such as a Permit to Take Water (PTTW) or an Environmental Activity Sector Registry (EASR) from the Ministry of the Environment, Conservation and Parks. ■ The Groundwater Management and Dewatering Plan will describe the storage, transfer, and disposal and or treatment of the groundwater collected during the works, and approvals for the water disposal, and/or treatment if applicable, based on the quantity and quality. ■ The Groundwater Management and Dewatering Plan will be reviewed and approved prior to construction. 	<ul style="list-style-type: none"> ■ A Groundwater Management Monthly Dashboard Report will be developed by the Constructor for review to document performance monitoring data/results and any corrective actions implemented during the previous month. ■ Upon completion of the work, the Constructor will submit a Groundwater Management and Dewatering Implementation Report.
<p>Stormwater Management</p>			
<p>Potential Impacts and Proposed Mitigation Measures for Stormwater and Site Drainage</p>	<ul style="list-style-type: none"> ■ The proposed construction activities pose a potential impact due to sediment transport into adjacent natural areas including watercourses, wetlands and municipal drainage infrastructure. ■ The proposed works may result in increases to impervious areas, with potential effects to water quantity and quality. ■ In addition to the increases in impervious coverage, there may be alterations to the local drainage system, both overland (major drainage system) and storm sewers (minor drainage system). 	<ul style="list-style-type: none"> ■ Prepare and implement a Drainage and Stormwater Report, an Erosion and Sediment Control Plan, detailed drainage design and erosion and sediment control drawings in accordance with the Ministry of the Environment, Conservation and Parks Stormwater Management Planning and Design Manual (2003), the Greater Golden Horseshoe's Erosion and Sediment Control Guideline for Urban Construction (December, 2006), as amended from time to time, and the guidelines and regulatory requirements of the Conservation Authority having jurisdiction. ■ The overall stormwater quality and quantity control strategy will be developed in accordance with all relevant municipal, provincial and federal requirements, as amended, as well as the requirements of Conservation Authorities having jurisdiction. ■ A detailed assessment of proposed ditches along the rail corridor is required to ensure adequate drainage conveyance in accordance with municipal requirements. ■ Infiltration requirements for municipalities will be determined as per the design guidelines and standards. 	<ul style="list-style-type: none"> ■ Turbidity levels within discharges from sites to be monitored visually. Turbidity levels will be monitored upstream and downstream of sites at watercourse crossings or adjacent to watercourses. Turbidity levels within discharges from sites and within receiving storm sewers will also be monitored visually to determine potential impacts from construction. ■ Obtain samples for existing watercourses and/or wetlands, when runoff from the site discharges to a watercourse and/or wetland will be conducted for pre-construction, during construction, and post construction conditions until the site is considered stabilized. Obtain samples for watercourses and wetlands will be taken for non-precipitation event and for precipitation events to obtain a reasonable understanding of the turbidity levels. Post-construction monitoring of wetland areas may be required depending on input from Conservation Authorities.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
		<ul style="list-style-type: none"> ■ Any proposed bridge expansions and culvert replacements will be sized to maintain or improve local flood levels and supported by hydrologic/hydraulic calculations and/or models. Creek bed and banks design will include geomorphological input for scour and erosion prevention, and creation of appropriate fish habitat. ■ A hydraulic assessment of each crossing and any proposed bridge expansions (replacements) is required to determine proposed flood levels and associated creek bed and bank treatments to prevent scour and erosion and facilitate fish passage. Where applicable, the regulatory model(s) will be obtained from the local Conservation Authority to assess the hydraulic impacts along regulated watercourses. ■ Develop and implement a Spill Prevention and Response Plan 	<ul style="list-style-type: none"> ■ Monitoring will be conducted for potential oil spills and containment of spills to be conducted as per provincial requirements. ■ Functionality of stormwater quantity controls including peak flows and water levels for storm events within the design range. Monitoring would require local rainfall data. ■ Infiltration targets, measured by flow monitoring on infiltrative Low Impact Development (LID) Best Management Practices (BMPs). ■ Stormwater quality measures will be assessed to provide a minimum 80% Total Suspended Solids (TSS) removal as per the Ministry of the Environment, Conservation and Parks Stormwater Management Planning and Design Manual (2003).
Environmental Mitigation and Monitoring Plan			
General and Project Specific Environmental Protection Measures	<ul style="list-style-type: none"> ■ Avoid and/or Minimize Construction Impact 	<ul style="list-style-type: none"> ■ The Environmental Mitigation and Monitoring Plan will be completed in Detailed Design by AECOM and will provide a summary of the mitigation measure required in construction to effectively mitigate the Project's potential impacts and satisfy environmental legislation. 	<ul style="list-style-type: none"> ■ N/A

*Notes: Regulations, standards and guidance documents referenced herein are current as of the time of writing and may be amended from time to time. If clarification is required regarding regulatory requirements, consult with the appropriate regulatory agencies.

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Table E-2: Summary of Environmental Concerns, Mitigation Measures and Commitments during Operation

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
Air Quality			
Operating Conditions: Increased Traffic Vehicular Emissions	<ul style="list-style-type: none"> Increased NO₂, CO, SO₂, particulate, and VOC impact levels at nearby receptors. 	<ul style="list-style-type: none"> Continued promotion of increased electric vehicle purchase and infrastructure within Ontario. Implementation of vegetation within the Project Study Area to decrease ground level dispersion of particulates. 	<ul style="list-style-type: none"> No other specific monitoring implementation recommended at this time.
Noise			
Operational Noise	<ul style="list-style-type: none"> Noise impact during operation to nearby noise sensitive receptors 	<ul style="list-style-type: none"> In accordance with the Metrolinx Guide, noise attenuation barriers up to 5 metre in height may be considered. Based on the Mississauga Policy No. 09-03-03, barriers should span a complete block to ensure their effectiveness. 	<ul style="list-style-type: none"> Complete regular or routine maintenance on fleet vehicles to reduce the potential for undesired sound characteristics (e.g., tonal or cyclical) that may cause an overall increase in noise missions. Maintain Bus Rapid Transit laneways with smooth surface to avoid additional noise that may be caused by rough or uneven (e.g., potholes) surfaces as vehicles drive along the corridor.
Socio-Economic and Land Use			
Land Use and Built Form Patterns	<ul style="list-style-type: none"> Property: Based on the 10% design, it is estimated that approximately 2 hectares of private lands fronting Dundas Street are required for the operation of the Project 	<ul style="list-style-type: none"> Permanent property acquisition requirements for the operation of the Project will be confirmed as design progresses. Where property takings are identified, consultation and negotiation with the property owner will be initiated well in advance to secure the required property and identify site-specific mitigations. Where operation will affect a private sign or billboard and cause it to be removed permanently, the owner shall be consulted in advance to determine an appropriate mitigation approach. 	<ul style="list-style-type: none"> N/A
	<ul style="list-style-type: none"> Permanent closure of driveways or building entrances 	<ul style="list-style-type: none"> Closures of driveways and building entrances shall be avoided whenever possible and shall be kept to a minimum when required. Where possible, alternate means of access shall be provided where a driveway is permanently removed. 	<ul style="list-style-type: none"> N/A
	<ul style="list-style-type: none"> Excess light spillage onto neighbouring properties 	<ul style="list-style-type: none"> Lighting should be designed to minimize trespass, glare and pollution effects through the implementation of best practices to mitigate or avoid unnecessary and obtrusive light. 	<ul style="list-style-type: none"> N/A
	<ul style="list-style-type: none"> Increased noise, dust and vibration emanating from Project operations 	<ul style="list-style-type: none"> Operations activities such as corridor maintenance should be minimized in duration and footprint to the extent possible. 	<ul style="list-style-type: none"> Operator to monitor operations.
	<ul style="list-style-type: none"> Negative aesthetic quality if not designed appropriately 	<ul style="list-style-type: none"> To mitigate impact to the visual environment, screened enclosures should be considered as required, particularly for storage areas. The visual effects of project structures (e.g. retaining walls, etc.) should be mitigated by considering their location, building materials, architectural design, and surrounding landscape treatments. Municipal departments and the public should be engaged as Project planning and design progresses. 	<ul style="list-style-type: none"> N/A
Transit and Transportation Network	<ul style="list-style-type: none"> Existing on-street parking may be reduced or eliminated as needed Left turns across the median may be restricted ("right-in/right-out" operation only) Through travel at minor intersections may be restricted, requiring a U-turn at nearby major intersections 	<ul style="list-style-type: none"> The Project is anticipated to result in an improved experience for transit users, providing faster and more frequent connections to major destinations along Dundas Street and beyond. In communities where U-turns are not common movements at intersections, consider information campaigns to clearly explain the new movement to residents. In general, it is good practice to reduce overall parking availability around higher-order transit corridors, however, significant loss of on-street parking may be compensated for by designating some new off-corridor parking spaces as appropriate and desired. Introduce appropriate signage and signaling to guide driver movement through corridor. 	<ul style="list-style-type: none"> City of Mississauga to monitor collision data to ensure driver guidance is achieving desired outcomes.

Environmental Component	Potential Impacts	Mitigation Measures(s)	Monitoring Activities
	<ul style="list-style-type: none"> ■ New turning movements (“U-turns”) may be introduced at major intersections 		
<p>Pedestrian and Cycling Network</p>	<ul style="list-style-type: none"> ■ Left turns across the median may be restricted for cyclists (“right-in/right-out” operation only) ■ Through travel at minor intersections may be restricted, requiring a detour to a nearby crosswalk 	<ul style="list-style-type: none"> ■ The project is expected to result in an improved experience for pedestrians and cyclists with new active transportation infrastructure. The Project should be designed to improve access to key destinations. ■ A public information campaign may be required to educate residents on Bus Rapid Transit and to avoid crossing the median. 	<ul style="list-style-type: none"> ■ N/A
<p>Community Amenities</p>	<ul style="list-style-type: none"> ■ Potential property impacts to community amenities 	<ul style="list-style-type: none"> ■ No effects to community amenities are anticipated as a result of the operation of the Project, except where property may be required. Property acquisition will be confirmed as design progresses. Where effects are anticipated, the property owner should be consulted with as soon as property impacts are understood. Property impacts to community amenities that serve vulnerable populations should be avoided. 	<ul style="list-style-type: none"> ■ N/A
<p>Future Development</p>	<ul style="list-style-type: none"> ■ Potential property impacts to planned future development 	<ul style="list-style-type: none"> ■ The Project should be designed to minimize effects to future development, where possible. Where effects are anticipated, the property owner should be consulted with as soon as property impacts are understood. ■ Overall, the Project is expected to have a positive effect on the Dundas Street corridor and spur additional development which is consistent with provincial and municipal planning policies. 	<ul style="list-style-type: none"> ■ N/A

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